

LIGHTING

EQUIPMENT NEWS

MAY 1990

In Brief...

- **Opus Lighting Ltd** has been appointed UK distributor for Camp, Rome, makers of modern lighting, including low voltage spotlights and uplights.
- **Fitzgerald Lighting** has been re-named to reflect its wider product range and is now Fitzgerald Lighting Ltd.
- **Marlin Lighting** has had two of its product ranges selected for the German *Gute Industrie Form*: Matrix downlights and Opaline luminaires.
- **Thorn Lighting Ltd** is continuing its European expansion. It has acquired Lumelec in Liege, Belgium, and is to open a sales operation in Lisbon, Portugal.
- **Trend Control Systems Ltd** has opened two further regional offices, one near Bristol and the other in East Kilbride.
- **Menvier Amberlec Ltd** has moved to a larger factory at Astley Lane Industrial Estate, Swillington, Leeds LS26 8UE (telephone 0532 870551).
- **Lee Colotran Ltd** has set up a consultancy division to advise on lighting projects for film, TV and theatres. Headed by John Burgess, it can provide a turnkey package.

Euroluce goes biennial

Euroluce, the Italian lighting fair, is to become a biennial event running concurrently with the Salone del Mobile in even years starting from 10-15 April 1992. This year's fair will, however, take place as scheduled from 19-24 September 1990.

New LIF president

A J ("Tony") Armstrong, managing director of GTE Sylvania, has been elected president of the Lighting Industry Federation for 1990/91.

Mr Armstrong is now in his third year as LIF Council member and active on the Federation's Public Affairs Committee.

His career to date has embraced accountancy, consumer electronics and — since 1980 when he joined GTE Sylvania — lighting.

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Tate re-hung

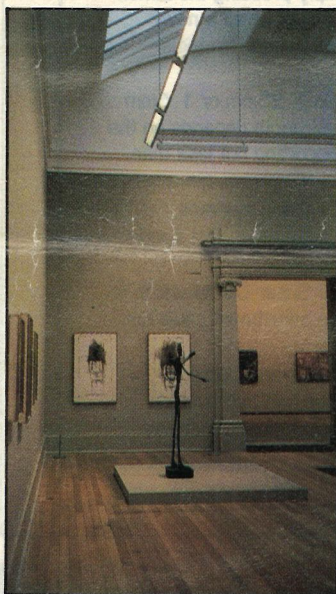
Four galleries at the Tate Gallery, London, have been relit and redecorated during recent re-hanging. All galleries adopt a combination of Erco suspended Hi-Trac system and dimmable 58W Optec was lights which give an average illuminance of 200 lux on the hanging areas of display walls.

The system is tried and tested in the Tate, having been used to provide ambient and wash lighting when the annex to the Clore Gallery was renovated some years ago.

The environmental lighting in

the galleries comprises compact fluorescent uplighting mounted onto the upper compartment of the Hi-trac. This system illuminates the barrel vaulted ceiling producing a light and airy interior while employing an economical light source.

The system of 3 circuit track within the Hi-trac allows the display staff to install additional spot-lighting to accent items on walls or within the central area of the galleries, providing the flexibility essential for a modern gallery.



Philips gains Eastern European foothold

Philips Lighting has come to an agreement with the Polish company Polam-Pila establishing a joint venture which will manufacture lighting products for sale under both the Polam-Pila and Philips brand names in Poland and abroad. The company will, in addition, sell imported Philips Lighting products in Poland.

Polam-Pila is considered to be one of Eastern Europe's most modern and best managed lamp manufacturers. It produces conventional incandescent lamps,

reflector lamps, TL-tubes, high pressure sodium lamps, car lamps and consumer luminaires.

The entire Polam-Pila company will be brought into the joint venture. Current Polish legislation on joint ventures and the privatisation of state-owned companies, will permit Philips to hold a 50% stake in the joint venture and to have an option on the rest of the shares.

Philips will primarily contribute technological expertise, production equipment, and managerial and marketing skills.

Call for NLA entries

The fourth National Lighting Awards are now being launched by the Lighting Industry Federation. The competition aims once again to highlight UK excellence and innovation in the quality of the lit environment.

The NLA promotes an awareness of the unique role that good lighting plays in everyday life — both for its functional and aesthetic qualities — and commends and rewards the design skills and technical expertise of those responsible for creating our lit environment.

Awards fall into four sections —

industrial, commercial, civic and leisure — and are open to all users or owners of lighting installations which have been either installed or refurbished during the period 15 July 1989 — 15 July 1990. Closing date for receipt of entries is 11 July 1990; and the awards will be presented in November.

The 1989/90 NLA Brochure incorporates the entry form together with guidance on the types of installations suitable for entries; these include interior or exterior installations with the exception of road lighting and domestic lighting.

Assessment and judging will be carried out by teams of highly qualified independent specialists ensuring fair recognition and commendation for all entries.

Point of honour

One of Britain's most famous landmarks, the Cenotaph in Whitehall, has been floodlit for the first time.

The scheme was instigated by the British Legion who felt that the Cenotaph merited floodlighting and approached Philips Lighting.

A number of problems had to be solved in positioning the floodlighting. The location of the monument itself, situated as it is in the middle of a major road, meant that a very narrow beam of light was required. In order to achieve this four NNF/20 narrow beam projectors were used, each fitted with a louvre to limit glare.

After trials it was decided to opt for the 400W SON Comfort lamp which was the most sympathetic to both the stonework and flags. The luminaires also had to be painted to make them blend into their surroundings.



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NEWS

Disco, theatre, TV and film lighting on show

Light and Sound Show 90, Britain's premier exhibition of lighting, sound and entertainment equipment, will be held from 9-12

September at Olympia, London. This 13th show has expanded to cover four floors and will be accompanied by a series of half-day seminars. It is sponsored by the Professional Lighting and Sound Association.

For further details contact 3D Services, 12 Brentford Business Centre, Commerce Road, Brentford, Middx TW8 8LG (telephone 081-569-9742).

Safety standard for lamps

BS7173 *Specification for self-ballasted lamps for general lighting services, safety requirements* has been published. It specifies safety, interchangeability requirements and test methods for tubular fluorescent and other gas discharge

lamps with integral means of controlling starting and stable operations that are intended for domestic and similar general lighting purposes.

Copies are available price £30.60 (£15.30 to BSI members) from BSI Sales, Linford Wood, Milton Keynes MK14 6LE.

Report on road lanterns

A new technical report on *The effectiveness of lantern cleaning* has been published by the Institution of Lighting Engineers. It details the results of a series of light output depreciation measurements on road lanterns and discusses the implications for both cleaning frequencies and maintenance factors for application in installation design procedures. A standard for a detergent that assists effective cleaning is also included.

Copies, price £18.75, are available from the ILE, 9 Lawford Rd, Rugby, Warwicks CV21 2DZ.

CIBSE support for CPI

In order to promote better understanding between the design engineer and those who have responsibility for installation CIBSE is holding a half day seminar on coordinated project information including the common arrangement.

The seminar, which will be conducted by David Russell, managing director of National Engineering Specification Limited, and Peter Jordan, technical director of the Building Employers' Confederation, will be of interest to both contractors and consultants.

The cost will be £25.00 + £3.75 VAT for CIBSE members and £35.00 + £5.25 VAT for others. For registration details contact CIBSE on 081-675 5211

CIBSE

The Chartered Institution of Building Services Engineers

Schedules of illuminance — more than meets the eye

The most often and most widely used part of the present CIBSE Code for Interior Lighting (1984) is, without doubt, the section dealing with the schedules of recommended illuminances. And this has assuredly been so for all its predecessors too.

Regrettably, it can also be the most misused. Many lighting designers appear to believe that if they plan to provide the level of illuminance prescribed in the schedules on a, frequently imaginary, horizontal 'working plane', they have met the requirements of the code: they seem quite unaware that there is a lot more to lighting design than that.

It is little wonder, therefore, that many lighting installations, while providing the lux suggested, completely fail to provide the required visual conditions.

We can all suggest areas where this might be the case: airport arrival lounges where you can't recognise the people arriving; workshops where machine operators cast shadows on the job in hand; signs which disappear under artificial lighting; downlights that cause glare to people looking up, to mention but a few.

The problem is how to get designers in a hurry to produce a scheme to read through the other parts of the code, and to interpret them in the manner intended. Perhaps the next edition should be issued in the form of a video game in which the designer could be taken from section to section, directing his attention to all the other important criteria he might need to take into account — and only then revealing the level of recommended illuminance!

Since we see not by illuminance but by luminance, and discern shapes by contrast, it could be argued that the schedules should be written in these terms.

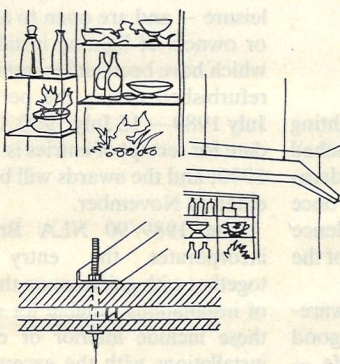
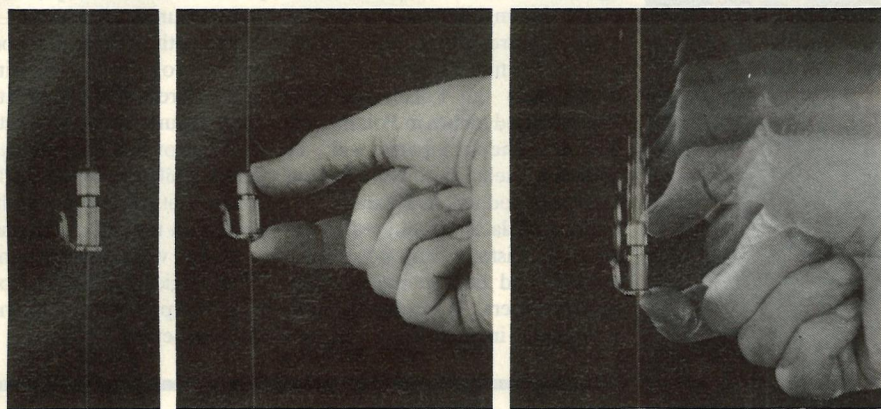
It might also be argued that the lux value should be related only to the size and contrast of the task, so that the designer can, by measuring the task and evaluating its contrast, arrive at a figure which is then modified by the age factor to produce a recommended maintained value. Such an approach could well result in a higher level being required to read a letter C than a letter Z — given that the C might easily be confused with a letter

The value of the present system is that it is relatively easy to calculate and measure the levels required. So, in spite of its drawbacks, it is likely to remain in use in future CIBSE lighting codes.

