

# LIGHTING

## EQUIPMENT NEWS

NOVEMBER 1989

### Reggiani UK Group formed

Reggiana UK, as part of its development programme for 1992, is acquiring Prima Lighting Ltd and a property company, Giltland Holdings. From 1 January 1990, it will be known as The Reggiani UK Group. The managing director of Prima Lighting will be Leslie Gorgin, and heading up its day-to-day operation will be Alan Parry, former marketing manager of Osram-GEC.

Commented group managing director Ralph Altmann, "Since Reggiani of Italy parted from Prima Lighting, its long-time agents, to set up its own manufacturing and marketing company over here, Reggiani UK, Prima has been inundated with proposals from overseas lighting companies seeking a foot in the UK market.

"Prima's merging with Reggiani UK means that it can now sift through the overseas offers, backed by all the vast resources of Reggiani."

### Chris Wray invests in glass

Christopher Wray has acquired Wakefield glass manufacturer Translucent Glass and is to invest half a million pounds in it over the next five years.

Founded by Czech immigrants in 1946, Translucent Glass originally blew glass shades for gas lamps and then diversified into producing shades for electric lighting. But the company fell on hard times during the recession of the early 1980s.

Christopher Wray first became involved with Translucent Glass two years ago when he placed a large order for specialist glassware. Now he has become chairman of the company and Derek Thompson has been appointed director and general manager.

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## Stadium lamp – a winner for Spurs



Thorn Lighting has launched a new floodlighting system and its first installation has kicked off at Tottenham Hotspur Football Club's ground in White Hart Lane, North London.

The system features a newly developed, 2kW, double-ended metal halide lamp. Immensely powerful, it has an output of 200 000 lumens and, with a colour temperature of 5200K, is particularly suitable where colour television cameras are used.

Purpose designed fittings, with reflector options that create five alternative light distributions, make fullest use of the light source. The slimness of the lamp enables these fittings to be extremely compact and lightweight with benefits in terms of column mounting and installation costs. The high light output means that in certain installations the number of fittings may be reduced, again giving cost savings.

One hundred and thirty-six Metatline fittings have been installed at

Tottenham's ground, providing an average illuminance of 1400 lux.

Fifty-two are positioned in groups of three on each stand roof on purpose designed brackets which can be turned through 180° for ease of maintenance and cleaning.

The remaining fittings, positioned at the back of the stands, direct light onto the touchlines. These fittings incorporate louvres which restrict glare but provide adequate illumination for spectators.

## Chairman champions research

David Loe, the new chairman of the CIBSE Lighting Division, entitled his inaugural address in October, *The spice of light*. Speaking to a crowded lecture theatre he said that well qualified people would give the lighting profession status and growth. He also called on manufacturing industry to invest more in research.

He reviewed progress in lighting education in recent years, which had culminated in the MSc course now established at the Bartlett

School of Architecture and said that similar courses were being set up in other countries.

It seemed that lighting had come of age, but there was still a need for centres around Britain offering study at technician level.

The problem of professional recognition also remained. CIBSE had established a Lighting Certificate and a Lighting Diploma, which was a step in the right direction.

Research, along with education, was the lifeblood of the lighting

industry, Mr Loe believed. It was in the interest of the industry to sponsor research and he felt it could afford to sponsor more than it was doing.

Some topics he identified as requiring research were: vision and adaptation; light patterns and light gradients; lighting measurement and numerical description, and daylighting.

He appealed to the industry to increase its research activity, perhaps on a group funding basis.



## Light refreshments

A ground floor area with minimal daylight, a basement with none and a requirement to convert both areas into light and welcoming bars was the exacting brief presented to interior designers, The Milner group and lighting designers Light Years by Charrington's.

The Art Deco inspired ground floor bar has an unusual curved ceiling on one side which has been heightened with a striking sand and mushroom harlequin design completely covering ceiling, walls and floor; the effect is of a warm cocoon.

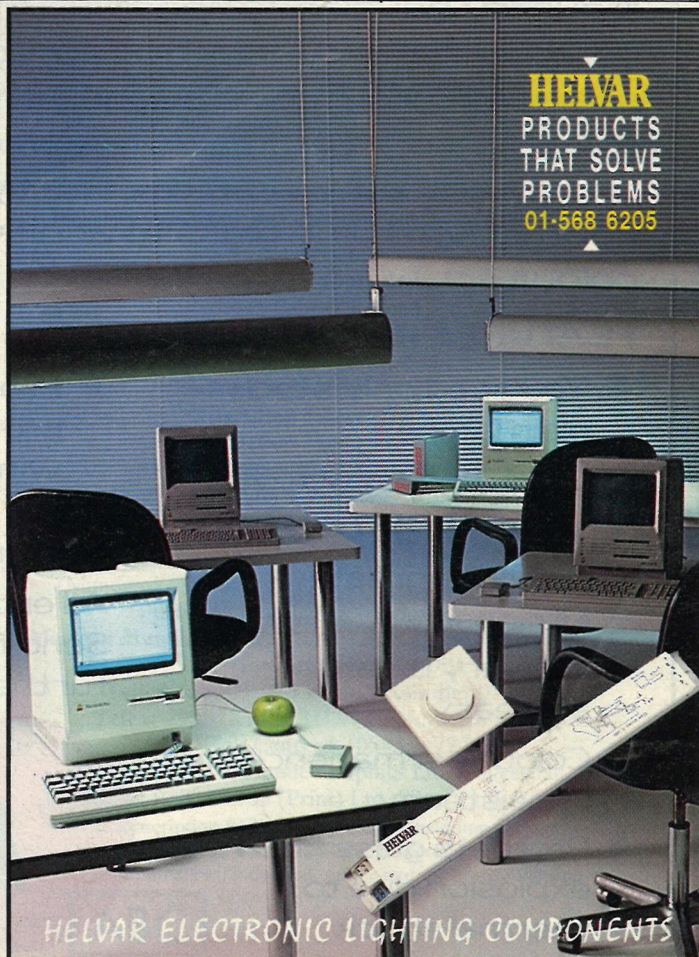
The basement bar is very different, blending warm terracotta with stark white tiles for walls and floor; glass, brick and steel for the bar front, and a dark ceiling.

Lighting had to create an illusion of greater space in a naturally small area, highlight focal points, and provide mood lighting and

effective ambient lighting in areas with little or no natural light.

In the ground floor bar, low voltage downlighters are recessed into the harlequin ceiling to provide pools of soft light. Over the bar and servery, a series of directional recessed fittings with dichroic lamps illuminate the counter and food. The 50W halogen lamp, used as the light source throughout minimises heat projection, keeping the interior cool and airy and the food in excellent condition.

In the basement bar low voltage downlighters are recessed into the midnight blue ceiling and behind the bar. Over the bar counter, Wirelight, a minimalist low voltage cable lighting system, suspends the dichroic lamps over ice-buckets, food and the choice of beers. High output directional semi-recessed spotlights throw brilliant beams of white light across the interior.







The winner receives his sword from Jim Bamforth, STC.

## Student wins a sword

Richard Bracebridge won the Outstanding Student of the Year Award in the Lighting Industry Federation's fifth lighting certificate course. He is with Philips.

His award is a magnificent Wilkinson Sword presented by STC Distributors Ltd. As well as keeping a replica of the sword, he receives a cheque for £250 and a further £250 to be spent on furthering his lighting education, training and interests.

The other finalists were: Alan Barr (Moorlite); Matthew Walters

(Thorpe); Alastair Stuart (Edmundson); Gerard Tierney (Philips), and Anna Scalera (LIF).

David Pritchard, course director, highlighted the fact that of those attending this year's course, less than 4% came from the design offices of consultants or users.

He added: "It would be comforting to think that this group of designers, responsible for millions of pounds worth of lighting design, had received a formal training during their college education, but few colleges are teaching lighting."

## Buyers drawn by light and sound

Light and Sound 89 held in London in September attracted more visitors than ever, with double the number of overseas buyers.

One exhibitor, Derrick Saunders of Pulsar Light, said, "For us the show proved to be an overwhelming success. There were definitely many more serious visitors wanting to do business."

This showcase for disco, stage and other leisure lighting will be held next year from 9-12 September and due to demand for space will expand into the new basement exhibition area of Olympia 2.

For further details contact David Street, 3D Services, 10 Barley Mow Passage, Chiswick, London W4 4PH.

## Chance to update your lighting

Short courses on lighting are among the programme of continuing professional education for building services engineers organised by the Institute of Environmental Engineering at the South Bank Polytechnic, London.

A three-day course on *Lighting fundamentals* will be held from 7-9 November. On 7 February there will be a course on *Efficient use of electricity and lighting*.

*Building energy management systems* will be the subject under consideration on 29 and 30

March.

A course on *Fundamentals of lighting* will commence on 24 April and be held on six half days during April and May.

*Intermediate lighting design* will similarly be covered in six half days during May and June, commencing on 21 May.

For further information contact the director, Institute of Environmental Engineering, South Bank Polytechnic, Borough Road, London SE1 0AA (telephone 01-928 8989).

## Lighting as a design aid

'Architectural lighting — a key to design' is the title of this year's Philips' Lecture to be given by Professor James Bell, Emeritus Professor and former director of the School of Architecture at the University of Manchester.

Professor Bell will explain how lighting can be seen as a generator of architectural form, both internally and externally, and how lighting can play a major role in

establishing the quality and mood of interior space.

The lecture will be at University College London on 29 November.

Applications for invitations to attend the lecture should be to David Loe, International Philips Centre for Lighting Education and Research, Bartlett School of Architecture and Planning, University College London, 22 Gower Street, London WC1H 0QB.

## NOVEMBER

7

**Lighting — the implications of the CIBSE Code.** An evening lecture at MANWEB Headquarters, Chester. Arranged by the Institution of Electrical and Electronics Incorporated Engineers. Details from IEEIE 01-836 3357.

**Lighting technical evening** arranged by the CIBSE Republic of Ireland Branch. Contact hon secretary, Oliver Reddy, for details on Dublin 975716.

15

**Flicker**, discussed by A J Wilkins of the Medical Research Council applied psychology unit. Evening meeting in London arranged by CIBSE Lighting Division. Details from CIBSE 01-675 5211.

21

**MOT in buildings (sick building syndrome).** Evening meeting at the Leverhulme Building, Liverpool University, held by CIBSE Merseyside and North Wales Region. Details from K R Roughley 051-530 1149.

21-23

**Office Environment Show**, and Third Design for Offices conference, at the Business Design Centre, London. Details from AGB Exhibitions Ltd 01-868 4499.

28

**The international sun.** An afternoon meeting at the Royal Institution, London, arranged by the National Illumination Committee of Great Britain. Details from I F Davies, CIBSE, 01-675 5211.

## DECEMBER

5

**The new lighting guides.** An evening meeting at the Trinity Maritime Centre, Newcastle-upon-Tyne, arranged by CIBSE north east region. Details from David Buglass 091 258 7003.

6

**Street lighting.** An evening meeting at British Gas plc, Manchester. Event organised by CIBSE north west region. More information from L Daniels 061-228 2331.

## More visitors for Paris exhibition

The international decorative lighting exhibition, *Salon International du Luminaire*, will be held in Paris from 12-17 January 1990 at the Porte de Versailles exhibition park.

On the Sunday, 14 January, it will remain open until 9.30pm and

specifiers will be invited to visit the exhibition that evening free of charge.

For the second year in succession there will be one day when the general public can visit the displays alongside trade visitors; this will be Saturday 13 January.

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# Crystal hides disco lights

A vast, hollow crystal chandelier which holds disco lighting in its centre forms a brilliant centrepiece in Manchester's newest nightclub, 21 Piccadilly.

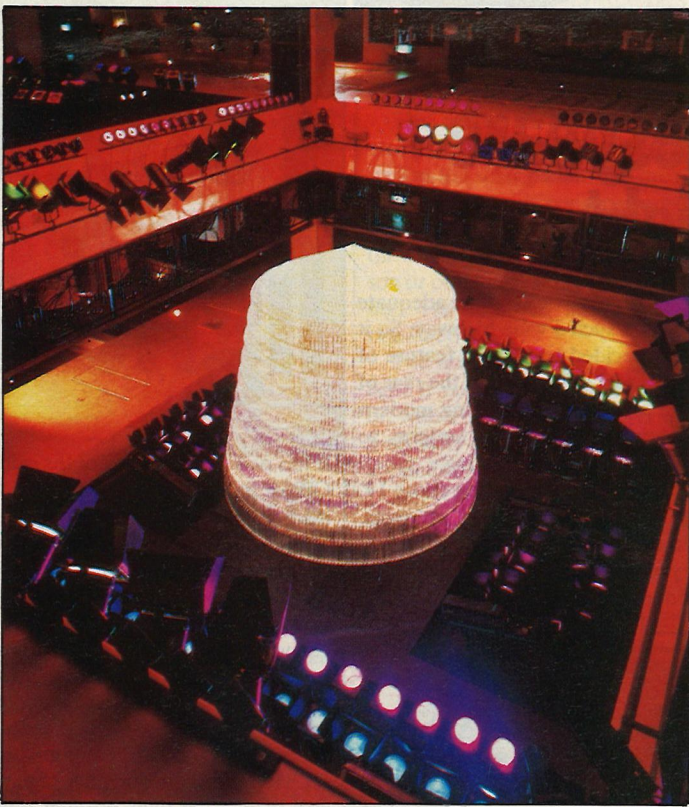
Formerly a Woolworth's store, the building has been gutted, redesigned and decorated by its owners, The Noble Organisation, to give a country house atmosphere, a design approach they believe is unique on such a scale in the UK.

With a capacity of 2000 people, 21 Piccadilly offers two dance floors, eight bars, a cocktail bar and a five-star restaurant.

In line with the manor-house interior theme, it was decided to conceal the major part of the disco lighting within the body of a crystal chandelier over the main dance floor.

Chelsom Ltd was called in to design a chandelier with a 2.3m by 2m void, the minimum space required to hold the disco lights.

The resulting chandelier was constructed in six weeks around vertically linked tiers from which hang 4250 hand-made four-sided solid Venetian glass rods, polished and cut to a 45° angle at the base for maximum light refraction. It weighs 1760kg, is 3m high with a 3m diameter and has 132 incandescent 60W lamps.



The finished crystal structure houses disco lighting designed by Carlsbro Sound Services. There are eight strobes and 32 500W floodlights with coloured filters in a spiral formation from top to bot-

tom of the chandelier void.

Both these and the chandelier's own lamps have been linked to chasers which synergise the lighting and music to create a total audio-visual experience.

## Action on the impact of IT

Good progress was made at the recent launching of the Information Technology Group of the Chartered Institution of Building Services Engineers.

The impact of information technology (IT) on buildings is rapidly increasing in magnitude and affects many aspects of building users' requirements, from architecture to cabling services, including of course lighting.

An understanding of both IT issues and the building design process was essential if errors, even disasters, were to be avoided, the audience was told.

The scope of the group was defined as: communications and information technology and its effect on buildings. It was decided to address opportunities and problems for forward thinking engineers, architects and IT specialists.

At a seminar held on the morning of the launching, speakers told building services companies they would need to adopt advanced techniques of project management to be able to offer new services in

future, and building services engineers must acquire new skills or risk technical obsolescence.

A representative of S G Warburg Management Ltd described the impact that IT had had on the nature of the company's business and its staff.

One result was that the greater density of equipment and people, especially in dealing rooms, had led to increased heat output. Five years ago the building had provision for a cooling load of 27W/m<sup>2</sup> whereas now it was 100W/m<sup>2</sup>.

Optical cabling had recently been introduced, which gave additional benefits and was cheaper than deepening the floor void to accommodate more cables.

One of the company's buildings had been pre-wired with Electrak under the floor so that premises staff could be used rather than expensive IT staff when layouts were changed.

Modern business demanded that a building be like a machine, with all parts interrelated and able to be changed as quickly as pro-

ducts and markets changed, the speaker said.

He also made a plea for cheap ancillary space to be provided for equipment such as generators, for raised floors and more flexible air conditioning.