Alan Wilson

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Reader Service No. 2

Handrail Emergency Lighting

As exhibited at Electrex 1990

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Reader Service No. 3
 Page 2

DIARY

MAY

13-17

Interior Design International exhibition at Earls Court, London. Further information from Paul Murphy, AGB Exhibitions (081-868 4499).

16

Lighting for hazardous areas fair. Half-day seminar and exhibition at the Building Services Engineering Centre, London. Details from Karen Phillips, CIBSE, 222 Balham High Road, London SW12 9BS (telephone 081-675 5211).

JUNE

7

Retail lighting seminar arranged by Wotan Lamps. One-day event, with exhibition, at the National

Motorcycle Museum, Solihull. Information from Barry Gros-smith, Wotan Lamps Ltd, Wotan House, Gresham Way, Durnsford Road, London SW19 8HU (telephone 081-947 1261).

13

European Lighting Council's awards luncheon and presentation at Copthorne, West Sussex, hosted by Thorn Lighting. Details from Hugh King, Thorn Lighting Ltd, Elstree Way, Borehamwood, Herts WD6 1HZ (telephone 081-366 1166).

19-21

International lighting exhibition at the Metro Toronto Convention Centre and the Toronto regional conference of the Illuminating Engineering Society of North America. Details from Deborah Dugan, Kerrwil Publications Ltd, 395 Matheson Blvd East, Mississauga, Ontario L4Z 2H2 (fax 416 890-5769).

Goodbye to Jack Waldram

Jack Waldram, a leading figure in the lighting world, died in March just before his 87th birthday. He was responsible for major advances in lighting technique.

His interest in the subject developed early — he assisted his father in designing the famous Waldram diagram for calculating daylight factors.

Most of his working life was spent in the Hirst research laboratories at GEC, which he joined in 1923. Here, he designed new and improved instrumentation, including a precision portable photometer (all measurements previously had to be made by eye).

In the 1930s Mr Waldram did pioneering work on street lighting, from which derived the basis of modern thinking of road lighting all over the world.

During World War II he worked on defence problems such as visibility of and from aircraft and effectiveness of searchlights.

In 1948 he became president of the Illuminating Engineering Society (now the Lighting Division of CIBSE) and received its highest technical award, the IES gold medal, in 1964.

The Association of Public Lighting Engineers (now ILE) made him its president in 1955.

He will be remembered in particular for his Designed Appearance technique, a method by which a decorative or artistic lighting scheme can be designed on an engineering basis. The first major application of this was in Gloucester Cathedral.

After his retirement from GEC he worked as an independent lighting consultant and in that capacity applied his Designed Appearance technique at Sydney Opera House. He has written over 100 papers and two books.

A memorial service was held in Jack Waldram's honour at the National Lighting Conference.



New controls for Berlin's spaceship

One of the world's most striking conference centres — Berlin's spaceship-styled International Congress Centre — has entered the 1990's with new lighting controls by Strand Lighting.

The ICC is built on an island site surrounded by motorways. It houses two vast auditoria — one seating 8,500 people and the other seating 4,500 — and 80 small-to-medium sized meeting halls with computer-controlled conference facilities.

In addition a wide variety of restaurants caters for the many visitors to dinner-dancing, civic events, cabaret shows, sports and political events, and motor shows.

Changes in lighting needs since the original installation was put in ten years ago meant the lighting controls needed replacing.

Both auditoria share the same stage area. One hall is fitted with raked seating which can be lifted to reveal a flat floor area. But doing so blocks access to one of the control systems, so a third control board is needed at floor level.

Each Strand Galaxy 3 lighting

board is able to control any combination of the three spaces. Currently installed in the centre are: 308, 5kW dimmers and 12, 10kW dimmers, although it is intended to increase the number of dimmers by at least 120 over the coming months.

Motion control panels have also been installed, since the centre intends to install 80 PALS luminaires when funds become available.

The systems are equipped with a dimmer test program which constantly monitors any dimmer status. Each control room also has its own electrical back-up system via memory back-up. In addition, the old pin patches have been retained, allowing the same inhibit function manually through dimmer patching.

The Galaxy system dimmer and racks, and all auxiliary controls, were installed and commissioned in a cycle of eight weeks from order to hand over. Technical staff at the ICC expect that the controls will only be utilised fully when the motorised luminaires are installed.

Legislation guide updated

The directory of UK Building Services Legislation, by Max Johansson, first published in 1989 by the Building Services Research and Information Association has been updated and enlarged for 1990. It lists UK legislation relevant when designing, installing and operating building services.

The directory includes chapters on interpretation and enforcement, the EEC and 1992, codes of practice and technical documents. Areas covered include air conditioning, heating, ventilating, plumbing, controls, lighting power, security, fire protection, lifts, insulation, acoustics, energy and alternative energy. Copies of the directory are available from BSRIA, Old Bracknell Lane West, Berkshire, RG12 4AH, tel: 0344 462511, price £18.00.

People In Brief

● **Mike Keevil**, managing director of Arrow Plastics Ltd, has been elected vice president of the Lighting Industry Federation for the year 1990/91.

● **Richard Turpin** has joined Microlights Ltd as associate director with responsibility for sales.

● **John Mitton** has become marketing manager at JSB Electrical.

● **Mike Aris** is now technical sales engineer at ALC Cellite Ltd.

● **Ken Ackerman** and **Mark Wood-Robinson** have received awards for long and meritorious service to the cause of good lighting on the international scene, from the *Commission Internationale d'Eclairage*.



When Copthorne Effingham Park Hotel was faced with the problem of finding an energy efficient alternative to a tungsten lighting system in their Museum Suite, without replacing the luminaires, it was decided to site test the Wotan Dulux EL Reflector lamp. One area of the Museum Suite was relamped to gauge whether adequate illumination would be provided by replacing the existing 144 PAR 38 102W lamps with 15W Dulux EL Reflector lamps. Having established that the required illuminance could be achieved, a complete retrofit was organised. The change of light source has shown an 87.5% saving on energy costs and substantial savings on maintenance costs. The short life of PAR lamps meant that lamps needed to be replaced frequently in a high and difficult ceiling structure; the 8 000 hour life of the new lamp has minimised this problem. Based on a price of 0.06p per kWh, the cost of electricity consumed over 8 000 hours by the 120W PAR 38 lamp is £57.60. It costs only £7.20 to run the replacement lamp over the same period: a saving on electricity of £50.40 per lamp. This represents a total saving of £7257.60 for the 1100m² suite.

On the light side of the law

What does the Single Market mean to me, you say. The product — or service — my company produces has no international market, and the niche sector we operate in is too small for the big boys from mainland Europe to want to come over and compete with us. So let's just pretend it isn't happening shall we?

But that's not so easy now if you are an employer. Harmonisation of European health and safety law has led to a recent series of changes in UK law in this respect. But because the UK had an existing framework of legislation in this field and the resulting changes have not been radical, the process has largely gone unnoticed over here.

Now under the terms of Article 118a of the European treaty, discussions are currently underway with a view to adopting a European directive to improve the health and safety of workers using visual display units by stipulating minimum standards — and these requirements include a reference to acceptable lighting.

So far, the European Parliament has adopted the common position to the directive proposed by the Council of Ministers, but subject to a number of amendments each rather tending to increase the onus on the employer to the benefit of the worker. However, subject to finding a politically acceptable balance between cost and benefit, within the foreseeable future we will see a legal requirement throughout the Common Market to provide both suitable ambient and task lighting and to regulate daylight and artificial lighting to prevent glare and reflection on VDU screens.

And the problem just won't go away. A fairly tight schedule has been fixed for the implementation of this directive. Legislation will be applied to any new work stations put into service after 31 December 1992. And existing layouts must, themselves, comply within a 2-4 year period of that date; but the exact timing for this is still under discussion.

So, there's no avoiding it, in order to keep on the right side of the law, employers, manufacturers and lighting designers and specifiers are going to have to keep ahead of changes in European legislation for the foreseeable future.

LIGHTING EQUIPMENT NEWS

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NEW PRODUCTS

Transformer is compact

Economy Lighting has introduced a compact transformer for low voltage lighting.

Measuring 62mm in diameter, the ELVL-50 can be easily passed through the cut-out required for

most low voltage fittings.

It is designed for use with individual luminaires and, being economically priced, is said to compete favourably with powering several lamps from a single transformer.

The ELVL-50 is supplied complete with flying leads, thermal cut-out and primary fuse. It is available in 20, 35 and 50VA ratings. **Reader Service No. 170**

Dimmers for LV lights

RAM Electronics has a range of hard fired dimmers. Specifically designed to control low voltage lighting transformers, both conventional and electronic, the dimmers can also be used for fluores-

cent lighting powered by dimmable electronic ballasts.

Units are available in ratings from 500VA to 1000VA on double-gang, flush or surface mounted switch plates and are fitted with fully enclosed electronics, supply fusing, mains neon indicator and double pole rocker switch for isolation.

Pre-set minimum and maximum lighting levels are incorporated.

Reader Service No. 171

Potted transformer

Lee Environmental Lighting has a compact low voltage transformer rated at 75W.

This potted transformer is small enough to be installed through the mounting hole of most downlights. It is supplied with 0.5m leads, and is fused.