After the seminar the first full meeting of the IT Group was held. Its first task is to produce a glossary of terms for engineers and architects and this is already in draft form.

A series of technical memoranda will follow that will eventually make up a CIBSE guide. First in the series will be *The accommodation of IT in buildings*.

A proposed contents list for this was studied and chapters were allocated to pairs of people — one IT specialist and one building services engineer — who undertook to prepare drafts. Lighting will be included in the electrical section.

The group arranged to make contact with other appropriate professional bodies with a view to the CIBSE IT Group becoming a focus of action on IT.

## British Pirates go to Japan

An amenity light with a Japanese feel has been designed by Pirate Design Associates as part of an exhibition of innovative, contemporary British product design that has been touring Japan.

Luminaire and column were considered as one entity and a unified solution produced that is elegant and economical to make. The fitting, with its 70W high pressure sodium lamp, locks into the inside of the pole top.

Thorn Lighting commissioned the design purely to bring its name before Japanese buyers; Pirate Design Associates retain the copyright and design registration and are now looking for a manufac-



turer to produce the amenity light. Pirate's address is 30-40 Dalling

Road, London W6 OJB (telephone 01-741 0706).

## Off to a royal start

Home Automation and its sister company Ripul Ltd have successfully completed their move from Hoddesdon, Hertfordshire to purpose-built premises in Chippenham, Wiltshire. And on 26 September the new company headquarters were officially opened by His Royal Highness the Duke of Kent in his capacity as vice chairman of the British Overseas Trade Board.

The new factory, laboratory and offices cover 2300 m<sup>2</sup>, and such is the optimism within the company that footages have already been prepared for almost 1400m<sup>2</sup> of extensions.

The premises are notable for the absence of light switches. Lights are activated throughout the building by the company's own Ripul PIR person detector switches.

## Light reading

The Claude Gill Bookshop in High Ousegate, York has taken on a new look with the installation of over two hundred ELPAR-H display lamps. The lamp is claimed to cut electricity bills by two-thirds, and give a heat reduction of 20% over conventional lamps, by using a toroidal step down transformer unit.

A Cox, of booksellers Hatchards who own the Claude Gill chain, explained the rationale behind the new lighting. "We put great importance on lighting for outlets. It can make such a difference between a successful and a dull presentation."

Over a hundred of the lamps were quickly installed on each of the two floors in early May 1989, and, as the lamp fits into the existing PAR38 lamp sockets, the whole operation was fairly inexpensive.

## Trade literature

● **Lytemode Ltd** has a brochure on its Green Ginger range of stage lighting controls and dimmers.

● **Program Lighting's** catalogue illustrates the company's display luminaires for open cell and solid ceilings.

● **Ashley and Rock Ltd** has produced a booklet for electrical contractors called *Developing your business*. It includes articles on understanding the electrical contracting market and tips on promoting services and maximising profitability.

● **Chelsom Ltd** has published a 143-page indexed catalogue of its 70 ranges of decorative and contract lighting.

● **R Hamilton & Co Ltd** has revamped its catalogue of Mercury Litestat lighting controls. Diagrams have been included to assist specifiers, wholesalers, contractors and clients.

● **Mirach**, a new division of Sirrah, Italy, has a catalogue showing its Este range of modern amenity lighting.

● **Applied Lighting Technology** has produced two illustrated brochures on fibre optic lighting, one on its use in museums, galleries and historic buildings, the other concerned with architectural, residential, restaurant, office and retail applications.

● **Marque X Contract Lites Ltd** has printed its loose leaf product information in book form to describe its full range of display lighting, including a linear lighting system.

# COMMENT

## Anyone for research?

"Along with education, research is the life blood of an industry and if it is neglected it is likely to lead to its decline", declared David Loe in his recent inaugural address as Chairman of CIBSE's Lighting division. Given the current climate of self-help, he felt an industry that earned some £500 million in the domestic market and an additional £140 million in exports could well afford to sponsor more research than it currently does. Research, he concluded, was one of those things that everybody pays lip service to but not real money.

This certainly reflects current government policies. Funding has been cut back sharply in recent years. The Electricity Council, in the run up to privatisation, is reducing its efforts on lighting research. Even government agencies like the Building Research Establishment are being required to generate more and more of the funds that keep them running from commercial consultancy work. All of which, presumably, means cutting back on the amount of time researchers have at their disposal to carry out basic research.

It is basic research we are speaking of here, and not the research and development routinely carried out by the major manufacturers and those others wishing to remain in the vanguard of a technologically led industry.

That such research can generate new business for a market has clearly been shown by the effect the *Middlesex Polytechnic report on lighting and crime* has had on the street lighting sector.

The problem is essentially one of coordinating effort in such a fragmented industry. But this difficulty is not necessarily insuperable, and there have been some successes elsewhere.

For instance, the British Hydromechanics Research Association Fluid Engineering Centre at Cranfield has determined with the fluid engineering industry the basic areas into which research should be conducted. It has then encouraged industrial sponsors of all sizes to come forward and group into consortia along these broad lines to fund research. Where research has been partly funded by government or EC grants, sponsors are given advance notice of results in return for their patronage, and results are made public after an agreed interval. Thus, sponsors get a head start when it comes to developing new products and techniques, research is carried out that otherwise could not be financed, and everybody is kept happy.

## LIGHTING EQUIPMENT NEWS

Editor: Judy Sewell

Associate Editor: Barbara Trigg

Art Editor: Lorna Francis

Midlands Area Manager: Jim Hughes

Northern Area Manager: Robert Ditchfield

Southern Area Manager: Jim Hughes

Classified Sales: Joanne Barker

Production Manager: Lee Hibbert

Circulation: Kirtie Parmar

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# NEWS

## Plugging safety

Safety conscious consumers must demand fitted plugs on new electrical equipment if electrocution and fire hazards are to be reduced, says the Royal Society for the Prevention of Accidents.

The Society recently assessed information on the safety of plugs checked in a survey of 20 000 homes — and some 50 000 plugs were found to be faulty.

Among the faults were: earth and neutral wires reversed; earth conductor not connected; terminal screws loose; cord clamp missing or not in use; insulation damaged or stripped back too far, and two appliances connected to the same plug.

RoSPA is encouraging manufacturers of domestic electrical appliances to fit plugs in the factory. Consumers can then be assured that the wiring is correct because every plug is checked

automatically, and the appropriate fuse will always be fitted.

The consumer holds the key to see that this campaign succeeds by choosing appliances which are supplied complete with a fitted plug. This is what is expected elsewhere in the EEC and, indeed throughout the world. In the UK only 10% of domestic electrical appliances are supplied to the consumer complete with a plug.

## Lighting controls guide

The Lighting Industry Federation has produced a new applications guide on lighting controls and energy management systems. The guide offers information on proven techniques that provide good, flexible lighting while also generating the opportunity for cost savings.

Copies of the Guide are available, price £7.50, from LIF at Swan House, 207 Balham High Road, London SW17 7BQ.



## Seeing Shakespeare in the right light

For the past year ornate foreign lights have been lighting up Waterside, the main thoroughfare between the Royal Shakespeare Theatre in Stratford-upon-Avon and the town centre. The lamps have mainly been donated by European countries in recognition of the Bard's birthplace.

As the Waterside area consists of a 7.3m carriageway with a 12m wide footway running alongside,

these lights would not be adequate to light such a wide highway. So it was decided to make a feature of them and erect them at the rear of the promenade, installing modern lighting columns and lanterns to provide the main lighting.

For this Warwickshire chose 14, 8 metre high tapered columns, from Abacus Municipal, each carrying three luminaires and one floodlight.

# CIBSE

The Chartered Institution of Building Services Engineers

## Terminal lighting

It has now been some months since the introduction of LG3 — the new CIBSE lighting guide for areas with VDTs. How has it been received? Is it too vague — or too restrictive?

Before tackling these points we had better comment on the biggest criticism of the document — referring to VDUs as VDTs. Why did we do this? It was not, as some assert, that we were merely copying the Americans. Nor was it because the spellchecker on our word processor kept changing VDU to VDT. We were simply following the lead of our esteemed British Standards Institution. They had used VDT in the standard on work station ergonomics. So, who were we to argue?

On the whole the document was well received. The need for a replacement for TM6 had long been known. A number of manufacturers have taken the document on board straight away and are in the process of altering their product ranges, or bringing out completely new products to meet the standard. Some, however, have buried their heads in the hope that the document will go away. Unfortunately, for them the document is here to stay and these manufacturers will need to adapt if they wish to maintain a share in the quality end of the market.

Having said that, it is, of course, totally unreasonable of designers or users to expect manufacturers to have products to meet the standard overnight. It takes time to evaluate their current ranges. Decisions need to be made about investment and future market share. Perhaps new luminaires have to be designed, tested and manufactured. This all takes time, money and a lot of effort by the manufacturers. For instance, we expect it to take a year for the downlight manufacturers to have tested and published the category that each of their products achieves. We do not expect to sell all manufacturers producing luminaires to meet each category. Overall, it is likely to take two years before the system is universally used and specified.

Of course the document dealt with more than just the luminaires themselves. It is gratifying to see that, as a consequence, far more attention is now being paid to the whole working environment. The screening of the windows is proving to be a popular pastime, with the lighting designer starting to discuss with the architect the type of screening, the fabrics used, its density and its colour. The architects are also doing more to influence the style of lighting being used, now that they know that almost all forms of lighting can be suitable for VDT areas — if designed well.

Such interaction within the design team can only be to the long term good of the lit environment. The future successful introduction and use of VDTs in the workplace depends critically on producing a suitable environment. Adoption of the LG3 standard will go a long way to achieve this.

Paul Ruffles

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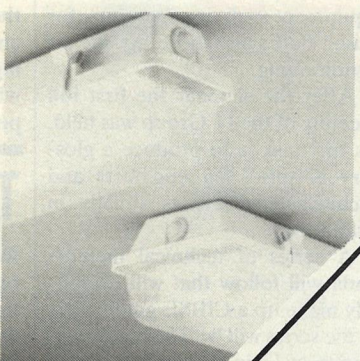
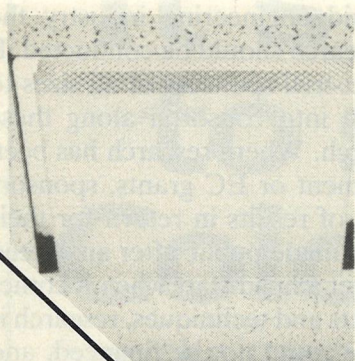
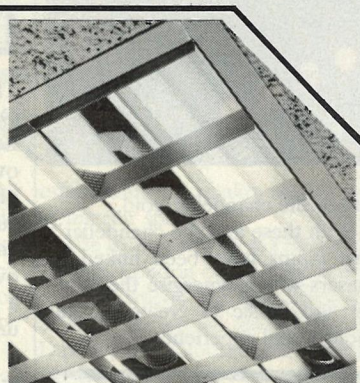
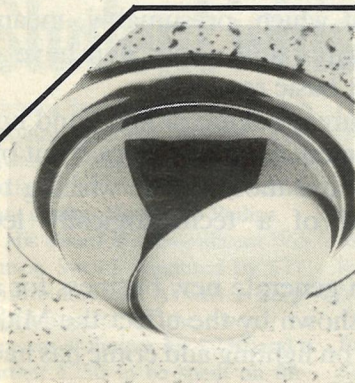
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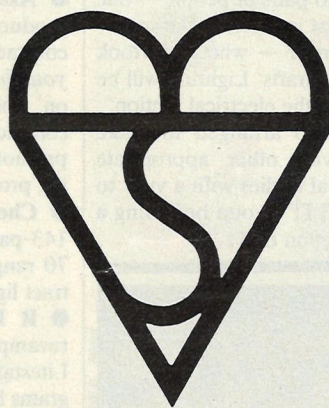
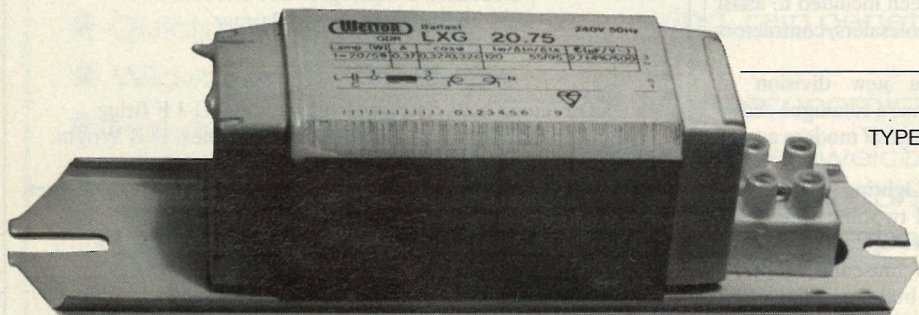


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## THE NEW LIGHT



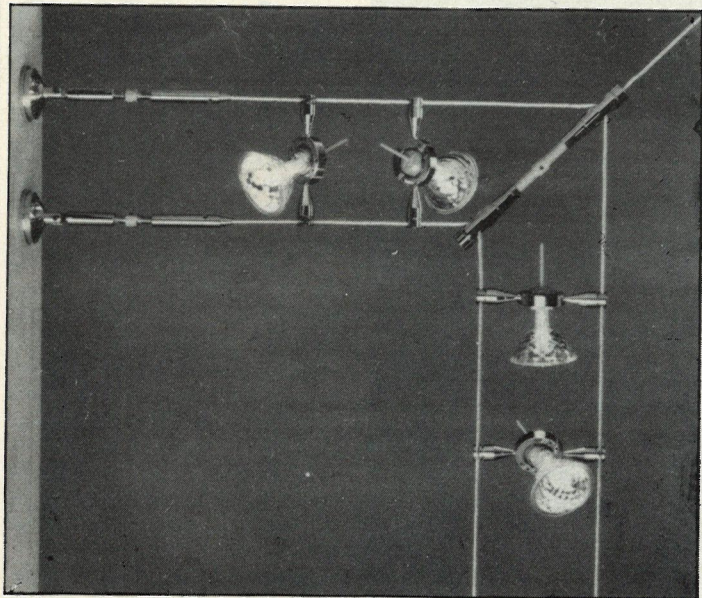
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# NEW PRODUCTS



## Tensioned wire system

A low voltage, bare wire lighting system for middle range budgets and applications has been launched by Hitech Lighting plc.

The two parallel wires span up to 6m on a run. A maximum of six 50W Mistral spotlights can be used with a 300VA transformer.

In the event of a short circuit, the lights are extinguished, the electronics immobilise the transformer, causing an audible warn-

ing signal, and an LED display lights up until the circuit is cleared.

Accessories enable the Hi-wire system to turn corners; a pendant conversion kit allows the height of fittings to be varied, and centre tensioners allow the 6m span to be extended.

There is a choice of either chromium or gold plated luminaires with the system.

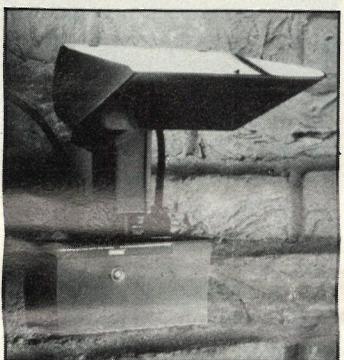
Reader Service No. 151

## Long range detection for security light

Night Protector, a quartz halogen lighting fitting has been added to the security lighting range of Smiths Industries Environmental Controls Co. Its 500W lamp switches on automatically as soon as anyone enters its detection range of up to 12m.

It is fitted as two separate units: one housing the quartz halogen lamp and photo-electric controller, the other containing a passive infra-red detector.

It is often better to site the light in a high position to provide maxi-



mum illumination over a car park or domestic garden, for example, and the detector in a lower position where it will be most likely to sense intruders.

A choice of sensors is available offering detection ranges up to 30m.

Reader Service No. 152



## Extra long sign lights fascias

To meet the need for extra long illuminated sign fascias for stores and filling station forecourts, Universal Components Ltd. in con-

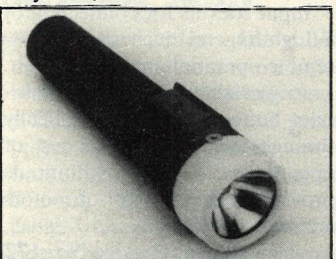
junction with ICI Acrylics, has developed a new sign fascia box.