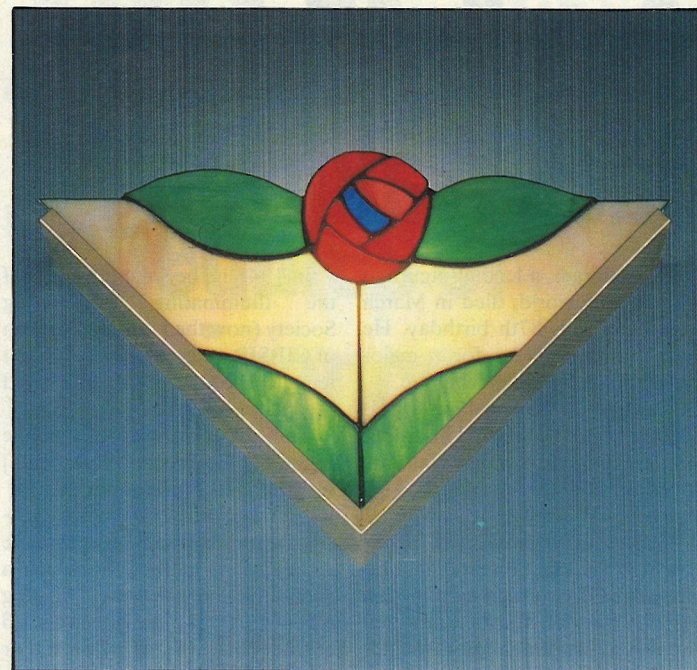
Reader Service No. 172

LV track has two circuits

Hitech Commercial Lighting Ltd has introduced a two-circuit lighting track. It enables up to 12 low voltage spotlights to be used on a single section of the track, compared with the normal maximum of four.

Straight and corner couplers are available.

Reader Service No. 173



Stained glass art deco wall lights

Geometrical simplicity of design and vivid colours are the hallmarks of a range of art deco wall lights from Chelsom Ltd designed for pubs, clubs, bars and restaurants.

The collection is based on a solid brass, V-shaped fitting 360mm wide and 200mm high, which takes interchangeable stained glass shades.

Two of the shades have triangu-

lar and rectangular shapes in jewel colours. Themes of leaves and flowers give the other two softer, undulating lines.

Reader Service No. 174

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

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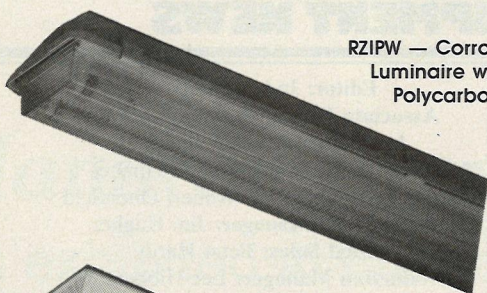
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Reader Service No. 4

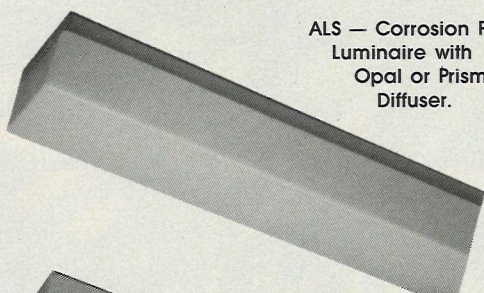
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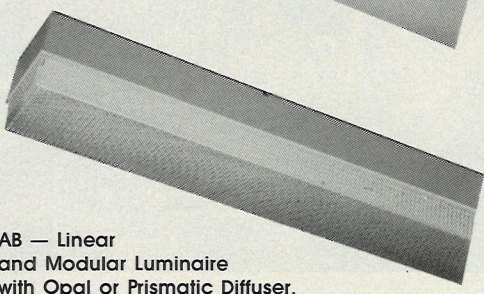
RZIPW — Corrosion proof Luminaire with Polycarbonate Diffuser.



AOT — Interior Luminaire with Opal/Prismatic Diffuser or Metal Louvre.



ALS — Corrosion Proof Luminaire with Opal or Prismatic Diffuser.



AB — Linear and Modular Luminaire with Opal or Prismatic Diffuser.

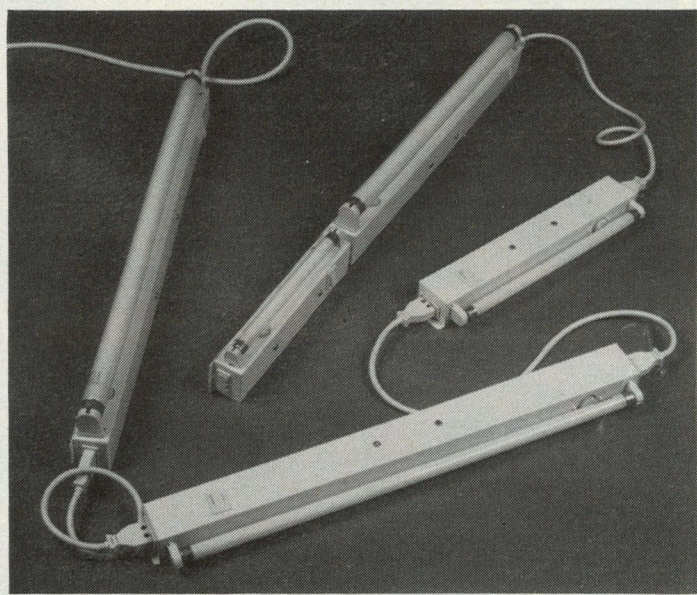
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Reader Service No. 5
Page 4



Easy-to-install display lighting

Linolite Ltd has introduced Mini-line Connect fluorescent system, a comprehensive display lighting system in small sections which allows uncomplicated installation in confined areas.

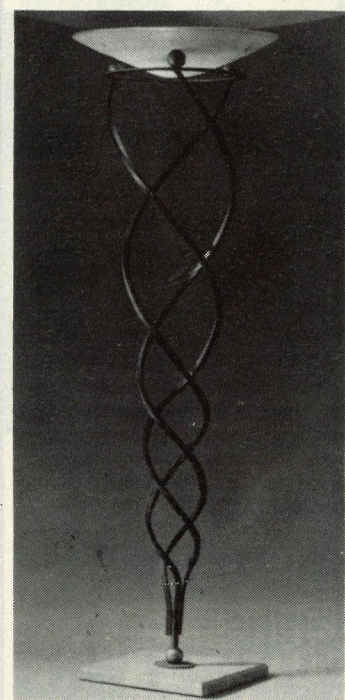
Each luminaire is switched, fin-

ished in white and supplied with a fluorescent lamp. They enable contractors and shop fitters to provide easily installed display lighting in homes and shops.

Wiring accessories include a 1000mm mains lead and a connector lead with 500mm of cable between two plugs. Alternatively there is a self-wire connector which can be wired by the installer to suit the installation.

Reader Service No. 180

NEW PRODUCTS

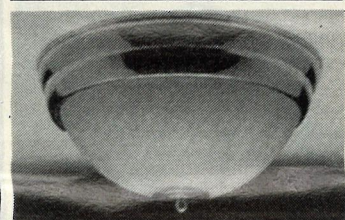


Modern wrought iron

A floor standard designed in Italy by Sergio Terzani is among the unusual decorative lighting available from Lighthouse.

Called Antinea, the base is in hand stippled wrought iron in a choice of colourings. A shallow bowl of Murano glass diffuses the downward light and allows other light to be directed onto the ceiling.

Reader Service No.151



Co-ordinated range for leisure areas

The Lusso range of solid brass and glass, co-ordinated mains and emergency luminaires from Bradley Lomas Electrolok Ltd combines Italian design with British manufacture.

There are five, flush fitting ceiling lights, two downlights and two emergency exit signs. A choice of diffusers and lamps (including compact fluorescent), is offered with the ceiling lights.

The fittings are suitable for hotels, restaurants, pubs, leisure facilities and prestige office and reception areas.

Reader Service No. 152

Electronic ignition for SON lamps

An electronic ignition device for high pressure sodium lamps which has its own built-in protection against faulty lamps and power cuts is available from the French company Adev Electronic. It is also stated to be able to detect lamp burn-outs before they occur.

The IDT2030S can be used with lamps from 70W to 250W.

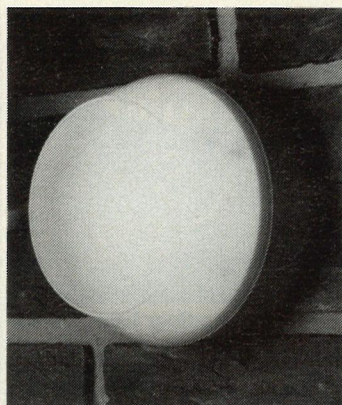
When a faulty lamp is detected, the device operates on a two

Emergency luminaire

Jaylite is an economically priced, 2.4W tungsten emergency light from JSB Electrical plc. This self-contained luminaire operates in the non-maintained mode.

It is particularly suitable for small hotels, clubs and bars. The opal diffuser and beige base are designed to blend with most decor.

Reader Service No. 153

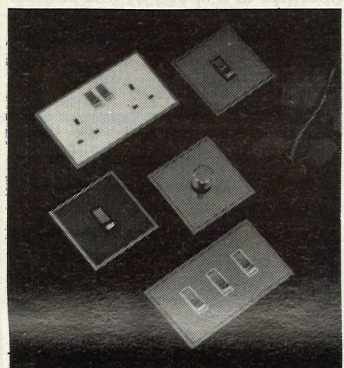


More choice in front plates

Hamilton Litestat has launched the next generation of its front plates for wiring accessories.

Linea Contrasto has clean, modern lines and offers various combinations of finishes. It is possible, for example, to mix polished brass with mirror chrome, black chrome, white or black — or simply to have polished brass throughout. Fixing screws are hidden.

Linea Contrasto accepts all the



standard wiring accessories offered by Hamilton Litestat on its other plate finishes.

Reader Service No. 154

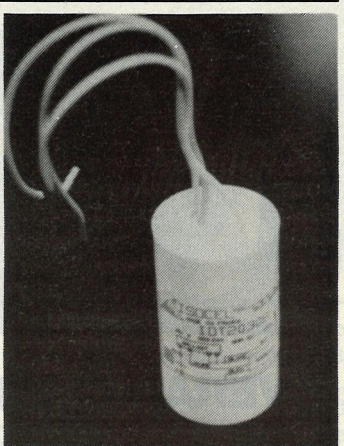
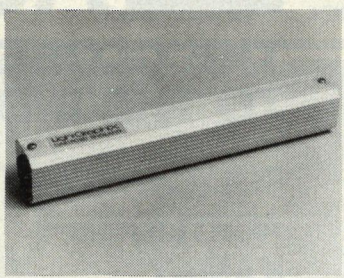
Transformer has low profile

LightGraphix Ltd has a low profile TLXB low voltage transformer.