Illuminated sign boxes can now be provided in lengths up to 100m with flaps top and bottom to allow access for lighting maintenance without disturbing the translucent Perspex sheet fascia at the front.

Reader Service No. 153

## Safety torch

Nitech Ltd has added an intrinsically safe, hand-held torch to its



X-Cell range of portable lighting. Applications for Legrand-Lite include use by fire brigades, police and army as well as in mines, chemical plants and on oil rigs.

Available in two and three D-cell sizes, it is 245mm long and weighs 0.25kg. The body is black plastic with fluorescent torch-head surround and polycarbonate lens. The red plastic switch is either pushed forward for a continuous beam or depressed intermittently for morse code.

Reader Service No. 154

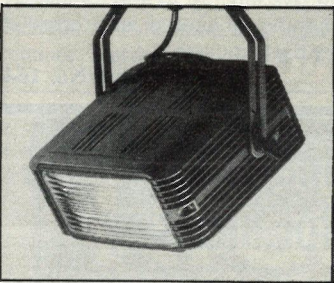
## Solar powered garden light

A solar powered garden light that can be either wall mounted or free standing is available from Uni-Com Electronics Ltd.

The triangular head incorporates a passive infra-red detector as well as the solar panel. This means that the batteries conserve power because the light is only switched on when the sensor detects a person or other heat source approaching. The tungsten lamp used is rated at 6V 3W.

The fitting can act as a courtesy light if positioned near the door, or, with a buzzer added it becomes a security device. Retail price is about £60.

Reader Service No. 155



## Stylish indoor floodlights

Studio indoor floodlights by Prisma, Italy, are available in Britain through Lampways Ltd.

This range is produced from diecast aluminium and uses 70W and 150W metal halide lamps. The 150W version has the advantage of an ultra-violet glass filter. Both units are available in either a black or white epoxy coated finish.

The Studio range is particularly suited to retail environments.

Reader Service No. 156

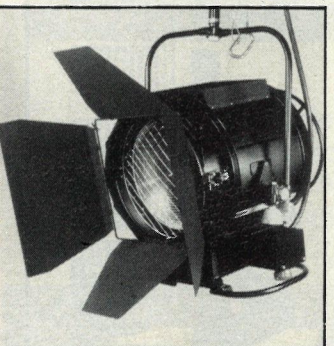
## Luminaires for TV studios

A range of tungsten luminaires for larger TV studios has been introduced by Lee Colortran International.

Improved design for focus and switching mechanisms has been incorporated and gives more efficient performance (lumens/watt) and improved spot-to-flood ratios.

Available in 1kW/1.2kW; 1.25kW/2.5kW; 2kW/2.5kW; 2.5kW/5kW and 5kW manual and pole-operated versions, the Studio range conforms to most European electrical and technical standards.

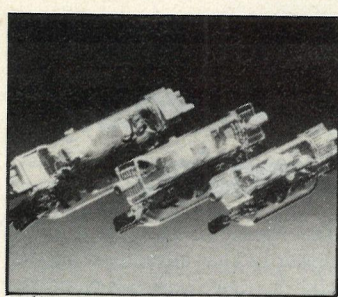
Each luminaire has a steel hous-



ing and a bottom tray which is detachable for easy maintenance. The inner skin, top vent, cowling and lens door are in aluminium to combine lightness with strength.

Reader Service No. 157

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



## New colour in metal halide

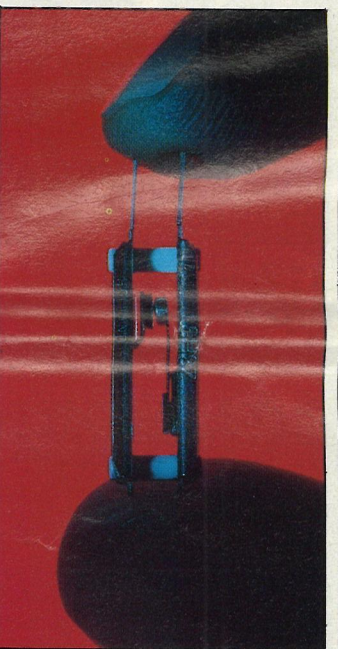
A new colour has been introduced to the range of metal halide lamps produced by BLV Licht und Vakuumtechnik GmbH, which are available in the UK through John E Robertson.

The new colour, Brilliant White, has a correlated colour temperature of 3500K to provide an intermediate alternative between Neutral White (4200K) and Warm White (3000K).

It has been developed for interior installations such as offices, where it gives the advantages of a small light source of high efficacy and good colour rendering.

Three wattages are available: 75W, 150W and 250W.

Reader Service No. 158



## Thermal cutout for LV lighting

A bimetal thermal cutout with innovative electrical re-set is available from Texas Instruments. The contracts open automatically at a pre-set temperature but then remain open as long as there is a power supply to the device. External removal of the supply, for example by a switch, is necessary to re-set the contacts.

Use of the Klixon TH11 avoids problems associated with redundant "one-shot" cutouts and offers the lighting designer more flexibility in the location of low voltage transformers.

Reader Service No. 159

## Luminaire for zebra crossings

Light Projects Ltd has introduced a low voltage fitting for zebra crossings. The new design has an M16 50W lamp that can be installed in place of a PAR38 mains unit.

Advantages claimed for the low voltage fitting, are lower maintenance costs, less likelihood of vandalism and a much longer lamp life of 3000-4000 hours.

Reader Service No. 160

# LIF LINE

## Anyone for lighting

The first serious British research into the effect of lighting on crime and fear of crime was funded by industry in answer to the 'show us' response of central government. This research consisted of carefully monitored improvement projects where lighting had been shown to reduce crime and fear of crime.

The research findings were received with interest when circulated among local authorities in Britain and many responded with letters of support. There was also evidence of frustration.

Local government does not have statutory crime prevention powers and no duties. Therefore, crime prevention which has been seen traditionally as a function within each individual service is in constant danger of falling between several stools. Funding comes from a range of sources and covers a number of departments. What sort of response and how coordinated a policy, can we expect from this hotch-potch?

Authorities have initiated their own research projects. There have been street surveys, estate surveys and police statistics are frequently used to monitor the effectiveness of improved lighting installations.

Representatives from Bristol City and Avon and Somerset Constabulary gave papers at the ILE Conference on their experiences of inner city lighting. Bristol City acknowledged that interdepartmental and county/city liaison played a major role in the success of their initiative. The London Borough of Brent commissioned a survey into lighting and safety on local estates, carried out by the Safe Neighbourhoods Unit. Cleveland County are conducting a research project in Middlesbrough; Bradford, as a Safe City, is monitoring lighting improvements; Leeds has just completed the six month long before section of their residential lighting improvement scheme; Islington has done extensive work on the Hilldrop Estate.

Impetus has also come from women's groups within authorities. The Women's Sub-Committee in Southampton called for a survey into the safety in women in public places in 1987. The Police Monitoring Unit in Manchester conducted a 'by women for women' survey. Tayside Women's Forum released its women and safety survey report in May this year.

The most recent comment on crime and fear of crime has come in the results of the Safe Company Campaign, an independent survey undertaken by a women's magazine. Of their female respondents, 93% worry about going out after dark; a mere 4% feel safe; 43% are positively scared. Of their male respondents, 74% feel women are at serious risk on the streets; only 4% think the problem of fear of crime has been exaggerated.

In terms of realistic methods of tackling the problem, 85% thought better policing and better lighting would be an effective treatment. It sounds familiar — better lighting, more police on the beat, tougher sentences. These have been the recommendations of every survey to date. Why do they fall short of being solutions?

Crime against the person is rare. Crime statistics released by the Home Office show that sexual offences and violence against the person account for only 5% of the total number of recorded crimes in England and Wales. However, against an overall decrease in the number of reported crimes, crimes against the person are increasing. Surveys have shown that lighting improvements reduce the instance of crime against the person.

There are no official statistics on fear of crime, but surveys show that it is extensive. It restricts peoples' lives, governs their freedom of movement, and affects their quality of life. The effect of lighting on fear of crime is well documented.

Yet the issue of fear of crime and the means to address it are in danger of being marginalised. Fear of crime is not, in itself, spectacular. Its effects are negative — no-go areas, deserted streets. Reaction is just that. It takes the form of withdrawal rather than confrontation, the 'self-imposed curfew' and 'fortress society' we hear more and more of.

There is now a body of research work in this country and government is aware of its existence. There is awareness of the problem and agreement on possible solutions. Jo Richardson MP, expressed the frustrations of many when she commented, "Women are not just frightened, passive victims — they are angry about male violence and they want people in power to listen to their demands".

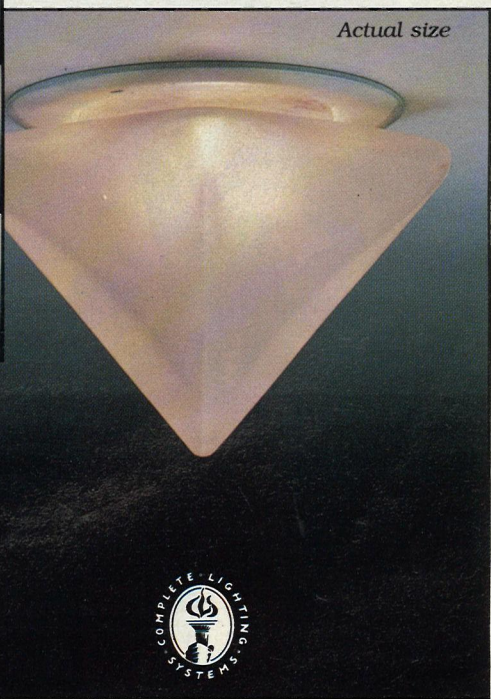


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Reader Service No. 6



# NEW PRODUCTS

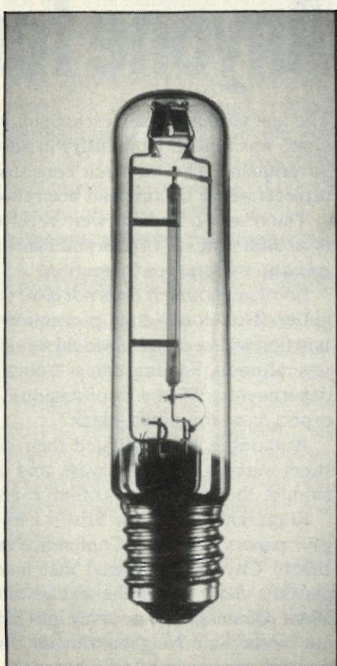
## Birth of a new son

SON-XL, a more powerful range of high pressure sodium lamps for industrial interiors and exterior lighting applications, has been launched by Thorn Lighting.

Performance is similar to standard SON, (colour temperature 2000K and a colour rendering of 25 on the RA Index), but the lamps emit 18% more light. Increased illumination and improved safety on the streets can thus be achieved at no extra running cost. In industrial interiors, the same performance can be achieved with fewer fittings.

Performance is maintained throughout lamp life. Light output can be as high as 90% of the original value at the end of life, which is half the depreciation of standard SON lamps. The improved lumen maintenance is due to an increase in the amount of xenon gas filling in the arc tube which provides greater thermal efficiency and less blackening of the arc tube ends.

The run up time for the new lamps has been reduced from 5 minutes to 2 minutes with a hot restrike of less than 1 minute.

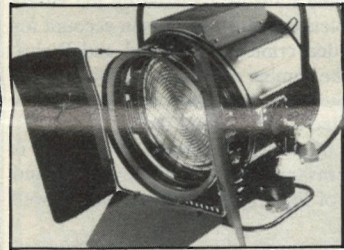


SON-XL is available in 70W-400W ratings and will work on ignitors manufactured to IEC 662 which have a minimum repetition rate of every half cycle.

Reader Service No. 161

## Baby location lighting

A range of Baby Fresnel tungsten luminaires is available from Lee Colortran International for small studios, outside broadcasts, or film location use. Each comes com-



plete with four-leaf barndoor, colour frame, wire guard and 4.5m cable.

These luminaires are more compact and lighter than their predecessors to give storage and transportation benefits on location, and to make movement easier around track and barrel grids in the studio.

More efficient performance (lumens/watt) and an improved spot-to-flood ratio is also claimed.

Eight models are available: 300/500W Kitten; 1kW Pup manual; Baby 2kW manual; Baby 2kW pole-operated; Baby 5kW manual; Baby 5kW pole-operated; Baby 10kW manual and Baby 10kW pole-operated.

Reader Service No. 162

## Hippos in the nursery

Sophie Nursery Products Ltd has three new ranges of lights: Sapphire Elephant, Jo Jo Hippo and

Benjamin Bulldog. The furry animals sit at the base of bedside lights and hang parachute style below pendants.

The company has also designed a special nursery fabric which features the three new characters.

Reader Service No. 163

## Automatic tests for emergency luminaires

The Normelec Division of ABB Power Ltd has introduced into the UK a range of self-contained emergency luminaires incorporating microprocessor-controlled self-test and monitoring functions.

Cewa Guard luminaires carry out both function and battery duration tests. To test operation, once a week the unit isolates itself from the a.c. supply, switches to battery power for five minutes, then reverts to mains power. A series of coloured LEDs indicates the status of the unit, with different LED combinations indicating the type of any malfunction. The day and time of this test can be set by the user.

Once a year the unit tests battery duration and a warning is

given if the battery time is less than 45 minutes for one-hour luminaires, or less than 120 minutes for three-hour units.

A major feature of the new range is the capability for centralized monitoring. Up to 15 luminaires may be connected to the Cewa Guard US15 supervisor unit. No extra wiring is required, status signals are transmitted to the supervisor unit through the mains wiring.

Coloured LEDs on the supervisor unit indicate the operational status of each luminaire and warn of any failures.

The unit also shows when a test is being performed and indicates the number of days until the next test. A remote alarm is available as an option.

For larger installations, it is possible to connect up to 32 supervisor units to a central computer. In this way, up to 480 luminaires may be monitored and recorded by the computer.

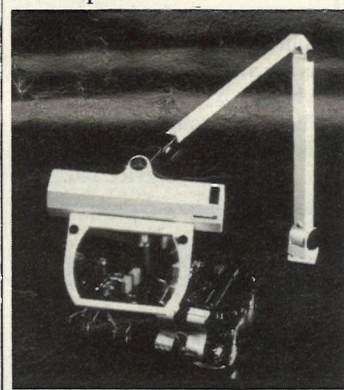
Reader Service No. 164



## Magnifying light for industry

A task light with integral magnifier is available from Midland Machinery Services. It uses an 11W PL type compact fluorescent lamp and has a three diopter, distortion free, wide angle, polished glass lens.

This combination ensures that a large working area is brightly lit and magnified. The articulated arm allows positive adjustment of the lamphead.



A secondary, four diopter lens can be supplied as an optional accessory.

Reader Service No. 166

## Lighting for window reveals

An effective way of illuminating the facade of a building is to pick out the window reveals. This requires a lighting fitting that is small enough to sit on the sills and be used in pairs to light both sides equally.

Light Projects Ltd has introduced such a unit with a rotatable shield to protect occupants of the building from glare. It uses a 20W or 50W low voltage dichroic lamp.

Reader Service No. 165



## More versions of Dulux lamps

Wotan Lamps Ltd continues its research on compact fluorescent lamps and has launched several new versions.

The Dulux EL Reflector lamp has been designed as a direct replacement for PAR lamps, offering energy savings and reduced heat output. It has an integral high frequency ballast and is produced in 11W and 15W ratings in Colour 41 Maxilux Interna.

Applications include downlights and installations requiring a lamp with a wide beam distribution.

Dulux EL Globe has a spherical, white opal envelope which is stated to give a relaxing, glare-free light suitable for commercial and domestic interiors. It is available in three wattages, 7W, 11W and 15W.

The Dulux S/E (standard electronic) lamp can be dimmed and has been developed for use in vehicles, ships, aircraft, mobile exhibitions, buildings without a mains supply and for battery powered emergency lighting systems.

It uses a high frequency ballast and does not have an integral starter.

Dulux S is now also available in red, green, yellow and blue.

A fully electronic, high frequency ballast for the Dulux L (long) provides up to 30% higher circuit efficacy compared to conventional ballasts.

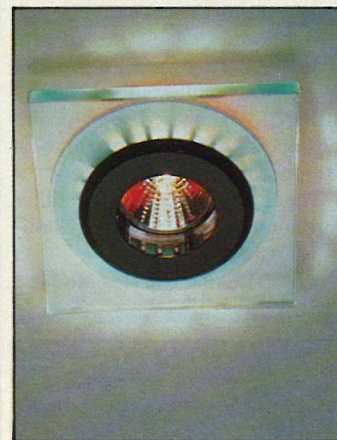
Reader Service No. 170

## Downlights for cabinets

A range of tiny, shallow-profile downlights, ideal for recessing into display cabinets and wooden soffits is available from Marque X Contract Lites Ltd.

They use 12V 20W M37 tungsten halogen lamps. There is a choice of circular, square, hexagonal or octagonal bezels.

Reader Service No. 167



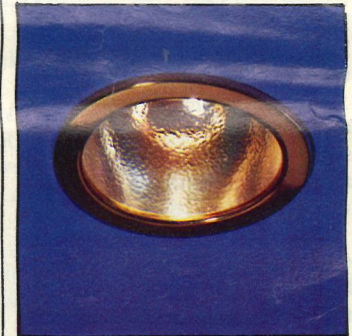
## Downlight has halo

A decorative semi-recessed collection of low voltage downlights is being launched by Prima Lighting Ltd. Called Strip, the fittings feature a thick glass disc which gives an unusual "striped halo" effect around the lamp.

A selection of eleven coloured bezels is offered including a gold plated version.

Strip, from Martini of Italy, comes in square or round formats and uses a 12V 50W dichroic tungsten halogen lamp.

Reader Service No. 168



## Low voltage downlight

Courtney Pope Lighting Ltd has a recessed downlight that can be fitted with a wallwasher attachment.

The AEM/1 has been designed for use with a 12V 100W tungsten halogen capsule lamp.

Reader Service No. 171

## Wider field for security sensor

The flexibility of the security lighting range from Smiths Industries Environmental Controls Co. has been increased with the addition of a passive infra-red sensor, the DL10, which has a larger, adjustable detection field of up to 30m.

Reader Service No. 169

## Lighting effects controller

Quattro, Multiform Lighting's controller for club lighting, is now in production. It is a microprocessor-based, four-channel, four-zone lighting controller with low voltage outputs to drive the company's Multipac and Switchpac slave packs.

The controller has 16 output channels grouped into four dimmable zones of four channels. Each zone can run a different chase pattern with audio triggering, auto reverse, auto pattern change, crossfade and speed individually selected for each zone. In addition a number of cross zone chase patterns can be selected.

There is a total of eight different

chase patterns plus All Flash and All On. A similar number of zone chase patterns is available including a 16-channel chase and a block chase.

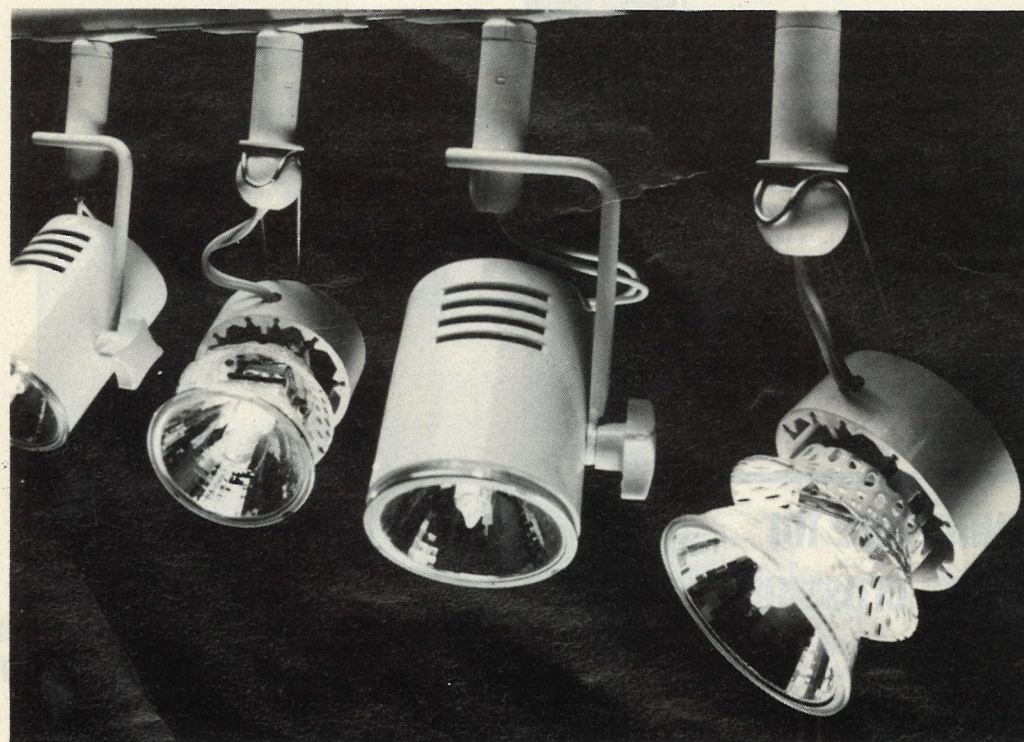
Once the pattern and modifiers have been programmed into each zone, they are retained in the memory even after Quattro has been switched off.

Matrix wired lighting can be controlled and a fifth four-channel output is provided to trigger a strobe system.

Input sockets for connection of a Lightfingers touch panel allow remote operation.

A special feature is the Auto-pilot button to run automatically through all possible modes of operation. Eight switched outputs provide for the control of motors and switched effects.

Reader Service No. 172



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## Options in amenity lighting

The Outdoor range of amenity lighting from Hitech Commercial Lighting Ltd offers some 30 configurations.

Luminaires are available in four shapes: barrel, cube, round and amphere. All are produced in acrylic, with the round shape additionally offered in polycarbonate. There is also a choice of sizes. Pole top luminaires can be mounted in groups of up to five. Wall lights can have either single or twin arms with brackets available in three shapes.

There are models to accept the following lamps: GLS, PL com-



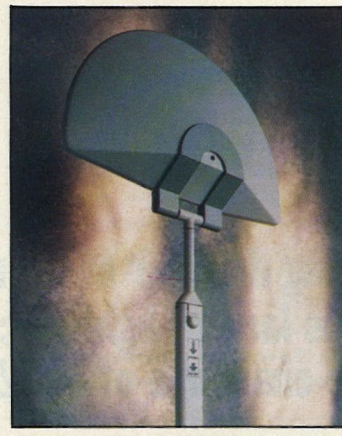
pact fluorescent, high pressure sodium, mercury and metal halide. Hitech states that particular

attention has been given to simplification of installation and maintenance. **Reader Service No. 173**

## Uplights are adjustable

Dacapo is a range of two wall and two floor lights from Marlin Lighting. The fixed wall uplight projects light upwards and forwards.

Both the free standing and cantilevered floor models are adjustable in height and direction and have integral dimmers. The cantilevered model allows light to be directed upwards or downwards. **Reader Service No. 178**



## Coloured filters for lighting

A 17-colour filter range for lighting, known as Dichrolight, is produced by Balzers High Vacuum Ltd.

Unlike gels, the filters generate

pure colours from non-absorption techniques and allow extremely high light transmission.

Dichrolight is made from 1mm thick, heat resistant glass capable of withstanding temperatures up to 350°C.

When the light is switched off, the coating gives the glass an attractive mirror effect.

**Reader Service No. 179**

## Streamlite packs extended

Philips Lighting has added five products to its Streamlite fluorescent lighting range.

Two new Streamlite packs are available with colour 83 or 84 lamps. Whereas colour 84 produces a cool effect for an efficient work environment, colour 83 creates a warm ambience for reception or leisure areas, for example.

A further two packs consist of a batten and lamp using high frequency electronic lighting technology.

A significant development is the extension of the Streamlite concept into high frequency regulation applications. This means that state-of-the-art dimming technology is now easily available to more users.

**Reader Service No. 180**

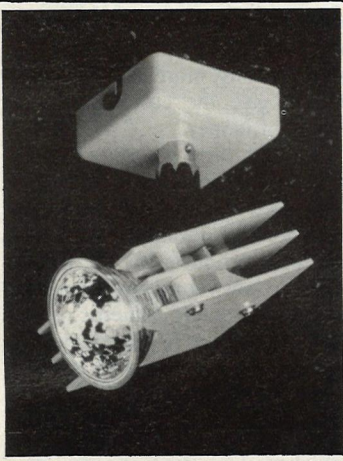
## Wafer shaped spotlight

Wafer is a low voltage spotlight from Lee Environmental Lighting. It operates from a remote transformer and accepts tungsten halogen lamps up to 75W.

There are versions for track and individual mounting, with a choice of white, black, chromium or gold finishes.

It is an addition to Lee's Collesque range.

**Reader Service No. 174**



## Metal halide in extra colour

A metal halide 150W lamp is being launched in a warm de luxe colour by Wotan Lamps Ltd. Previously only available in an intermediate de luxe, the new colour is intended to provide an energy saving alternative to installations currently using incandescent lamps.

The lamp has a colour temperature of 3000K, a warm colour appearance, a colour rendering index of Ra80 (group 1B) and a service life of 6000 hours. It is particularly suitable for sales areas, showrooms, shop windows, office lighting, hotel foyers, and for public buildings.

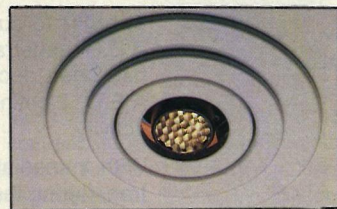
**Reader Service No. 175**

## Replacement for PAR38s

A range of low voltage downlights from Light Projects Ltd is designed to enable mains voltage fittings to be replaced without damage to the ceiling.

Existing PAR38 units can be replaced by 50W or 20W low voltage fittings. The new range also includes a 75W downlight that fits neatly into the cut-out left by a PAR56 unit.

Advantages of switching to low



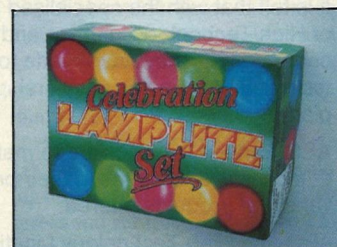
voltage fittings include longer lamp life, a choice of beam widths to suit different situations, energy conservation and easier maintenance. These downlights can be fitted with an egg-crate louvre to reduce glare and gels to produce colour effects.

**Reader Service No. 176**

## Outdoor festoon lighting sets

George Turnock Ltd, has added the T7031 Lamplate set to its Celebration range of outdoor lighting.

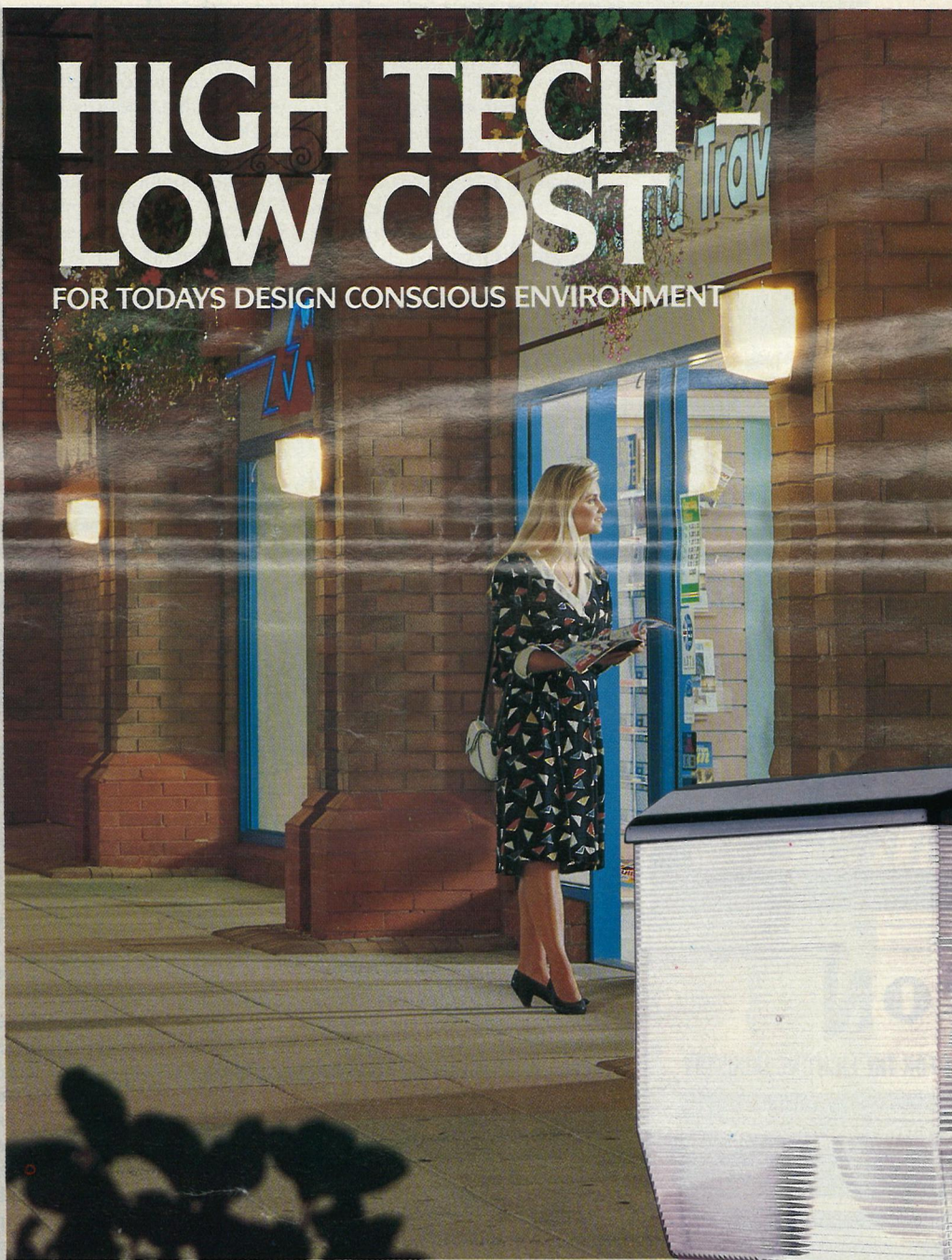
Each set consists of 10 green polycarbonate lampholders ultrasonically welded to green 0.75mm<sup>2</sup> double insulated pvc cable. Green silicone rubber sleeves are fitted and the sets are



supplied with 10 assorted coloured 25W, 240V, B22 tungsten lamps. Packaging is in overpacks of 10 sets. **Reader Service No. 177**

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# European perspectives

**Hamish Bryce, managing director of Thorn Lighting, talks to LEN about how Britain's largest lighting company is preparing to meet the challenge of 1992.**

**W**hen it comes to Europe, Thorn Lighting is in a very different position from the majority of British manufacturers. The company had already had a presence in most EC countries for twenty years or more, but had not taken advantage of being early in the field.

Hamish Bryce took over the management of Thorn nearly three and a half years ago and found

himself with a company that was a market leader in the UK, but generally had only smallish market shares elsewhere. Outside Britain, the strongest European position was in Scandinavia and Thorn was a reasonable force in the Italian market but, although the company would never claim to be setting off from a standing start, it had effectively gone to sleep in Europe. However, Bryce is the first to admit the advantages of this cor-

porate experience. 'It gave the company a tremendous strength in that we were familiar with trading in all these different countries, knew the legislation and product approval procedures and had products which suited the local territories. We were familiar with the trading conditions, and, even more important, we already knew the customers.'

Foreign competitors were either lamp companies or came with a lamp pedigree, as similar fittings companies in Europe tended to be national and very narrow in their product range.