Its very small cross section enables it to be passed through a 60mm diameter hole, so solving many installation problems where miniature downlights are used. Alternatively, the slim extruded aluminium case enables it to be mounted in full view.

Standard finish is aluminium with black end plates, other finishes are available on request.

Reader Service No.155

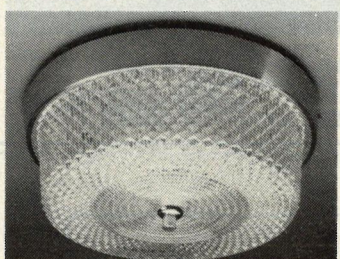


minute time lag before shutting down altogether.

Reader Service No. 156

Crystal for emergencies

A stylish emergency light called Crownlite has been introduced by

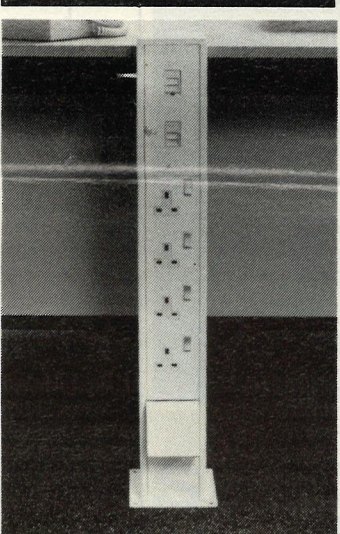


Menvier (Electronic Engineers) Ltd.

It is a decorative luminaire for public areas of hotels, office blocks etc, where appearance is important. Contained in a round base, with gold coloured finish, it has a diffuser of Bohemian lead crystal.

Crownlite is a maintained emergency luminaire with a PL11 light source giving three hours' lighting under emergency conditions. A matching mains only version is also available.

Reader Service No. 157



Service posts for desks in open areas

Tot service posts from Thorsman & Co (UK) Ltd are designed to provide electrical and communications services from floor direct to desk height. Segregation is provided for power, telephone and data cables.

They are suitable for work stations in open plan offices, shops, exhibition areas, or anywhere requiring multiple services throughout a single floor area.

Two versions are available, single sided (152mm deep) and double sided (304mm deep). Capacity depends on height, but typically a 700mm high single post supports two telephone points, four socket outlets and one data outlet point.

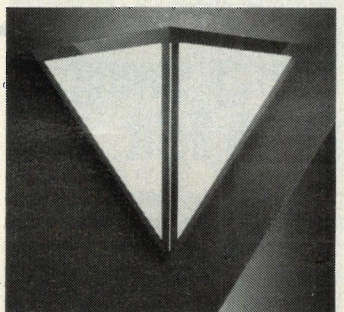
Made of aluminium with a moulded pvc top, the posts are available as standard in four neutral colours, or can be colour anodised to match any decor.

Reader Service No. 158

Glass pyramid lighting

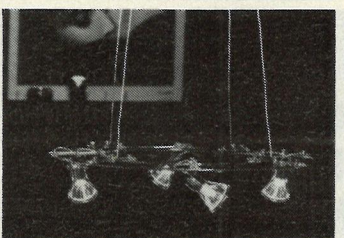
Marlin Lighting has added to its collection of Limburg lighting fittings the Pyramid series of wall lights and ceiling fittings. All the wall lights are made of white satin matt glass, while the ceiling versions are made from satin matt three-ply opal glass.

There is a choice of either polished brass or white metal frames.



Compact fluorescent lamps of the Dulux D/PLC type can be used with these luminaires, or alternatively GLS lamps.

Reader Service No. 159



High-tech pendants

Atlanta range of decorative lighting from Philips Lighting is in high-tech, stylish designs.

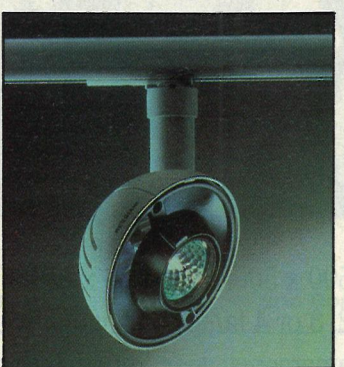
There are two pendant models, the circular style shown and a linear version, and a table model. All use low voltage tungsten halogen lamps.

Reader Service No.160

LV luminaire accepts variety of lamps

A range of low voltage fittings which use the same luminaire shape with different light sources is available from Reggiani Ltd.

This compact luminaire takes either a PAR36 lamp, a 20W or 50W tungsten halogen lamp with



dichroic reflector, or the Super Spot tungsten halogen lamp for powerful accent lighting from distances greater than 3m.

The fitting is vented to reduce surface temperature and has a 356° adjustment on both backplate and head. There are track and surface mounted versions in either white, black or graphite colour.

The TE3787 range is used with a remote transformer and incorporates the new mechanical system Polyblok, which has been developed by Reggiani to ease relamping and to hold a safety glass.

Reader Service No.161

LIF LINE

Lighting up our future

Over the last thirty years local authorities have been allocating progressively less of their capital budget to refurbishing their lighting stock. Come budget-making time, street lighting has dropped down the list of priorities and has been cut in real terms until the point has been reached where allocations often approach zero.

The figures published for 1985/86 show a capital spend by local authorities in England and Wales of £10 million. When this is set against the Institution of Lighting Engineers' report that an injection of £1 billion would be required to finance a replacement programme covering substandard street lights, it is no wonder that most of our public lighting has become outdated, inefficient and ineffective. The problem is compounded by the fact that today's lighting engineers have inherited lighting stock which is, for the greater part, 40 years old. It is in a poor — even dangerous — state of repair; well past its effective working life. Without investment now the problem can only escalate. Peter Wright, when President of the ILE commented that, "the folly in not investing in new equipment and sensible replacement intervals borders on a national scandal".

For this reason members of the BPLG lobbied the Department of the Environment for money to be made available under the Urban Aid programmes specifically for street lighting.

Sympathetic noises were made by David Trippier, the Department of the Environment Minister then responsible for inner cities, and in June 1986 he opened the BPLG display in the Upper Waiting Hall of the House of Commons. On this occasion the Minister urged local authorities to include street lighting in the projects they submitted for Urban Aid and suggested they use the display, to show their colleagues how good, modern street lighting can assuage the fear of crime, cut crime itself and help regenerate inner city areas.

In 1988, at the invitation of the Minister and in consultation with the Department of the Environment, the BPLG produced a 17-minute video, Out of Darkness, reiterating the argument for improved street lighting. This, with a personal note from David Trippier, was sent to the leaders of all English councils. Via the BPLG it was further circulated among the convenors of the Scottish councils and the Secretaries of State for Northern Ireland, Wales and Scotland. In his letter the Minister urged authorities to think positively about the contribution lighting could make to their constituencies.

As a result of all this activity, eligible authorities are applying to fund street lighting schemes under the Urban Aid Programme and in 1988 £1.5 million was allocated for this purpose with a further £800 000 allocated in the first six months of 1989.

The BPLG is strongly of the view that good street lighting actually cuts night-time crime and that this brings enormous benefits to everyone, but particularly to women and to the elderly.

So, with the help of Thorn Lighting, Philips Lighting and, most recently, Urbis they set up small-scale research projects which show that by refurbishing street lighting and bringing it up to the recommended standard local authorities can cut night-time street crime and rekindle a sense of community safety.

Although the Home Office attitude continues to be ambivalent, the then Home Secretary, Douglas Hurd, referred to street lighting in his outline for local action against crime in March 1989, saying he hoped that councils would try to give priority where ever possible to improvements in street lighting and in the lighting of council estates.

John Patten, Minister at the Home Office, has written that he accepts the view that substantial improvements in street lighting can reduce the public's fear of crime and in certain circumstances can help to prevent crime itself. He added that discussions were already underway to identify where early action could be taken.

Robert Atkins, newly incumbent Minister for Roads and Traffic, when questioned in the House by Joan Walley MP, said that although there was no research evidence to show that road lighting reduces crime rates, common sense suggested that it must.

The upshot of all this common sense, following in the wake of research conducted by the Industry and local authorities, was evidenced in the Home Office's announcement of their own £75 000 project largely based on the examination of police statistics in Wandsworth, where the local authority is systematically relighting the whole borough. There are also to be four regional research projects, based entirely on police statistics.

Now, while this research is to be welcomed, we must continue to press the Home Office for evidence of their professed aim to move as quickly as possible from experimentation to the actual application of lessons.

In spite of the apparent lack of enthusiasm at the Home Office, more Urban Aid is being allocated to street lighting and some local authorities are allocating more of their own budgets to street lighting. Even so, the Department of transport recently revealed that only 71 of the 108 English local highways authorities included bids for street lighting expenditure in their transport policies and programmes submissions for 1989-90. Furthermore, because of the neglect of the past 20-30 years there is an enormous backlog of dimly lit streets needing to be brought up to standard.

Although there have been successes both with central and local government, there is still much work to be done to stimulate an adequate response to this problem. Far too often the top decision makers in local government, where spending decisions are ultimately taken, fail to appreciate the enormous policy significance of improved street lighting for large numbers of their electorate.

For some reason lighting for people has come a poor second to lighting for vehicles, important though that is. Improved lighting would be not only a popular measure — it would be highly visible too. Yet most large inner city authorities will have to spend about £1 million per annum for five years to bring their street lighting up to the British Standard.

In many cases the will is there to spend these sorts of sums and in some instances, such as Wandsworth, Barnet, Tower Hamlets and Birmingham, relighting programmes have started. But a sea change in attitudes towards street lighting is needed if these examples are to become the norm, and a more positive attitude from the Home Office would be a welcome boost to the BPLG's campaign to bring about that change.

If you, as a public lighting engineer, would like assistance in presenting the case for increased allocation of funds for better street lighting, the BPLG can provide a free information display with accompanying video "Out of Darkness", which can be manned by a lighting expert. If you would like to know more about the display and the work of the BPLG and its campaign for better street lighting in the streets please contact us at Swan House, 207 Balham High Road, London SW7 7BQ.

NEW PRODUCTS

Downlights have ventilation

Techne range of recessed downlights from Reggiani Ltd has been enlarged to nine models. A series of apertures between the fitting rim and the surface in which the downlight is installed allows a continuous flow of air to maintain a low temperature around the luminaire. As well as extending the application possibilities, this prolongs lamp life.

The nine models accept a variety of lamps, including low voltage and mains voltage tungsten halogen, White SON, metal halide and compact fluorescent.

This enables lighting designers to use matching luminaires in an installation while achieving a variety of effects from background lighting through to spotlighting.

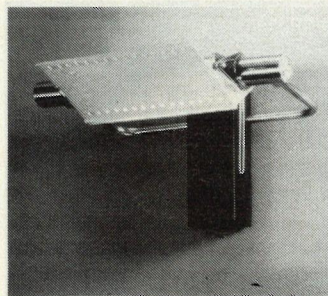
Reader Service No. 162

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

Adjustable wall light

Futura wall light from Opus Lighting Ltd provides either uplight, downlight or both simultaneously by swivelling the rectangular anodised aluminium reflectors to different positions.

A 200/300W linear tungsten halogen lamp is used and a dimmer is built into the wall bracket. The arm supporting the reflectors is chromium plated.

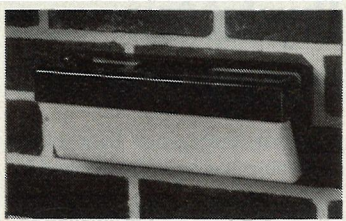


A matching floor light is available and two suspended fittings, one with a single light, the other with twin lights.

Reader Service No. 163

Energy saving porch light

A wall mounted porch light from Philips Lighting Ltd uses an 11W PL compact fluorescent lamp. It also has a photo-electric cell for automatic switching. Ingress protection rating is IP23.



The diffuser is made of opal coloured acrylic.

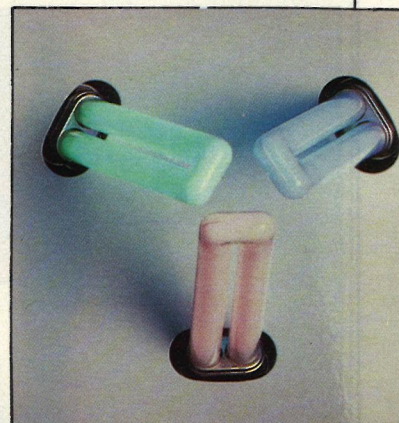
Reader Service No. 164

Three times more colourful

Trilite is a ceiling luminaire from Vitalighting Ltd which uses three PL type compact fluorescent lamps, one red, one blue and one green. It is claimed to give near white light at the centre of the fitting, while giving distinctive separate colours in each direction.

Applications include interior display and commercial lighting.

Reader Service No. 165



Rainbow colours for rock audiences

M & M Lighting has developed a rainbow scroller to fit the Thomas 8-Lite unit which is used to light audiences at rock concerts or other large areas such as swimming pools.

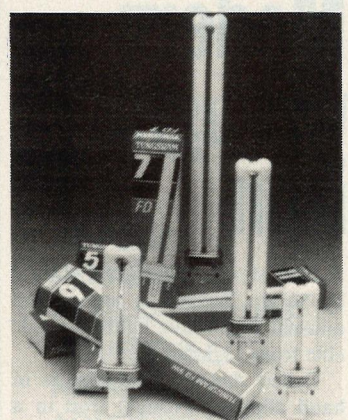
The 8-Lite scroller has eleven colours in its detachable scroll and operates at a speed of one second end-to-end. The horizontal fan unit, which is stated to be completely silent in use, dramatically reduces heat from the lamps, giving the filters a much longer life.

This scroller can be supplied in either analog or DMX512 digital format, according to the type of lighting control console being used. The digital format gives very precise positioning of colours and has a minimum cabling requirement. List price is £1200.

Reader Service No. 166

Compact fluorescent lamps

Tungram Lighting Ltd is marketing a range of compact fluorescent



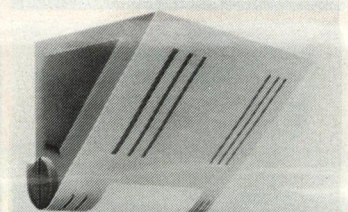
lamps of the PL and PLC type. There are six ratings: 5, 7, 9, 11, 10 and 13W.

Reader Service No. 167

Mains and emergency uplights

Existalite Ltd has a range of wall mounted and floor standing luminaires called Up-lite. Each model can accommodate one-hour, self-contained emergency lighting facilities.

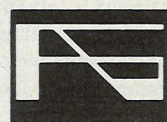
The wall lights use either 70W or 150W metal halide lamps; free standing types also have the option of using 250W lamps. Control gear



is integral. Auxiliary lights are also provided.

An extra feature of the range is that the metal housing can be colour co-ordinated to decor. Company logos can also be etched onto the end panels.

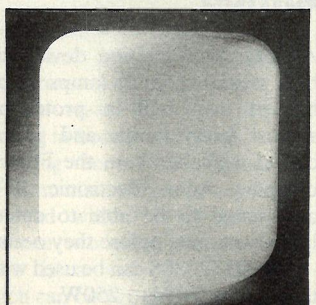
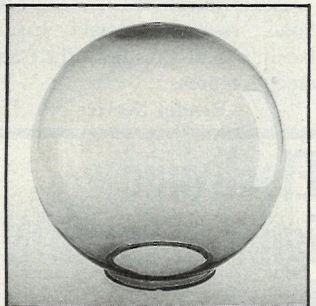
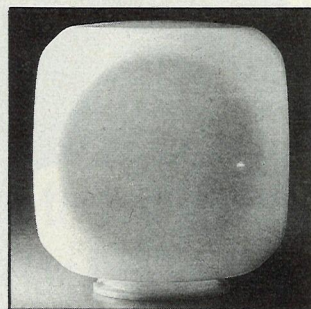
Reader Service No. 168



ACRILUX

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Reader Service No. 7

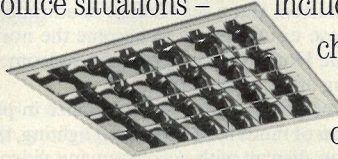
RADA PRESENTS AN EXCELLENT CASE FOR A MILLION AND ONE LIGHTING OPTIONS.

IT'S CALLED SUMMIT.



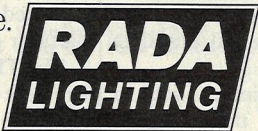
Summit is a new luminaire design that's suitable for all ceiling types - concealed grid, exposed 'T', plasterboard and metal systems. So it can go anywhere. What's more, it also gives an unprecedented range of lighting options. So you can specify it for everywhere.

You have a choice of louvres for all office situations - including VDT areas, choice of control gear, choice of sizes from



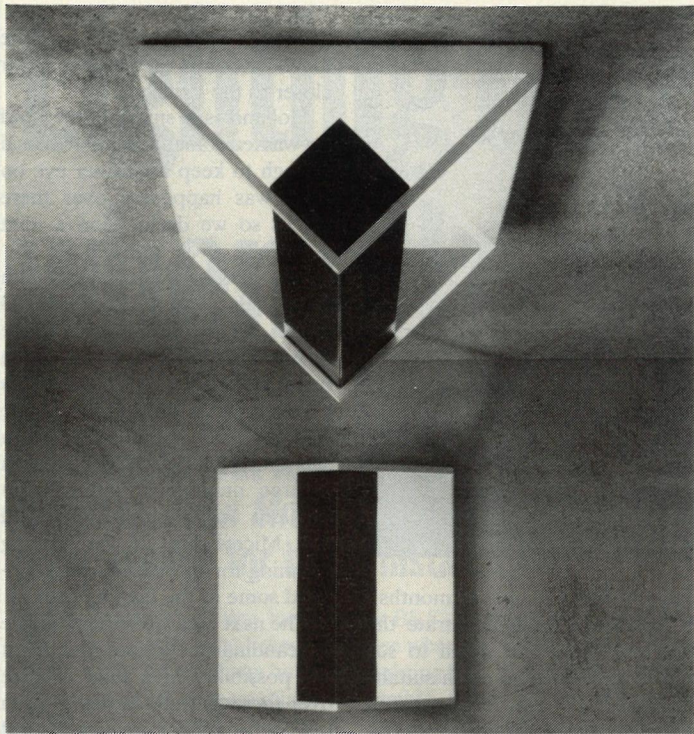
500 x 500mm to 300 x 1800mm, choice of 2, 3 or 4 lamps and, if you want it, choice of emergency gear. Return air-handling and RADA's well known high-quality finish are not options. They're standard.

So now one body design can cover practically all of your needs. At a realistic cost. Summit. It's an exceptionally good case for lightening your life. Ask us to send you a Summit brochure.



Rada Lighting Limited, Hollies Way, High Street, Potters Bar, Herts EN6 5BH. Tel: (0707) 43401

NEW PRODUCTS

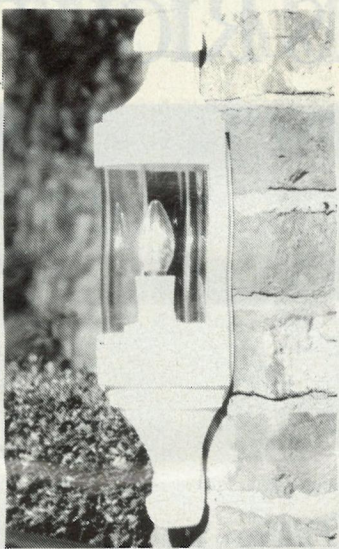


Low energy decorative lights

A modern wall or ceiling luminaire from Elemsystems Ltd uses either 18W or 36W PLC compact fluorescent lamps. The lamp is held at the apex of a metal triangle and light is reflected off a polyester coated steel back plate.