Bryce's approach was to look to the wider Europe, rather than confining his attention to the EC countries. In fact, he saw the projected single European market as providing an ideal springboard from which to broach the world market rather than as an end in itself.

There, then, followed an initial phase in which Thorn Lighting acquired an increase in European market share, giving the sleeping giant a much needed shot in the arm.

In 1987 the company began by securing a dominant position in the £362 million Scandinavian commercial lighting market with the purchase of Swedish lighting manufacturer, Järnkons, for the sum of £15.9 million. This gave subsidiary Thorn Belysning a total of one third of the Swedish market and in the region of one sixth of those of both Norway and Finland. Moreover, this fairly modest figure concealed a strongly concentrated market share. At a stroke of the pen Thorn had obtained a quarter of the industrial fluorescent market and a hefty 40% of street and amenity lighting in Sweden.

## Strategic position

At the same time, the acquisition was strategically important. It gave Thorn a manufacturing base in Finland from which to supply the Russian market which was at that point in time just beginning to open up to Western technology. Small wonder, then, that the company has since referred to the merger as the 'perfect fit'.

In September 1988, following a battle with the Emess Group, Thorn made a successful bid for Société Holophane, whose subsidiary, Europhane, is France's second largest luminaire manufacturer. This firm was also particularly strong in outdoor and amenity lighting and brought into the group advanced technology in the field of airport and runway lighting.

Expansion then moved beyond Europe with the purchase one month later of the Howard Smith Lighting Group for approximately £28 million. Combined with the company's existing businesses in Australia and New Zealand, this acquisition gave a strong base for expansion throughout the Asian Pacific region.

In Germany and Austria, Thorn does not have a large market share. Thorn Licht is probably only the fifth largest operator in this area, but the company has found a good

niche in its particular sector — the upper end of the commercial lighting market. Here, however, the company is very definitely only in the fittings field. But there are many products from the European portfolio that Thorn is hoping to market.

Priority areas for future European development include Spain, Germany, possibly some of the smaller countries such as Belgium and Switzerland, and developing a Dutch operation.

This period of expansion by acquisition left Thorn as the largest light fittings manufacturer outside the United States and Japan; the market leader in the UK, Australia, New Zealand, and the Nordic region; and has given it a leading position in France.

'We are no longer to be seen just as exporters', summarises Bryce. 'We are following an active programme of world wide expansion through organic growth and strategic acquisition. We are fast becoming a truly international company with a mission: to be the largest lighting solutions company in the world.'

The first phase was later followed by a period of consolidation starting with Scandinavia. Järnkons was initially reorganised in Sweden and the three companies in Finland and two in Norway were merged.

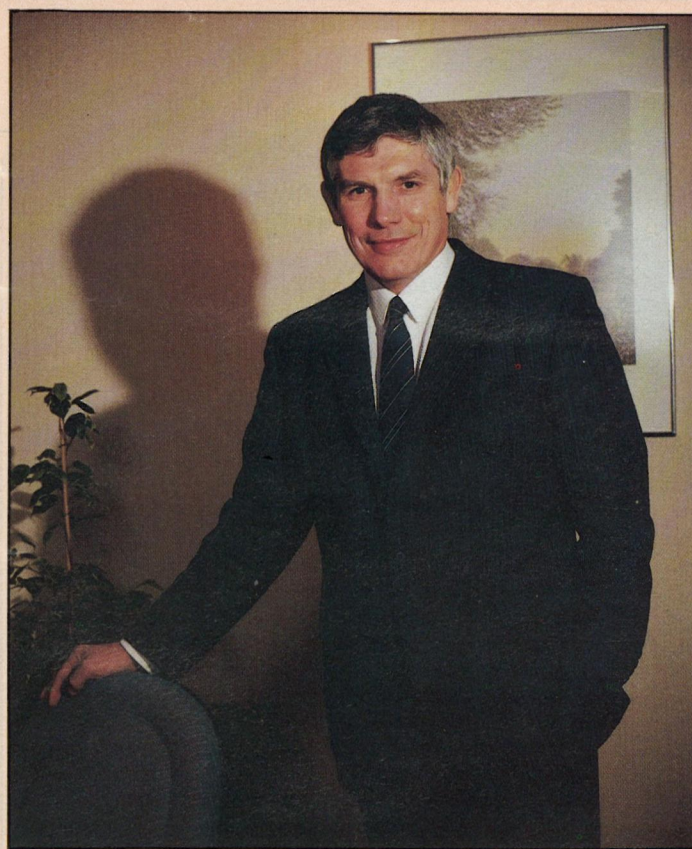
This process, too, is now largely complete, leaving the company in a position to take stock of the benefits of reorganisation.

Clearly the group has benefitted in terms of product synergies. Järnkons was particularly strong in the fields of street lighting and amenity lighting, and the Swedish Cityscape range has now been introduced to other European operations. From German subsidiary Thorn Licht has come the up-market Modulite range of fluorescent luminaires for office lighting.

Conversely, individual national companies have benefitted from Thorn's strength in the light source field. Where Järnkons was weakest, for example in compact fluorescent and floodlighting, the parent company was particularly strong.

Thus, in the process of consolidation, the group has been able both to build on its strengths and to minimise its weaknesses — a clear recipe for success.

A certain amount of rationalisation has recently been taking place in the areas of production and distribution. This has led to airport lighting being moved away from the UK and centred in France. Within the UK the company has centralised its distribution system, reducing the number of warehouses needed nationally to two.



and Germany, and further two-way exchanges are anticipated.

Looking to the future, what does Thorn have in general terms in the form of products in the pipeline? Developments can be expected in low voltage, metal halide and SON light sources, stimulating the use of these lamps in 'hi-tech' environments. The application of electronics to lighting controls also offers exciting possibilities. Less spectacularly, there will be continuing developments in the use of compact fluorescents, particularly in commercial applications.

For technical approvals, Hamish Bryce favours using the European test houses that give the fastest results, and feels that the Scandinavian test houses are probably best in this respect. The company, he grudgingly admits has, in the past, met with some difficulties in obtaining German VDE approvals.

## Fortress Europe?

So, in summary, what attitude does Thorn take towards Europe? Hamish Bryce hesitates momentarily and then dismisses the idea of a European threat, although some companies will, of course, be left behind. The philosophy engendered by European policies has, in his opinion, been just as important as the specific issues posed by directives.

'Europe's there as a catalyst which will help us in our development. In Thorn we had already started on the process of integration before we were wholly aware of 1992 as such.'

We have taken advantage of this change and are building on it. It forces us to offer a better deal to the customer in terms of quality and design, and enhances our ability to offer a competitive price. The biggest development lies in taking the cost out of better product design.'

So, it is the customer who ultimately benefits. According to Bryce the company is now in a position to boast that it can deal with enquiries about schemes anywhere for any other country world wide.

'In all we gain from our international perspective and can help all our customers in their approach to lighting solutions for international business', he concludes. 'We have put a lot of time and thought into it and it forms an important part of the strategic development of Thorn Lighting.'

## Advertisement

HIGH TECHNOLOGY

lighting & heating  
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## A.E.G. LIGHTING IN THE UK

In order to support more closely the growing A.E.G. penetration of the U.K. lighting market it has been decided to concentrate the sale of A.E.G. Lighting products into one specialised activity.

With immediate effect AEG (UK) Limited are transferring their sales activity in Slough to

**High Technology Lighting and Heating Ltd.**  
Unit 5  
Cardigan Trading Estate  
Lennox Road  
off Kirkstall Road  
Leeds LS4 2BL

Tel: 0532 798111

It is felt that with the specialised sales and marketing expertise of High Technology Lighting and Heating Limited and the commitments they have made to stock profile expansion and technical backup this partnership can only benefit the market place.

AEG Springe will continue to maintain and improve the standard of technical excellence in their product range as well as the variety of products offered.

AEG and High Technology Lighting and Heating Limited look forward to a long and flourishing relationship and to a consolidation of standards and service to all their customers.

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# Lighting — the wider market

**As part of their planned expansion Emess plc have been directing their efforts at the geographical areas and industrial sectors in the lighting fields showing the most rapid growth. This feature looks at some of the market research behind these decisions.**

**T**he world lighting market in 1988 was estimated at US \$28.2bn. Sizes and types of companies in the lighting industry vary greatly — but manufacturers are most commonly split between light sources and light fitting producers, with many of the major producers, such as Thorn and Philips, operating on both sectors. Of this total market, lighting fittings made up US\$28.2bn or 75%, and light sources constituted the remaining 25%.

The sources market is dominated by a relatively few large players. The turnover of light source producers is often huge, but margins are much tighter than in the fittings sector. Because of the greater added-value of lighting fittings smaller companies can operate more profitably, and this market is, therefore, far more fragmented.

Geographically the world market may be divided up as shown in the table, with North America emerging as the largest single market sector, closely followed by Europe. The Japanese market, in third place, is worth about half as much as the European; while the rest of the world, is approximately the same size as Europe.

The areas of greatest growth include North America, Europe and the Pacific basin.

Several giant manufacturers dominate large areas of the world lighting market. However, there is only one truly world-wide manufacturer of bulbs and fittings, Philips Lighting, with an estimated world market share of 20%.

## Europe

The greatest challenge facing European industry is the formation of a single European market in 1992, when all technical and legislative barriers to free trade between EC member states will be broken down. The UK lighting industry is well placed to meet the challenge.

Groups like Thorn and Philips have operating companies in several European countries.

The recently founded European Lighting Council has encouraged developments, and by 1992 it is almost certain that all UK fittings will be compatible with European standards.

Industry estimates of the size of the European lighting market vary between £2750m and £3250m — approximately one-fifth of the world market. Light sources account for roughly one-third, with two-thirds going on fittings.

Europe's largest manufacturer of light sources is Philips, with a market share of approximately 36%. Next come Osram (22%), GTE-Sylvania (10%), Thorn Lighting (10%), Tungsram (8%), and General Electric Company (2%). The remainder make up 12%.

The fittings market is far more fragmented, consisting of many companies each with lower market shares. The European market leader, Britain's Thorn Lighting, increased its share from 11-12% to 14% following the acquisition of French group Holophane with its lighting subsidiary Europhane

The lighting market worldwide (in \$bn)

	North America	Western Europe	Japan	Rest of the world
Lamps	2.3	1.9	1.0	2.0
Luminaires	7.1	5.6	2.8	5.5
TOTAL	9.4	7.5	3.8	7.5
Share of world market	33.3%	26.6%	13.5%	26.6%

in 1988. Over half, (to be exact 54%) of Thorn's lighting sales are now made outside the UK.

The other main players in the fittings market are Philips (9%), Siemens (5.3%), Zumtobel (4.3%), GTE-Sylvania (3.8%), Trilux (2.5%) and AEG (1.8%). The remaining companies make up a large 59.3%.

## United Kingdom

Over the past three years the UK construction industry has experienced work levels unseen since the early 1970s. Private commercial work fueled much of the boom, with projects such as Broadgate and Canary Wharf set to add hundreds of thousands of square metres of prime office space to London, with other areas of Britain reporting lower, but still very healthy, order books. Nationwide, new private commercial output increased by over 40% in real terms from the beginning of 1986 to the end of 1988.

The UK lighting market has followed the fortunes of the building industry. Sales of lamps and lighting equipment rose steadily from £787m in 1984 to £1049m in 1987. The first three quarters in 1988 amounted to £852m.

Housebuilding was struck a body blow by the increases in interest rates during 1988, and new starts in 1989 are predicted to plummet by as much as 30% compared with the record 1988 levels.

Commercial office building, however, remains relatively undented, and is forecast by stockbrokers Phillips and Drew to grow by 13% in 1989 and a further 8% in 1990, levelling off in 1992. It is likely that sales of lighting to the commercial office sector will remain healthy for a least another year after any plateau in the market, as services equipment is installed late in the construction cycle.

As offices have become increasingly hi-tech, energy efficient light fittings and controls have become correspondingly sophisticated and have increased in value. Technology- and design-led fittings companies serving the commercial market clearly have excellent prospects over the next four years. Life expectancies of sources, however, have grown significantly in recent years, resulting in less need for replacement.

An approximation of the total UK market size can be made by adding imports to sales by UK manufacturers and subtracting exports. This gives a 1987 market size of £1136m. Estimating the 1988 market size for the first quarters results yields a figure of £1222m.

There is growing penetration of

the UK market by foreign companies — particularly from the EC. Imports rose more sharply than exports from 1984 to 1987, growing from £154m to £246m, with the first three quarters of 1988 showing £209m.

Sales of bulbs, fluorescent tubes and associated parts by UK manufacturers in 1987 amounted to £224.7m. Filament lamp bulbs exceeding 28V took the greatest share of output, at £91.2m, following by fluorescent tubular discharge lamps, at £71.8m.

Among the other light sources, mercury and sodium vapour lamps, accounted for £35.1m; low voltage filament lamps, £10.9m; and other lamps and parts £15.7m.

Imports of light sources were £78m and exports were £39.4m. UK consumption of light sources comes to approximately £263.3m — roughly a quarter of the total lighting market in 1987.

Problems arise in determining the breakdown of lamp and fittings sales by end user groups because of the complexity of the fittings market and difficulties in classification. According to industry estimates, the UK commercial light fittings market

## Emess plc

The Emess group, which comprises commercial lighting company Marlin Lighting, a group of decorative lighting companies including Emess Lighting and Poole Lighting, and electrical accessories manufacturer Tenby, has recently been going through a period of rapid expansion.

Growth has been targetted at geographical regions and product areas with maximum growth potential.

In geographical terms, Emess has concentrated overseas expansion in North America, Europe and the Pacific basin. Emess companies are active in most EC countries, and in 1989 the company was floated on the Frankfurt stock exchange.

Major acquisitions include West German decorative lighting manufacturer Brillant Leuchten and, in August 1989, the French industrial and commercial lighting firm Eclatec.

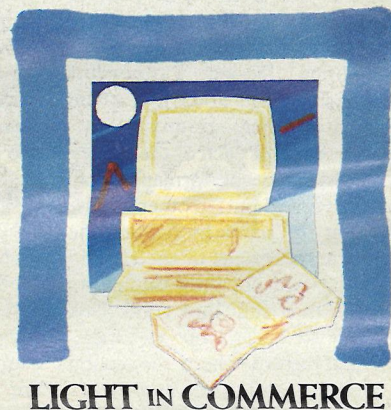
Within the UK domestic market the company estimates its share of the £500 million plus decorative lighting market at around 11% and growing. Another growth area identified was the emergency lighting market — forecast to grow at some 15% per year — and in 1988 the group acquired emergency lighting manufacturers JSB.

was worth around £208m in 1988; while industrial and public light fittings were approximately £355m.

The size of the decorative lighting market and the market for domestic fittings overlap considerably with each other, and with other market sectors. It is thus only possible to arrive at very rough approximations. The Decorative Lighting Association estimates the retail

market in 1988 to be worth over £500m, some 20% up on 1985.

Apart from commercial lighting, the fastest growing markets include emergency, security, outdoor and sports lighting. The Building Service Research and Information Association forecasts that emergency lighting, currently valued at £37m, will grow at 15% per year, reaching £56m in 1992.



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# Making a production of it

In an attempt to inject interest into hotel design, *Lighting Design Partnership* have adopted a theatrical approach to lighting. In this feature Jonathan Speiers describes some LDP's recent hotel projects.

If you speak to any good hotel operator or general manager about the hotel environment the expression most likely to spring to their lips is 'theatre'.

After all, not withstanding that 'all the world's a stage', you can witness some very impressive performances by waiting persons and bar-persons in some very theatrical settings.

In the same way that the stage set designer would work hand in hand with the stage lighting designer, crafting the appearance and atmosphere of a theatre production, the architect or interior designer works with the architectural lighting consultant.

Lighting Design Partnership approaches each hotel project in such a manner, examining the requirements of each of the spaces in terms of the performance that will be carried out. In other words, they set the scene by lighting the important elements of the set and ensuring that not only the actors but also the public look good. This is somewhat analogous to experimental theatre where the action takes place among the audience.