The L103 range, which is imported from Denmark, is available in three sizes: 320 x 320mm, 320 x 650mm and 320 x 1350mm. The lamphousing is finished in a choice of six colours.

Reader Service No. 176



Gold effect emergency luminaires

A range of emergency luminaires with polished, gold coloured housings is available from Tam-lite Emergency Lighting. They are particularly for use in areas such as hotels, conference centres, receptions and business centres.

There are circular and square styles with 'crystal' glass, circular polypropylene, two rectangular polycarbonate models and single or double sided exit boxes.

Versions can be supplied in



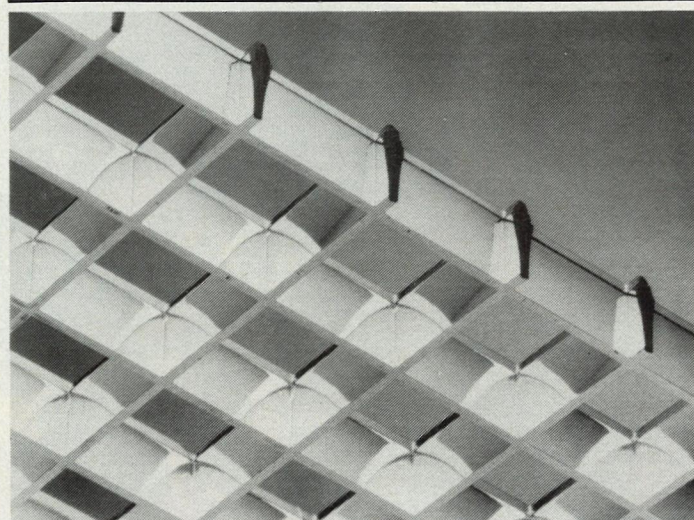
non-maintained, maintained and sustained operating modes, using miniature fluorescent or 2D lamps.

Reader Service No. 178

Lanterns for gardens

Powerlite Electrical Products Ltd has introduced a range of garden lanterns called Classic.

A photo-electric cell for automatic switching and a passive infra-red detector to deter intruders are available as optional extras. Reader Service No. 177



Louvre for VDU lighting

Interlux Ltd's type 94 V-backed Paracube metallised louvre is designed to eliminate reflected glare in VDU screens while providing efficient lighting.

The new louvre is a development of the company's Paracube louvre and is stated to provide at least 15% more efficient lighting, achieved by the complex tapered shape of the upper part of the louvre.

There is a choice of metallised silver or gold colour.

Reader Service No.179

Low voltage transformers

A range of low voltage transformers called Multi-Quartz has been introduced by Automotive Electronics Ltd. They have ventilated plastic cases and are available in 80W, 100W and 200W ratings at present, but higher output units

will be available soon.

The transformers are rated to withstand cold start surges and maintain correct voltage to ensure efficient lighting and long lamp life. They have a regulation of $\pm 0.3V$ with a load range of 25-100% at 240V input.

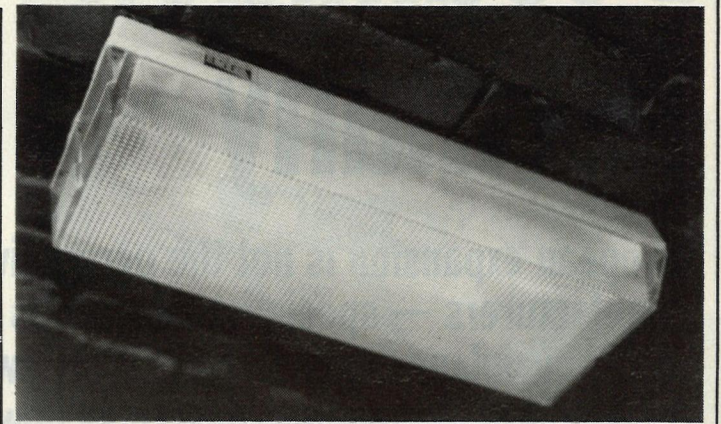
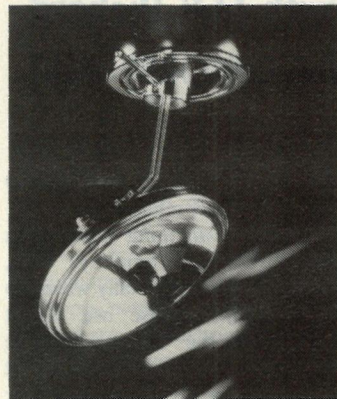
A self-resetting thermal cut-out protects against excessive temperature, over current and short circuits. Reader Service No. 181

Z line is free of finger marks

Z line is a range of low voltage spotlights from Light FX. A jack connector allows each fitting to rotate through 360° as well as tilt. Adjustment is by means of a small rubber-tipped arm which does not show finger marks.

The fittings are made of solid brass chromium plated.

Reader Service No. 182



Outdoor emergency light

Stormglow self-contained emergency luminaire has been specially designed for the rigours of outdoor use by Bradley Lomas Electroluk Ltd.

Applications include stairways, alleys, precincts, entrances, bus

stations, railway concourses, racecourses, marinas and soccer grounds.

Maintained, non-maintained and sustained models are available using either single or twin 8W fluorescent lamps. An ac/dc slave version has also been produced.

There is a choice of prismatic or opal diffuser. Ingress protection rating is IP65.

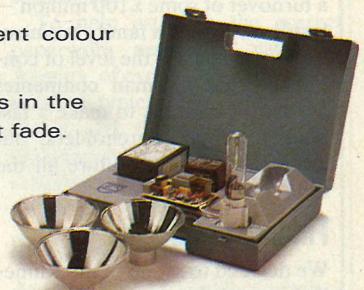
Reader Service No. 183



SETTING NEW STANDARDS

- Stunning vibrant displays to stop consumers in their tracks – Philips WHITE SON and single-ended METAL HALIDE lamps bring products to life with intense, brilliant, sparkling light.
- Both allow fittings to be made for spots, general lighting, ambience, wall washing or outdoor decorative luminaires.
- WHITE SON has a warm (2500K) appearance and injects real, larger than life drama and texture into your displays.
- The New METAL HALIDE lamp has a cool (4000K) light, creating a crisp appearance.

- Both lamps have excellent colour rendering (CRI 80).
- There's no need for filters in the fittings, so material won't fade.
- Both lamps can use the same reflectors and housings.



Philips Lighting Limited, City House, 420-430 London Road, Croydon CR9 3QR. Telephone: 01-689 2166. Telex: 946443

For more information fill in your details below.

Name _____ Position _____

Company _____ Address _____

Postcode _____

O.E.M. Division, Philips Lighting Limited, Freepost, City House, 420-430 London Road, Croydon CR9 9ET.

LEN

Philips Lighting



PHILIPS

Reader Service No. 8

Destination Germany

European expansion is not the prerogative of large lighting manufacturers — specialist companies can also profitably look to mainland Europe. In an interview with *LEN*, Richard Millington of Microlights, describes how his company went about setting up a German subsidiary.

Europe? We decided very early on in the company's existence that the UK was a very small market and that, with increasing integration in the Common Market, it was inevitable for us to seek closer commercial ties with Europe. None of the shareholders of this company ever had a "little England" approach to business.

So, in 1985 Geoffrey Bean, the company secretary, and I decided to research Europe. Over a space of some 10 days we visited users, wholesalers and designers in France, Germany and Benelux. The British embassies proved very helpful, and so was the British Chamber of Commerce in Bonn. But, unfortunately, these trips do take time because of the fragmented nature of the lighting industry.

We had already realised that Germany was the richest market in Europe and optimistically took the view that we should start at the top. The most significant thing that we did not discover at the time, but only subsequently, is that the German attitude to business is totally different from ours.

The Germans are very conservative and they do not see solutions to life as short term solutions, so industries instinctively plan for the long term.

This partly reflects the fact that the country is very stable and German business has not had to come to accept the ups and downs in politics, commerce and the economy that business has experienced here in the UK in the postwar period. This conservatism shows in the large number of family businesses — often of considerable size — that you meet in the Federal Republic. Trilux, for instance, with a turnover of some £100 million — is still very much a family business. Moreover, such is the level of confidence that German companies are not in business to make a fast buck for their shareholders, but are investing in the future all the time.

Finding premises

We decided to set up in the Rhine-Ruhr area, the area of maximum population density, and started looking for some 200m² of space to give us an office, a showroom area and some storage space. Finding premises could have proved a problem as the Germans do not have estate agents specialising in commercial property in the way we do in the UK but, in the event, a personal introduction provided the solution. As our UK bank is the National Westminster, we decided to bank with its Germany subsidiary, the Deutsche Westminster Bank AG in Düsseldorf, and they introduced us to another client of theirs, a German businessman. He had some space he was willing to rent in Mettmann, some 10 miles outside Düsseldorf, so we managed to come to an agreement and moved in.

The man who runs the German

operation, Christian Engelmann, we discovered by accident. He is a German national but has lived most of his life in England and, at the time, it seemed to make sense to have someone who was totally bilingual.

The German attitude towards standards differs significantly from our own. The UK does not have the same tradition of standards approval as a marketing requirement either of the manufacturer or of the user. What happens over here in practice is that this state of affairs makes for less competition as companies develop specifications based on their own experience of product types over the years and manufacturers have to produce to a range of different requirements. In Germany, on the other hand, there is only one standard — the national standard — and if a manufacturer meets this standard that is all that is necessary. So, manufacturers know exactly where they stand.

Standards approval

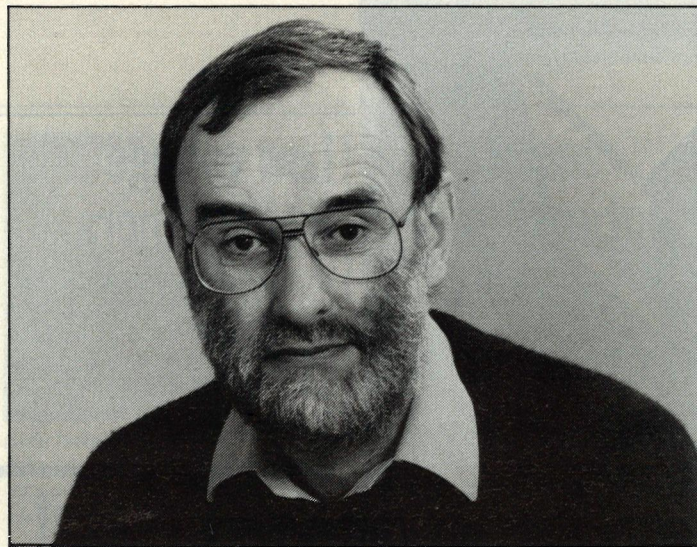
Our initial market researches had made us aware of the necessity of having German standards approval, so, while setting up our Mettmann office, we went to talk to a test house. The Technisches Überwachungs Verein eV comprises 8 regional test houses sanctioned by the government to test to standards in many different fields. The TÜV group, for instance, carries out vehicle testing in the Federal Republic, in the same way as the MOT grants test house status to garages in the UK. We decided to use the TÜV Essen test house because it was the closest to our German base and had informal chats with them as to how to go about obtaining standards approval.

I feel testing has developed something of a mystique over here. We found that once we have proved we were trying to play fair and not beat the system by taking short cuts, they were always ready to come up with a solution to our problems. They suggested, for instance, that we should set up our own test facilities here in the UK factory so that we would have a good idea of the results we were going to obtain before making a formal application. They also came up with the idea that it would be more economical if they came over to the UK and tested our products in the factory using our own equipment. And this has worked out well.

Quality assurance is a major element of standards requirements. Each batch number is batch logged and we carry out 100% electrical testing. The standards authorities, moreover, can come over and check both records and products at any time. Compliance, therefore, is very expensive as one person or more is fully employed testing at any time, but we do find errors and we can now say with confidence that faults will not be there when the product goes out of our doors.

So it does give us the confidence to sell on product reliability.

Did we do anything wrong when we moved into Germany? Well, we got the market totally wrong to start with, because we didn't understand the German attitude towards business and assumed it would be pretty much like our



own. As a result we wasted a lot of time. This is where I feel we would have benefitted from the assistance of an indigenous adviser, as opposed to someone who speaks the language fluently but does not understand the psychology of business in the country. We were told that it would take a conservative two years to break into the market and that was about right. I think we will anticipate this time

scale by just a couple of months.

You have to demonstrate that you are there and mean to stay there, and that you are a suitable company they can rely on before they will consider trading with you. In short, you have to prove you can do things the German way.

Looking to the future, we are currently expanding into Holland. Our Dutch venture has been going since 1989 and will be successful in

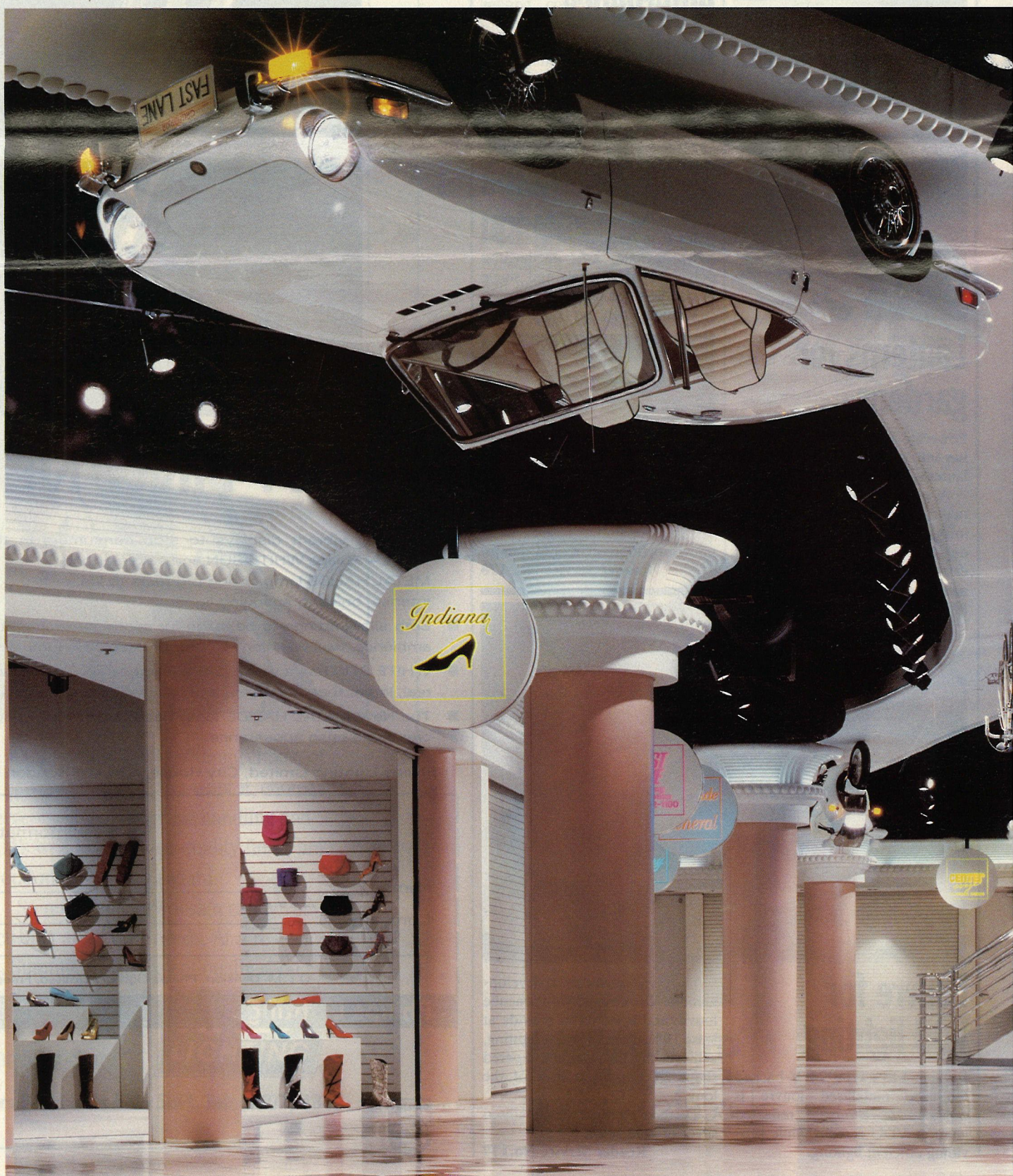
a shorter space of time, as the Dutch attitude to business is far closer to the British.

Holland is a small market and we wanted someone who was local enough to keep a weather eye on what was happening over there for us so we decided on a joint venture.

We are collaborating with Dutch people in the lighting field whom we had known for some three years before we started up in business together. Working with a Dutch design house, we have recently been responsible for a small food mall development with a large number of independent retailers on a jointly developed site. Microlights did the lighting planning for this scheme and supplied some of the lighting fittings.

The next area we hope to tackle is Scandinavia. We are looking at the possibility of a joint venture over there as well, so that we can take advantage of existing local expertise. All our surface mounted products currently have NEMKO approval. This leaves us with an advantage as it is mandatory to have approvals in Scandinavia before you can sell luminaires.

THE LIGHT IS RIGHT.



Lighting that works when all else fails

Emergency lighting is a requirement in public buildings and workplaces, but it is essential that it should work when that crisis happens. John Mitton, of JSB, explains the importance of regular maintenance for these installations

Emergency lighting has now become an established part of the fabric of any building accessible to the public, and with just cause. The need to light the way out is of paramount importance, as is the need to establish correct procedures for the operation and long term maintenance.

Emergency lighting, as defined

in BS 5266, is lighting provided for use when the supply to the normal lighting fails. Its main purpose is to enable those in the building to leave safely and quickly, without panic.

Since 1971, it has been a requirement in all public places under the *Fire Precautions Act*. And the 1974 *Health and Safety at Work Act* made it obligatory to

provide adequate means of escape in all places of work.

This feature looks not at the installation of emergency lighting, but rather at its maintenance. There is no point in just putting in an emergency lighting system and hoping it will work when the emergency happens. Regular maintenance and checks are vitally important to ensure the emergency

luminaires are in working order when needed.

Once the emergency lighting system has been installed, the relevant authorities require written guarantees that it meets the necessary standard BS 5266. But the work doesn't stop there. In fact it is just starting. From then on a series of daily, monthly, six-monthly and three-yearly routine inspections and tests are required.

Reliability

As with all 'end user' operated equipment, day-to-day responsibility for the equipment is the duty, and routine maintenance and testing is the key to continued equipment reliability.

JSB can offer advice and customer training in all aspects of maintenance, together with periodic inspection of the installed equipment. The establishment of the correct use of log books as detailed in BS 5266 (page 13, 11.3) gives a record of events and any rectification work carried out.

Every piece of equipment used for emergency lighting has three vital components: the battery, the charger and the changeover



A maintenance engineer testing the voltage of an emergency light fitting.

device, all of which require specialist attention.

The best time to establish records is the date of commissioning, as this is the first opportunity to get together all the relevant details and formulate an on-going maintenance job.

Inspection

In order to establish a routine of system inspection, whether it be by the user or a specialist contractor, BS 5266 details the correct procedures, a summary of which follows:

- ☐ A site supervisor should be appointed with overall control of the installation.
- ☐ The system should be inspected daily and a check made that maintained lamps and indicators on equipment are 'normal', any deviation being recorded in the log book. Inspectors also serve to check the level of electrolyte and allow topping up in good time where applicable.
- ☐ Monthly inspection incorporates the simulation of mains failure of emergency lighting systems, allowing for visual inspection of correct illumination over a period not exceeding 1/4 of the rated duration of the equipment. This would incorporate the previously mentioned daily checks.
- ☐ Six-monthly inspection involves a more specialist approach and is more usually called for in a planned maintenance contract. The visit requires a period of discharge as appropriate and a full inspection of the equipment with a report on its condition. At this time, a complete check is made on battery voltage specific gravity and electrolyte level (when applicable), together with a charge and discharge voltage as appropriate. These records can be compared with any previous reports so building

up an historical picture. In addition, it is the duty of the service engineer to examine daily and monthly records to check that any remedial action has been attended to.