This basic statement conceals a considerable amount of spade-work including the following:

- Studying the requirements of the client.
- Discussing the various desires of the design team.
- Taking into account the available budget.
- Looking at the programme.
- Considering the implications of daylight.
- Providing for sensible maintenance, including cleaning.

- Looking at the integration of building services.
- Considering the possibility of custom-designed luminaires, if relevant to the project.
- Designing the control system.
- Holding meetings with contractors and engineers.

LDP is currently working on 15 hotel projects in Norway, Finland, the USA, Belgium, Holland, Austria and, of course, the UK. These vary in style from traditional to contemporary and the clientele ranges from business travellers to tourists.

There is considerable mental stimulation from working with designers from different countries. We are constantly finding different problems to solve and new details to design to integrate light into our projects.

## Business hotels

LDP are the lighting consultants on three new-build business hotels for SAS international hotels — the hotel arm of the famous airline company — in Helsinki, Amsterdam and Brussels. These projects are running almost concurrently, and Amsterdam and Brussels are due to open in early 1990. They will support the SAS group statement that the "battle for passengers in the air will be won on the ground" by providing excellent facilities and generally smoothing the way for business people on the move.

We are working with the same interior designer yet we are seeing different images being created for the hotels. The intention is to create the flavour of the country and city that the business-person is

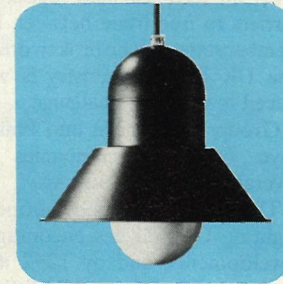
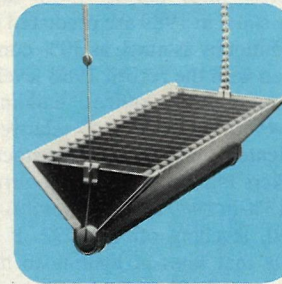
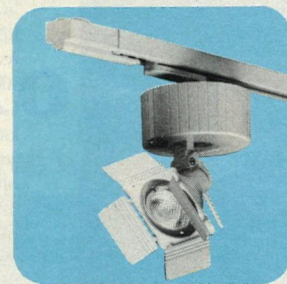
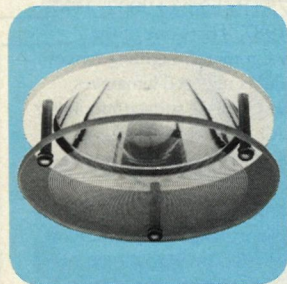
visiting rather than produce the bland homogeneous designs that some hotel groups prefer. This means that, apart from ensuring adequate and suitable levels of illumination, the design of custom-designed luminaires or the choice of standard catalogue items has to reflect the detailing of the interiors.

In Amsterdam the hotel takes up almost one and a half blocks, set among the canals in the centre of the city. Some of the period buildings are being retained within the design, causing considerable problems for the architect and main contractor, but the finished result will be well worth the effort. Projecting into the atrium is an old refurbished building called 'the Vicarage' that will be used as a bar. The primary light source for this area is the humble candle, and lighting will include high level electronic candle chandeliers. A raised area within this atrium houses a landscaped garden bounded by water at the base of the walls. We were asked to agitate the water in some way, so we are lighting the walls of the atrium through the water with underwater luminaires to achieve soft ripple effects.

The Brussels hotel features the first public atrium space in the city, and this has already generated a great deal of interest both within the design community and from the general public. The floor of the atrium is landscaped to give the sense of an external space with a tiered landscape design that leads to an original length of Roman wall, uncovered during excavations for the hotel. The wall sits in water and, as in Amsterdam, lighting will play ripples across the



SAS Royal Hotel in Malmo, Sweden: the effect of lighting in minimising the size of a wall.



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small atrium during the long summer evenings when there is a high level of natural light, and how to produce a comfortably bright interior during the day in the winter when it is dark almost all day.

We managed this by using a computerised control system that responds not only to photo-cells, but also incorporates a time clock to control white light wall washing and uplighting during the day that later crossfades to a blue ceiling element, using dichroic glass filter and gobo leaf patterns thrown onto the walls. The programming of the computer system was crucial to the success of the projects. In fact we needed to depart from our usual method of programming in this case, to allow for a change in weather conditions between winter and summer.

Among the projects we also completed last year was the SAS Royal Hotel in Malmo, Sweden. This comprised a mix of new and old buildings clustered around an atrium. The courtyard has buildings on three sides with an end wall of glass. We felt that it was essential to light the areas beyond the glazing to minimise the mass of the block. SAS own the small building 2 metres beyond the glass wall but the area beyond that belongs to the local bank.

Lighting the first wall was relatively easy, visually positive and most effective. After discussions with the bank, the area beyond is being landscaped and lit, at the expense of SAS, and this was completed recently.

The illustrations (left) show a set-up situation to show the differences between the wall being lit and unlit — it presents quite a different image. Note also the use of real gas lanterns by Sugg in the courtyard space.

#### Shades of white

A brief aside. If you look carefully at the photograph of the front elevation, you should be able to see that the glazed corridors in the top right hand corner of the image appear to have different coloured ceilings. In fact they are all the same colour — white. The colour is reflected from the carpets which are different colours on each floor. We are constantly surprised by the number of designers who have no understanding of how light works and its implications on how people perceive spaces.

At the Kona Kai Club resort in San Diego, California, we are facing different kinds of problems. The hotel is being refurbished in time for the return of the Americas Cup to San Diego as it is in the centre of race area.

The associated marina needed some visual lift, especially with the potential for reflections off the surface of the water at night. We felt that the concrete piles — sitting in the water demarcating the yacht berths and in some cases bounding floating access pontoons — had great potential for light source locations, but providing this light was a major logistical and practical problem. As a solution we are currently developing a solar powered waterproof marker light to be mounted on the top of each pile, using a PL lamp as the lightsource.

On this scheme we also came across our first 'night sky ordinance' which controls light pollution above the area around San Diego. Mount Palomar Observatory houses what is apparently the largest optical telescope in the world and is located 60 miles away from the site. The ordinance dictates that after 10pm you are not allowed to use a luminaire that has a light distribution above the horizontal plane of the luminaire. It is surprising how we take certain approaches for granted and this design restraint has generated interesting departures from normal external lighting principles.

stone during the evenings.

One of the bars is dedicated to the Belgian cartoonist Hergé, the creator of Tintin. We have worked closely with the interior designer to illuminate etched glass cartoon figures and models, creating a comfortable and pleasing environment. In the main restaurant, which specialises in fish, we are individually lighting conch shells located around the walls as well as pushing light through etched glass panels depicting Nordic sea and fjord scenes.

As each of the hotels mentioned so far has an atrium, serious consideration has been given to relating lighting controls to changing daylight conditions. It is fair to say that in the majority of LDP atrium projects we incorporate a micro-processor-based control system that incorporates dimming and switching units interfaced with photo-cells and a time clock.

This goes a long way towards ensuring that the spaces within and adjacent to an atrium have the right image and feel for the time of day and, in some cases, for the season of the year — an 'organic' response to lighting design.

Last year LDP completed two hotel projects north of the Arctic circle. The particular problems that we faced were how to create an intimate atmosphere in the



SAS Royal Hotel in Malmo, Sweden: front elevation.

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# Sweet and low

**Low voltage tungsten halogen lighting is a most effective display lighting tool, but high performance installations need to meet demanding safety requirements. Dale Kitching of GTE Sylvania outlines the basic principles.**

One of the most important recent developments in the display lighting field has been the emergence and rapid growth of low voltage tungsten halogen.

Indeed, the tungsten halogen lamp has many distinct advantages to offer the installer. Designers can create dramatic and exciting lighting systems, yet the dichroic principle ensures that 70% of unwanted heat is passed back through the reflector. This reduces

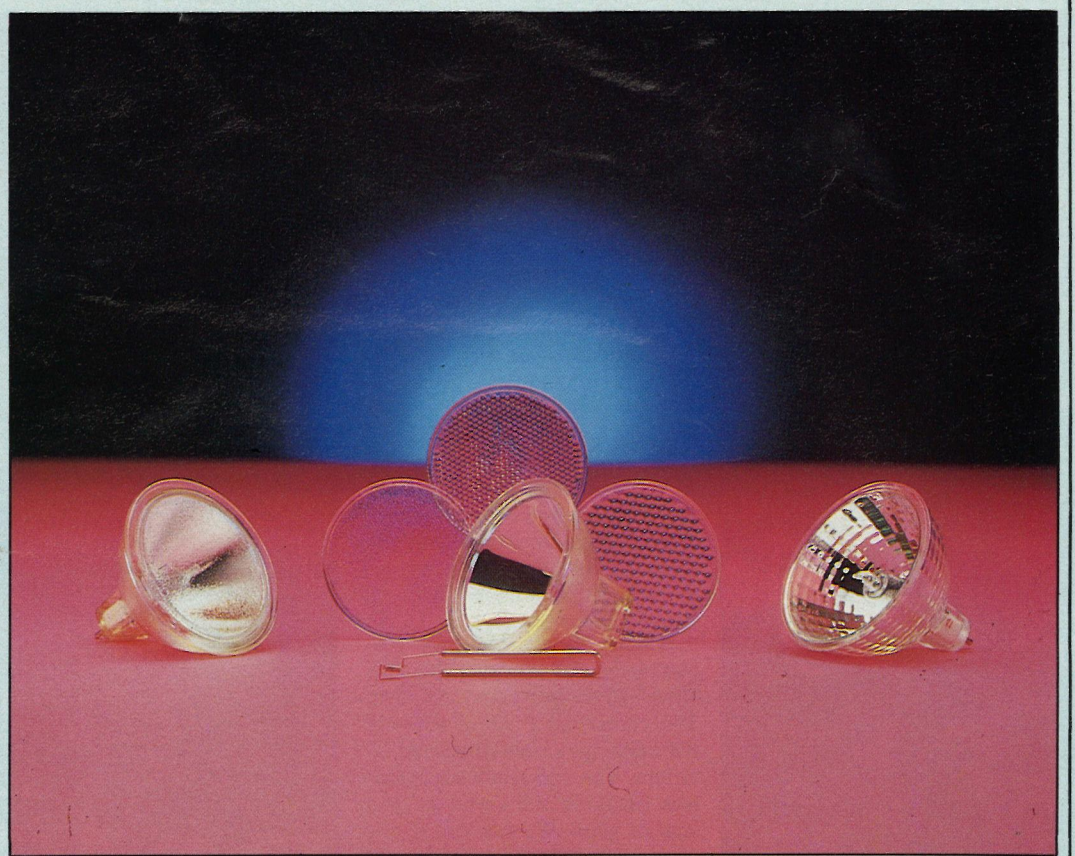
the high heat levels traditionally associated with the more conventional spotlight displays, often found in clothing shops and boutiques.

The tungsten halogen lamp can also out-perform the PAR in almost every sense. In terms of light output, the 12V 50W version does a similar job to a 150W PAR 38 lamp, leading to a considerable saving of energy.

However, as the popularity of the halogen lamp has increased, a

worrying tendency to ignore fundamental safety requirements has emerged. Practical considerations must always be borne in mind before choosing the halogen option.

There are basically two types of lamp: one has an exposed capsule, while in the other the capsule is enclosed by a front lens. Until recently all lamps supplied were of the former type, but concern that the high pressure and high running temperatures at which tungsten



The Tru-Aim Professional low voltage tungsten halogen dichroic lamp and its constituent parts.

halogen operates could pose a risk in the event of non-passive failure has led to the development of the sealed capsule type which gives improved safety by ensuring containment.

We, at GTE Sylvania, have designed a sealed lamp, the Tru-Aim Professional, which overcomes this difficulty and the problem of 'black holes' associated with the beams of dichroic lamps, resulting in uneven light distribution. This has the added advantage that deterioration of the inside is prevented, since it cannot be touched during handling.

Moreover, the use of an axial filament, which eliminates the black hole creates a much improved beam symmetry and more uniform light distribution.

But the risk of fire is a matter for concern in every electrical installation, and low voltage is no exception. That operating at lower voltage means running on a higher current may seem like stating the obvious, but in the case of extra-low voltage lighting it poses a number of problems for the unwary installer or specifier.

For instance, the size of transformers makes their remote location serving a group of luminaires a more practical proposition than the use of luminaires incorporating

individual transformers. This arrangement, however, requires greater lengths of cable and voltage drop soon becomes a problem with the higher current. So, the selection of the right size of cable is vital.

Ideally, each lamp should be cabled to the transformer separately and extra-low voltage wiring should be run from mains voltage wiring.

Transformers are still frequently overloaded by connecting too many lamps to a track or wired circuit. However, following some fairly elementary rules should ensure that a transformer is not overloaded.

## Safety

The transformer should be a Class II safety isolating transformer to BS 3535. If individual transformers are not used, the regulation — that is the difference between no-load full-load voltage expressed as a percentage of the no-load voltage of the transformer — should be 5% or better to ensure that a transformer that is underloaded, for instance after a lamp failure, does not seriously over-volt the remaining lamps.

The transformer primary circuit should be fused, so that a fault on one transformer does not affect

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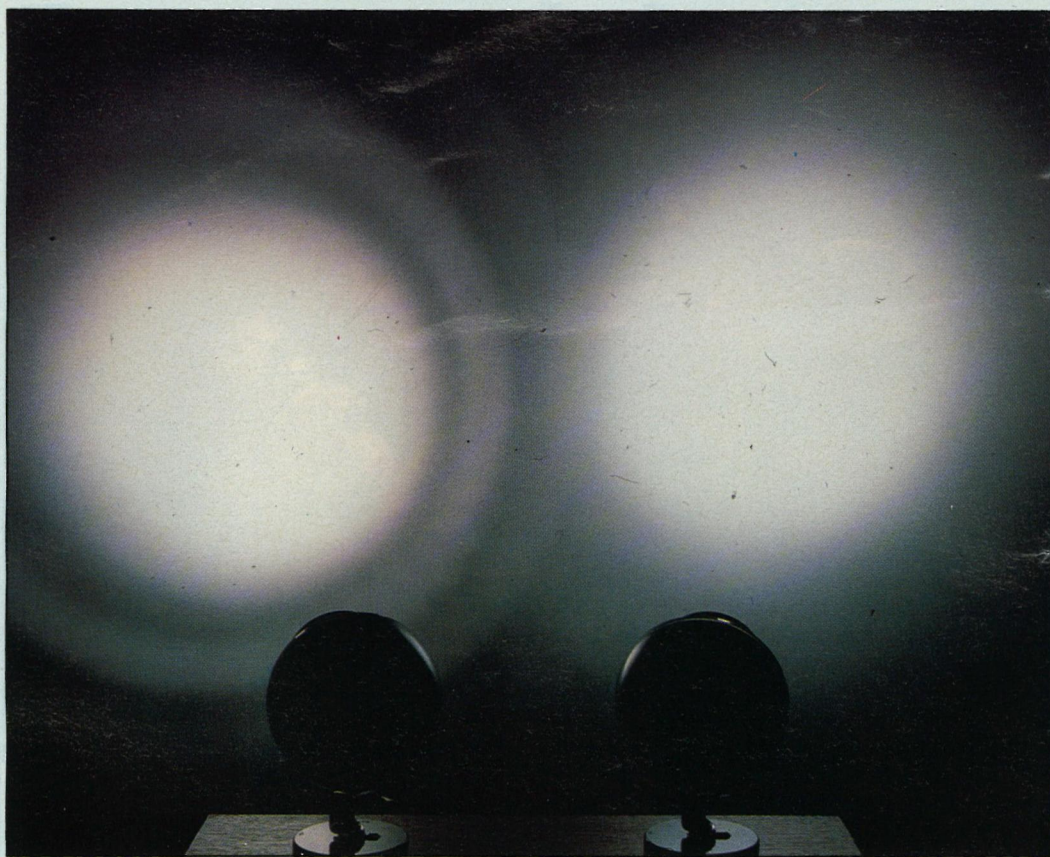
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Black hole shadow effect: the Tru-Aim Professional lamp (right) and an ordinary capsule (left)

others connected to the same sub-circuit. When used with extra-low voltage track the secondary should also be protected by a fuse, circuit breaker or thermal cut-out.

Do not forget that transformers are heavy pieces of equipment and need to be supported adequately. Positioning should also permit good ventilation and provide easy access to associated fuses or circuit breakers. Finally, if the resulting cable length allows, a position close to the distribution board feeding the transformer is perhaps ideal.

The switch controlling the primary circuit must be rated to withstand the surge on switch-on. After installation, the voltage should be checked at the luminaires to ensure that it is within the range allowed by the lamp supplier. It is important to remember that over-volting by 0.5 volts can reduce lamp life by 50%. By the same token, under-volting by more than 0.6 volts significantly reduces efficiency and colour temperatures and may inhibit the halogen cycle.

This problem of volt drop and overloading has been partly overcome by products such as Concord's Micro track, which is produced in fixed lengths with tool removable end caps. This greatly

reduces the temptation to add more and more lamps to the track. However, it equally reduces ease of access to the track.

Where extra-low voltage luminaires without transformers are to be fed from a lighting track, it is vital that the track selected is designed for extra-low voltage use and cannot be confused with a mains voltage design. This is essential to avoid confusion and possible hazard to the client after installation.

#### Warning

In addition, GTE Sylvania recommends fixing a warning label adjacent to the track saying: 'WARNING: transformer fed track. No more than n x 50W 12V fittings (or equivalent) to be connected to this track', where 'n' is the maximum quantity appropriate to the transformer. We also suggest that the secondary of the transformer feeding the track is fitted with a fuse or circuit breaker to limit the current drawn from the transformer to the designed maximum, unless the transformer is fitted with a resettable thermal cut-out.

Once running, a luminaire with an operating temperature rise of more than 90° C should not be fixed directly to a ceiling or partition

containing combustible material. It is also essential that temperature rises of more than 90° C do not occur when light beams reflect on an illuminated surface. Transformers which have to be used in a LVTH recessed downlighter installation should be reliable and small enough to pass through the normal cut-out for the downlight itself.

Faults that are blamed on the lamp can frequently be traced to faulty transformers. Toroidal or ring doughnut shaped transformers have a number of advantages: they are compact and relatively light; they are quiet in operation; they have low losses; and they provide regulation.

Regulation must be regarded as the key to the stability of voltages at low loads and it is particularly crucial when lower wattage lamps are substituted or when lamps fail.

Concord incorporates all these features into the transformers that accompany the company's downlighters. The units are held in neat cylindrical cans, and larger types have a distribution box which avoids large numbers of electrical leads being jammed into over-



Range of transformers for the Concord low voltage downlighters.

crowded terminals. These are fitted with thermal cut-outs, which act as automatic 'fuses', removing the need for access to replace normal fuses.

But what about the much heralded solid state electronic 12V transformers which have come on to the market? In theory they should have proved more practical, yet in reality they have been dogged by problems of unreliability. Concord's Torch 50 LVTH fitting incorporates the most reliable electronic transformer on the market and its attractive fitting weighs less than 0.40 Kg.

To conclude, in spite of all the

advantages it seems to offer, a low voltage tungsten halogen scheme must be installed for the right reasons. In the rush to present a modern 'high-tech' image, many users, particularly those in the retail sector, have converted over-zealously to low voltage. A product designed merely to pick out displays has been over used to such an extent that at times it appears to have replaced the total fluorescent package it was intended to complement.

As with most lighting displays, the emphasis must be always to balance the dramatic with the functional.



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# Why low voltage?

**Ashley Goodall, of Edison Halo, looks at the advantages of the miniature tungsten halogen lamp, now extensively used in display lighting.**

**F**requent random failure of the traditional tungsten electric lamp is always a source of annoyance. In the domestic situation this is likely to take the form of a 'it's lasted no time at all' reaction. On the commercial scene the response is certain to be more virulent.

In this situation such failures are invariably frustrating, the cause of inefficiency and costly to put right. Replacing a lamp, or lamps, in a high luminaire over working machinery can be a major operation.

In an area to which the public has access, lamps cannot be changed until the area has been cordoned off — any attempt to do

so would be an infringement of health and safety at work legislation.

A tendency to failure as far as conventional lamps are concerned stems from the basic design. The passing of electric current through a tungsten wire filament in order to generate light is basically inefficient because a large part of the current used is being converted into heat.

By virtue of its length, the tungsten filament is an fragile component of the lamp and can be subject to failure due to the high temperature, as well as the effect of vibration.

Typically the life of a traditional lamp is rated at a thousand hours,

but in practice may be considerably shorter.

Tungsten lamps are relatively cheap to buy, but are more costly to run than alternative types, such as the low voltage option. To secure high levels of lighting, the lamps themselves have to be large, a situation leading to the use of obtrusive luminaires.

## Commercial low voltage

The development of the miniature tungsten halogen lamp — first conceived as multi-mirror projector



Miniature low voltage fittings and created an arresting focal point.



Logoline, a low voltage light has system.

lamp — has opened up a whole new field in which commercial low voltage lighting is possible.

Small, efficient and emitting less heat than traditional lamps, they facilitate the design of more attractive and efficient luminaires for a wide range of specific applications.

Although the operating temperature within the low voltage bulb is, in fact, higher than the ordinary bulb, the multi-mirror reflector — an important element in the quality of the beam produced — has a dichroic characteristic which absorbs heat from the bulb.

The resulting 'cool beam' is a crucial factor when it comes to choosing lighting for such things as delicate display material.

The short, rigid and, thus, stronger, filament is located within

a quartz envelope designed to withstand the higher operating temperature within the bulb itself and is less prone to failure from vibration.

It is because of this feature that in recent years halogen lamps have been widely used in car headlamps, where vibration is severe, achieving a very long life.

When using low voltage halogen lamps, it is essential that the quartz envelope is not handled as this can cause chemical contamination which could lead to a blow-out as the quartz becomes hot.

Below 10.8 volts the halogen cycle breaks down and emissions settle on the quartz bulb. This effect will darken the bulb and result in lower lighting output and short lamp life.

Because halogen lamps operate above atmospheric pressure there is a remote risk of shattering, which in certain situations could constitute a safety hazard.

To offset such a risk, some manufacturers offer a cover glass in all units — it is optional with the Edison Halo range, for example — although the practice is not universal.

Such a cover helps to contain any fragments of hot quartz resulting from a shattered lamp, thus significantly reducing risk of injury or fire.

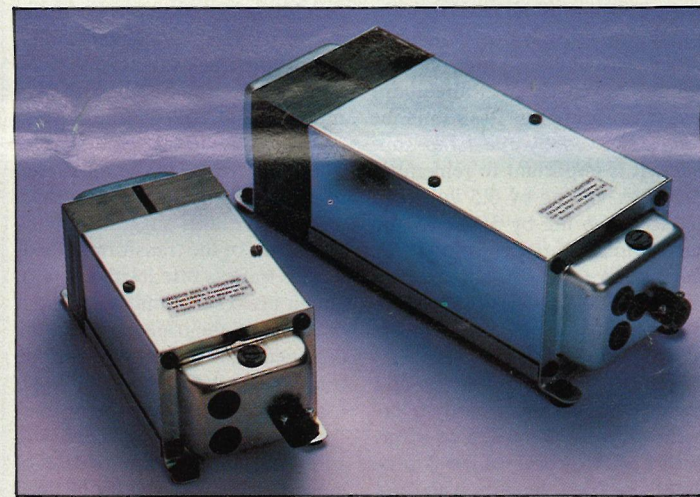
## Advantages

Low voltage halogen lamps have rated average life of between 2500 and 3000 hours depending upon

the type of lamp, or three times that of traditional lamps. This is clearly significant from the maintenance point of view, greatly reducing relamping costs, and offsetting the originally higher cost of the lamp.

Energy consumption is virtually halved. A 12 volt 50W low voltage lamp has an output of 900 lumens, equal to 18 lumens a watt. Traditional tungsten lamps have an output of only 11 lumens a watt.

Low voltage lamps are extremely flexible with a wide range of beam patterns, enabling widely varying lighting effects to be achieved from one type of luminaire. Added features are a resulting whiter light and better colour performance.

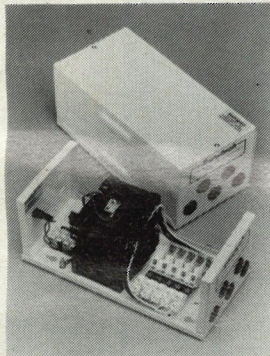


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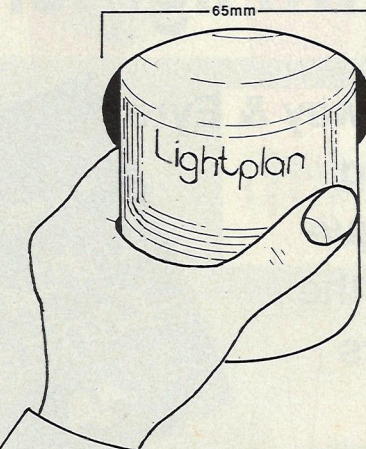
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# Eurotunnel shown in a new light

## How low voltage spotlights are adding sparkle to the Eurotunnel Exhibition Centre in Folkestone

The Eurotunnel Exhibition Centre, built to explain the construction, operation and environmental issues raised by the Channel Tunnel is a £2 million 70m x 25m exhibition centre overlooking the terminal site at Folkestone.

Focal point of the centre is a 32m long model railway showing the Folkestone and Coquelles terminals and the Straits of Dover.

Situated behind glass panelling, the whole model is illuminated by a bank of low voltage Glamour spotlights from Reggiani Ltd, which are specially converted to Bulldog-clip fastenings for attaching to the exposed sub-frame of the building. As access to the area is difficult, the clips facilitate removal of the fittings for maintenance and relamping. The cables are run along the sub-frame and remote transformers are used. Glamour spotlights on Teknolit

track also light the gallery and the whole mezzanine floor.

An auditorium which holds 80 visitors and shows explanatory videos has been lit using Glamour spotlights mounted on the sub-frame, with Kell uplights from Prima Lighting Ltd providing decorative wallwashing. All the lighting fittings in the auditorium are on dimmers controlled from either the doorway or projection room.

The Tunnel Gallery, designed to resemble a transportation tunnel, houses 'hands-on' exhibits for school parties, models of the tunnel structure, a mock-up section of a tunnel boring head and a cross-section of a double-decker car hold.

Lighting requirements in this area were diverse. The Tunnel Gallery sides are lined with curved display boards which need an even spread of light. Reggiani, after

experiments, made a rod and suspended track arrangement for its Glamour spotlights to ensure the best position for comfortable viewing.

Ambient lighting is provided by high bay fittings from Prima, which use linear tungsten halogen 250W double capsule lamps.

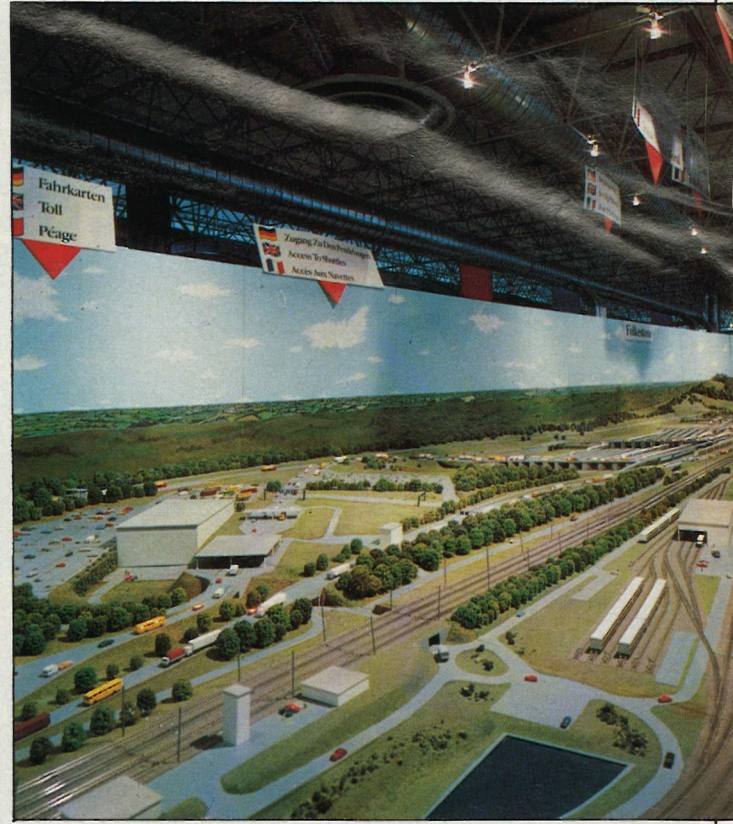
The shuttle interior section, which houses two cars, has been illuminated with glare-free Prima Vulcalux compact fluorescent fittings. The illuminance here is considerably higher than in the rest of the gallery to emphasise the

exhibit as a focal point.

First attempts of British miners to dig a channel tunnel with picks and shovels have been explored in the history section. Complete with sound effects and dank smells, the area needed atmospheric lighting and has a very low illuminance provided by more Glamour spotlights on beams and rafters to light the trundle carts and explanatory graphics.

The café was designed to link Britain and France with a French-style eating area. Tables are arranged around tall, free standing bollard lamps from Prima supplemented by low voltage Grif fittings on rods which light prints lining the walls. Glamour dichroic spotlights light the food counter. As the café has a glass exterior wall, the daylight and tungsten halogen lamps have been balanced by the use of metal halide (4300K) Reggiani Space Light luminaires which give upward and downward ambient lighting.

Low voltage Prima Flut spotlights, on rods attached to either surface mountings or track, light merchandise around the perimeter of the Eurotunnel shop.



A view of the 32m long model railway, one of the principal attractions of the Eurotunnel Exhibition Centre.



Tunnel Gallery with double decker car hold.

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# Designing with low voltage lighting

**Sally Storey, writing as a lighting designer, gives her views on the pros and cons of low voltage lighting, with examples of schemes to illustrate where and why she uses it.**

**L**ow voltage lighting is no longer the new phenomenon it was eight years ago. Today, everyone knows its key properties: miniature lamp size; excellent colour rendering, and good optical control of light.

Eight years ago it was a new and exciting medium for the lighting designer. Previously, all that had been available for highlighting objects were incandescent sources: large parabolic spotlights and PAR38 or ISL lamps.

Ceilings were littered with large dark holes and a multitude of fixtures. We had the "Swiss cheese" syndrome. With the advent of low voltage however, it suddenly became possible to provide a magical element with miniature hidden sources.

Background lighting could be provided by mains voltage incandescent sources either in the form of downlights, table lamps or wall lights. Main features, whether flowers, a piece of sculpture, pictures or a tree could be highlighted using narrow beam low voltage spotlights.

The highly focused nature of the source and the whiter light compared to the warm quality of mains voltage tungsten lighting made them stand out. This was particularly exciting when used for the display of shop merchandise or museum exhibits.

The main problem at this time was that few electrical contractors knew how to handle low voltage lighting. This led to a succession of problems such as lamps blowing due to over voltage, transformers burning out and cables melting. The result was that many people became wary of low voltage; rumours spread that dimmers reduced the life of lamps when in fact they do the opposite.

Initially-impressed shopfitters became wary as problems arose. But it was purely an educational barrier. With so much now written about low voltage lighting and manufacturer's literature improving, those early teething problems have been overcome.

Hence, one thing I have now noticed is an overuse of low voltage. What was at one time considered a specialised source has been used over extravagantly in retail space. This usually means that the source is not being used effectively; it is providing an even illumination without making use of its skilful highlighting possibilities.

Another phenomenon is the massive use of low voltage in window displays, where often the sparkle of the dichroic source creates more impact than the product. Is this the right approach for the retailer?

The time has come to step back and analyse the light source and what it can do. Below I have summarised the three main categories of low voltage light sources that are generally in use.

## 1. Dichroic

This is the best known and most commonly used source. It comprises a capsule lamp and



**Guildford Business Park:** the sculptural staircase revealed in silhouette by use of low voltage fixtures with integral reflectors providing a controlled scalloped effect on the wall.



**Salisbury House reception area lift lobby,** showing miniature low voltage downlights incorporated into the lift surround. Elsewhere they add sparkle to the marble.

integral dichroic reflector which not only provides precise control of the light but allows much of the heat to be dispersed backwards. It is often known as the cool beam light source.

The main disadvantage is that strange scallops can be seen when located beside a wall, sometimes giving pink or green striations.

## 2. Capsule

This is the bare halogen lamp generally used in conjunction with a reflector built into a fixture. Occasionally it is without a reflector to provide a starlight effect.

## 3. Metal reflector

This provides the most precise control with beam widths from 3°-50°. The PAR36, PAR56 and Halostar lamps fall into this category. Some have a cap over the source to reduce glare.

In the past a bare light source was considered to cause glare. However, if used in quantities, contrast is reduced and provides "sparkle" rather than "glare". Sparkle is a descriptive word often



**View of Guildford Business Park reception area** showing a combination of low voltage sources over the reception desk and on the half landings, with metal halide downlights providing infill lighting.

associated with low voltage sources.

How we go about selecting and using light sources is a complex process. My general feeling is that a combination of sources produces the most successful environment as the varying colour temperature of different sources provides depth.

The most important element in the design process is to work out how to get a "layering" of light to make the interior both creatively lit and practical. Control is also important to achieve maximum effect.

With these three examples as a starting point, I have looked at four distinctly different projects where low voltage lighting was selected.

## Guildford Business Park

Maintenance was important in this scheme. As a result a long lamp life fixture had to be selected. We selected a metal halide source to provide a cool general light.

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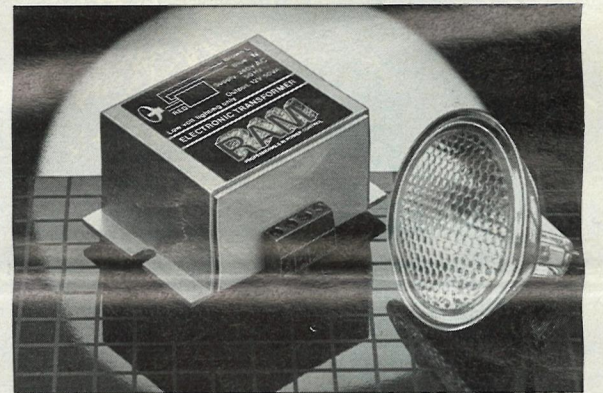
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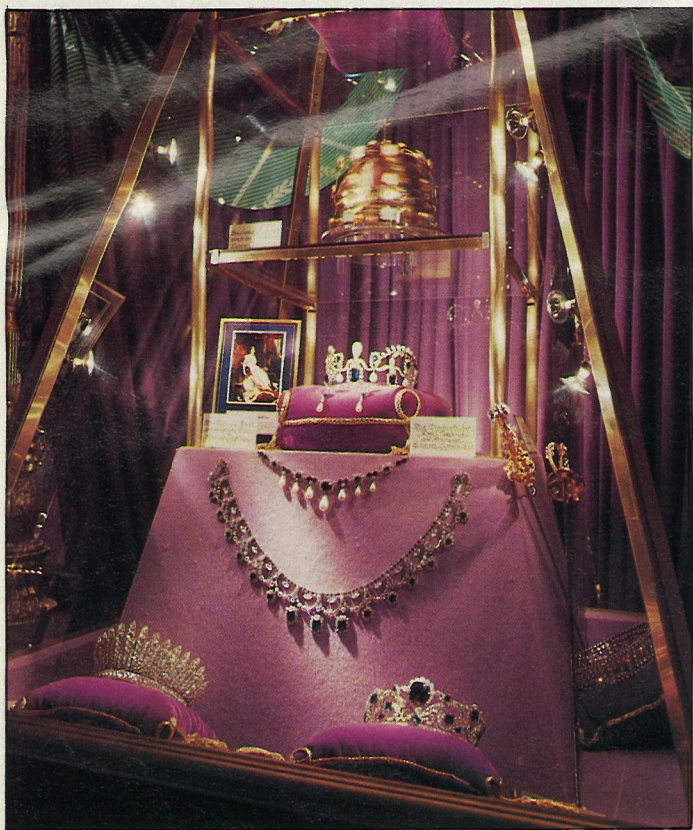
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Reader Service No. 26





Close-up of a display case for the crown jewels lit by a combination of low voltage festoon and metal reflector lamps.

For the reception area we wanted to maintain the impression of white light but to create a vibrant feel.

Low voltage sources were the most appropriate to highlight the reception desk and to emphasise the staircase. This was done by a controlled scalloped effect putting the staircase into silhouette. Although dichroic sources were used over the reception desk to provide sparkle they would not have been appropriate for silhouetting the staircase because striations in their scallops are uncontrollable. For this purpose we chose a low voltage fixture with its own built-in reflector.

As a control system was not within budget, we specified all transformers to operate at 11.5V to ensure that the lamps were underrun to extend lamp life.

### Salisbury House

For this prestigious city reception area, a combination of sources was used to provide a creative but practical effect.

Tungsten wall lights were used for local intimacy. Hislim cold cathode tubing provided an uplighting effect and definition of the dropped ceiling areas, while low voltage was used for feature lighting. In this instance dichroic lamps were used throughout as the additional sparkle with the marble and granite finishes was an important aspect of the design.

Downlights were used to highlight the reception desk and were carefully detailed into the lift



Salisbury House: foyer showing the reception desk lit by low voltage downlights.

surround for definition. Only miniaturised sources would have been appropriate here.

### Crown Jewel Exhibition

The exhibition was lit generally by a grand chandelier. For successful lighting of the displays however, low voltage was the only choice because of its colour rendering and miniaturisation.

For this exhibition we wanted to highlight both the gold and the jewels. Gold tends to respond better to a warm tungsten light which brings out the richness of the metal, whereas jewels are better with the sparkle of the low voltage halogen dichroic lamp.

We therefore used a combination of festoon lamps for general background light (which have a similar quality to traditional tungsten) and miniature 35mm dichroics which allowed precise control of light on to the jewels.

For the arches we used spiked PAR38 fixtures to light through the foliage and provide a soft background effect of unusual shadows.

For the columns we selected a PAR36 source and buried it in the ground at the column bases. This source was selected due to the controlled nature of its light and because having a cap over the source there was little glare.

The most difficult problem, however, was the lighting of the urns, as anything projected at them would have created glare.

Eventually we selected a small low voltage source and designed a small housing that sits on the top of the columns. Painted to match the stonework it is barely visible during the day and at night it provides a magical effect.

These case studies illustrate why low voltage was selected to achieve a particular result. It is by no means the only answer. Each project should be assessed individually, the designed effect considered and the appropriate source selected. Low voltage can certainly add that extra bit of magic.

Sally Storey is a director of Lighting Design Ltd.

### Ritz Italian Garden

Low voltage lighting can be used outside too! In the project of lighting the Italian Garden at the Ritz Hotel we had the task of lighting the wonderful backdrop of arches, columns and urns without causing glare, while keeping the sources as concealed as possible.



Detail of the Ritz garden lighting to show the effect of a specially designed luminaire at the base of an urn.



Low voltage lighting used in the Italian Garden at the Ritz Hotel.




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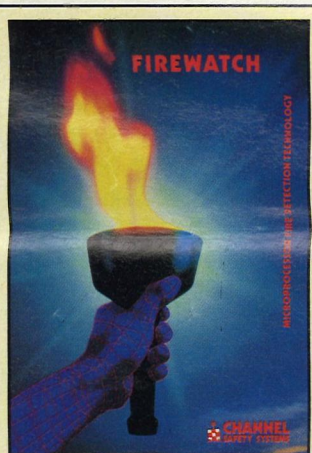
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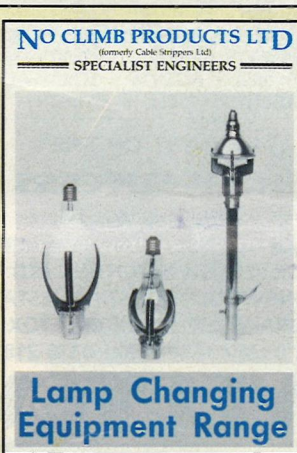
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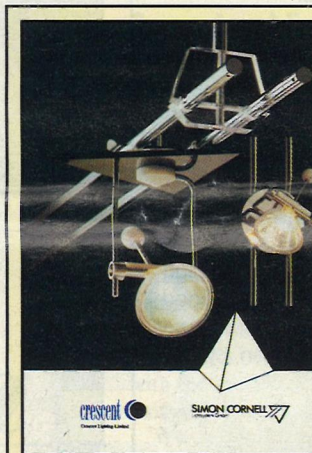
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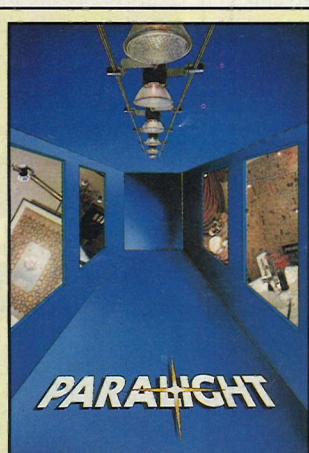
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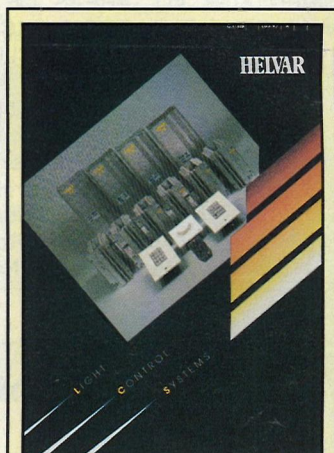
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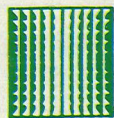
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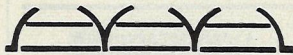
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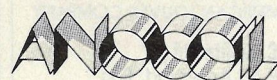
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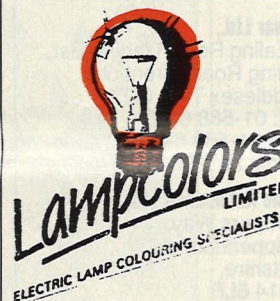


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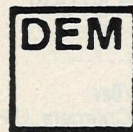
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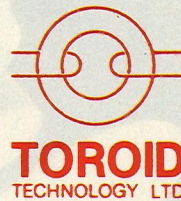
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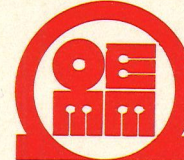
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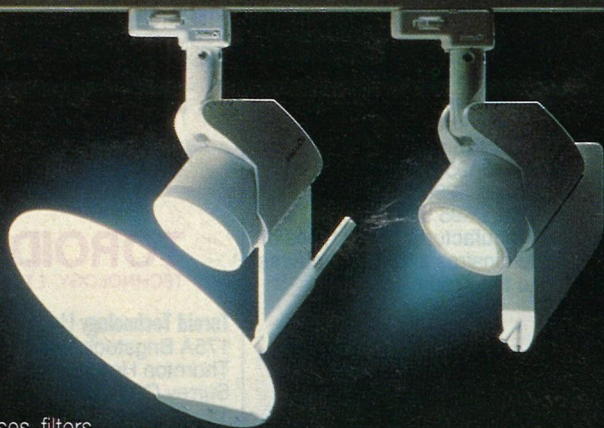


## SHUTTLE LIGHT SCENE

The innovative Shuttle design by Bruno Gecchelin creates a consistency of shape throughout the range. 22 lamp variations are possible using many of the most popular light

sources including tungsten halogen. Shuttle is available with ceiling plates or iGuzzini track adaptors which fit several systems including the new iGuzzini Challenger track.

If lighting interests you please write to:  
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Units 310-311, Business Design Centre  
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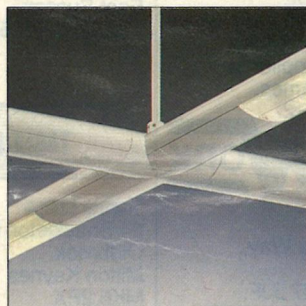
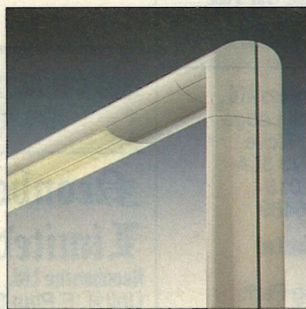


Accessories include lenses, filters, screens, louvres and barn doors. Transformers, both conventional and electronic are radio interference suppressed.

**iGuzzini**  
Architectural lighting



HOFFMEISTER Multioval is a 134 mm x 68 mm linear system that can incorporate fluorescent lampways from 18 watt to 58 watt, single or twin, with diffusers, louvres, or VDU reflectors. 1 or 3 circuit lighting tracks can be installed, or by use of 200 mm or 300 mm modules, downlights, spotlights, or speakers can be integrated into the system. A complete range of accessories and suspensions are available to allow any configuration of design or lighting concept to be considered. With an option to have special RAL finishes on request.



Planned  
Light with  
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## LIGHTING EQUIPMENT NEWS



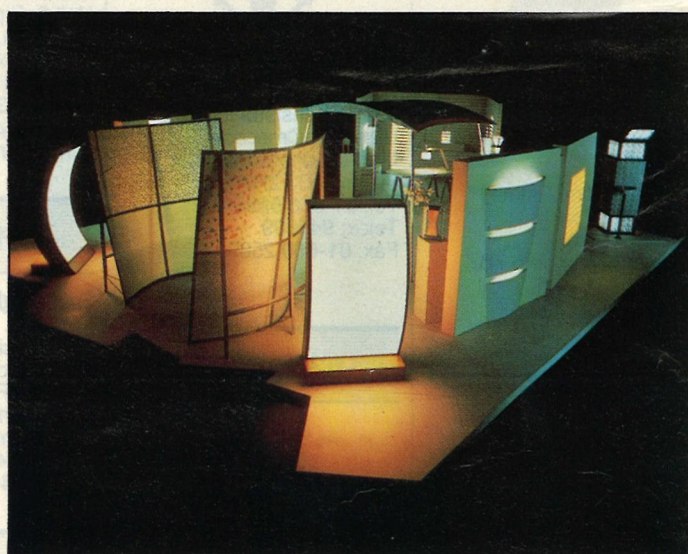
### Setting Harrods alight

Harrods has recently replaced the thousands of white lights on the facade of its building with red, yellow, amber, green and blue THORN 25W GLS lamps, one of the rare occasions that this has happened in the history of the store.

It's all part of 'Colour-Full Harrods', a celebration of colour which runs until Mid-October,

with appropriate merchandise and a wide variety of colour-linked exhibitions and displays.

Harrods estimates that well over a million people will visit the store during the promotion. Customers are invited to guess how many lamps have been used to illuminate the building's exterior, and try for one of the nearly £1000 worth of prizes that are on offer.



### Seeing through design

New light is cast on home objects in an exhibition of furniture and lighting panels which comes to London in November as part of a tour of European design capitals including Milan, Paris and Barcelona.

A group of thirteen international designers, led by Ettore Sottsass, has been commissioned to produce a range of objects using

Diafos, a completely new material. They have designed tables, lamps, vases, windows, illuminated panels and flooring: all of which exploit the new material's property of translucence.

Diafos, manufactured by Abet Laminati, is the first high pressure laminate which allows light to penetrate the surface, giving the impression of depth.

The exhibition will be held at London's Italian Trade Centre from 22-30 November 1989 and is organised in collaboration with Studio Sottsass Associati. The event comes 10 years after Sottsass teamed up with Abet to produce the first Memphis collection of one-off furniture.

## IN YOUR NEXT ISSUE

A preview of the 26th Lightshow, to be held from 7-11 January, will be the main feature of the December issue of *Lighting Equipment News*.

We will also be taking a look at

the field of commercial and industrial lighting controls, examining the latest developments in air handling luminaires and reporting on the National Lighting Awards winners.

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Unit 3, Preston Road,  
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Tel: 0734-866941  
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