- ☐ Three years after manufacture a full test should be carried out. This involves a complete duration test, during which time a full record of the discharge characteristics should be made. It should be noted that if this test is related to sealed 'nicad' cells it should be carried out each year after the three year test.

Full details are given in BS 5266: Part 1: 1988, pages 14/15, section 12.

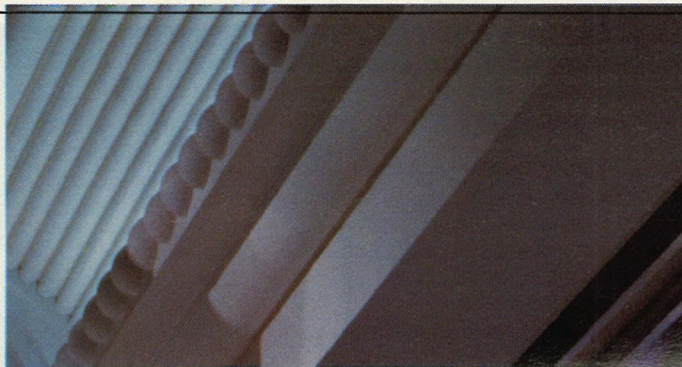
To help establish the correct paperwork associated with the 'logging' of events, BS 5266 incorporates typical test and record sheets and these, together with manufacturers' log books, form a complete and detailed record which should normally be kept.

Replacing cells

As most self-contained luminaires contain sealed 'nicad' cells, it is necessary, after a period of time (approximately four years), to replace the cells in order to continue to achieve the duration requirements.

It is also important to appreciate the recharge time needed after discharge has taken place, and due care must be taken to provide emergency lighting cover during this period should there be a loss of mains supply.

To conclude, although many feel regular maintenance is not worthwhile, a properly maintained scheme offers the user complete peace of mind and in the long term will save money by maximising equipment life, so the building owner should seriously consider taking out a service/maintenance contract.



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Reader Service No. 9

Emergency lighting must be planned

The design of an emergency lighting system requires careful planning and close liaison with the relevant authorities. Chris Watts, of Menvier, and Chairman of the British Standards Committee on Emergency Lighting, outlines an approach to design.

The first requirement when designing an emergency lighting system is to be aware of all the factors involved. The legal requirements laid down — what use the building will be put to — what the occupier wants and expects from the system — and what equipment is available on the market.

It is also important to work closely with the local fire authority and the eventual user so that the project moves ahead with a minimum of problems. The relevant British Standard is BS.5266: Part 1: 1988.

Before starting to design the system the following data should be available:

- ☐ What duration is expected of the battery system?
- ☐ What mode of operation of the luminaires is required?
- ☐ A full set of building plans showing the whereabouts of fire alarm panels, call points, extinguishers and safety signs.
- ☐ What escape routes will be used?
- ☐ When an escape route passes through an open area, should it be treated as an escape route or should the whole compartment be covered as an "undefined" area?
- ☐ Is external illumination of outside exit doors required?
- ☐ Are there other areas which, although not part of the escape route, need illumination ie lifts, plant rooms and toilet accommodation greater than 8m².
- ☐ If a central system is to be used, establish areas of low fire risk for location of the battery unit and cable runs.
- ☐ Is standby lighting required for activities that need to continue during a failure of the normal electricity supply?

When this data has been studied the initial design can be started by first deciding where luminaires should be sited to highlight safety equipment and signs. This outline should be prepared regardless of whether the route is to be through defined or undefined areas.

Only when this outline is prepared can the luminaire type and light output be considered.

In Figure 1, "near" is considered to be within 2m measured horizontally.

British Standard BS 5266: Part 1, requires exit signs either to be internally illuminated or to be illuminated from a remote source. Relevant standards for these are:

- BS 2560 — For electrically illuminated signs — green lettering on a white or matt black background.
- BS 4128 For self luminous signs — also with green lettering.
- BS 5499 Plain signs with remote illumination with white lettering on a green background.

It is proposed that in the near future signs will be standardised in

the form of internationally recognised pictograms with directional arrows. Until this standard is finally agreed and introduced, signs as listed above should be specified with the addition requirement of BS 5266 calling for remote illumination to be at least 5 lux with a uniformity of 0.7.

Other areas

When the hazards of escape routes have been covered other areas needing illumination should be identified and luminaires selected for them. These include.

- ☐ Lift cars — although only in exceptional circumstances will they be part of the escape route, they do present a problem in that people may be trapped in them in the event of a supply failure.
- ☐ Toilets exceeding 8m² in gross area.
- ☐ Motor generator, control or plant rooms require battery-supplied emergency lighting to assist maintenance or operating personnel in the event of failure.
- ☐ Covered car parks — the normal pedestrian routes should be provided with non maintained luminaires of at least 1 hour duration.

By now the location of most luminaires in the system will be known. The next stage is to select the type of system and the light level required.

System selection

How should the emergency lighting system be powered? The alternatives are:

- ☐ Each luminaire to be powered by its own self contained battery.
- ☐ Each luminaire to be a 'slave' operated from a central battery unit.

After making this major decision, the level of light at each position is a function of the emergency lamp output and the ballast lumen factor determining what proportion of normal light output will be available under emergency conditions.

As each individual site will be different there is never an absolutely right — or wrong — system but the following points should serve for guidance.

Considerations that favour self-contained units:

- ☐ Ease of installation as protected wiring is not normally needed. Supply can be taken from the nearest unswitched live point of the lighting circuit.
- ☐ Inherent sub-circuit protection is provided by the individual change-over devices, ideal for non-maintained systems.
- ☐ Low maintenance requirement, from the sealed nickel cadmium batteries normally used.
- ☐ Ready availability of the fittings which are stocked by most distributors and wholesalers.

- ☐ The system can be easily extended in the future by the addition of extra fittings.

Considerations in favour of central systems:

- ☐ Central control of the system enables testing to be carried out

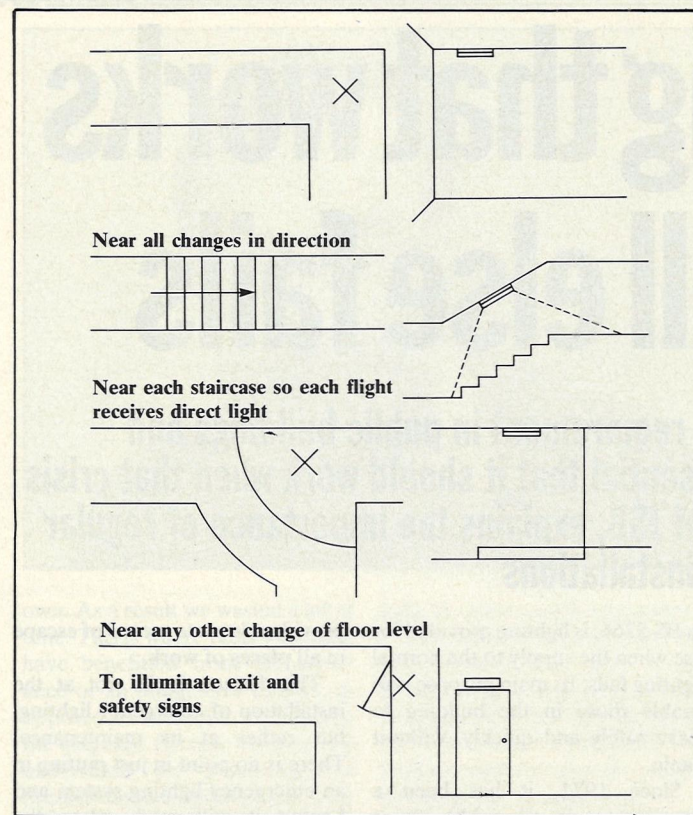


Figure 1. Areas requiring illumination on escape routes to ensure safety and aid fire fighting are given in this diagram. Requirements are taken from BS 5266 : Part 1 : 1988.

easily and also permits the central switching of the maintained output without additional wiring.

- ☐ Longer life batteries are available including maintenance-free cells. The interval between battery replacement can be much longer than that for self-contained units. When it becomes necessary it will be less expensive and, as a single battery is involved, will be a simpler operation.

When choosing the type/power of the lamp to be used remember that tungsten lamps are lower in initial cost and do not require control gear. They are however inefficient, have a short life and can be difficult to obtain. On the other hand fluorescent lamps are far more efficient and are readily obtained — but do need specialised control gear.

Light levels

Once the system components are selected photometric data on the luminaires chosen must be obtained so that light level requirements can be met. The laid down levels are:

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Precise optical control.

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- Defined parts of escape routes — 0.2 lux minimum on the centre line. (nb when used on escape routes the luminaire housing must pass an 850°C hot wire flammability test.
- Undefined areas (open) which are part of an escape route must have a 1 lux average over the whole of the compartment's floor area.

Both of the above conditions must not exceed a uniformity factor of 40:1.

The calculations for checking light levels vary dependent on the specific requirements to be met. To meet the minimum of 0.2 lux the maximum distance at which this is provided should be checked against spacing tables (see Figure 2). All reputable emergency lighting manufacturers can provide such tables for different mounting heights. These are based on the worst case conditions for light output — at the end of discharge with aged components.

Number of fittings required:

The example shown in Figure 3 involves two hazard points — one the corridor junction and the other

a right angled change of direction. Each needs a luminaire and they are 16 metres apart with a 4m ceiling height.

The tables show that if 8W luminaires are used they can be mounted transversely and the spacing would be adequate. If however 4W luminaires are selected an additional fitting would be needed, sited midway between the hazards. As the 16m spacing would be reduced to 8m the luminaires could be mounted

axially or transversely.

When making the calculations for the number of fittings required it is usually preferred to use the normal utilisation method — but it should be based on zero reflectance with an additional factor for reductions in battery voltage and cable volt drop. This method has the advantage that much of the calculation will have been made for normal lighting design and will be well understood. What is needed however is the following data from

(All dimensions in metres).					
Ceiling mounting height	Lighting level directly under luminaire	Transverse to wall	Transverse spacing	Axial spacing	Axial to wall
KWIKLITE 4 WATT 80 LAMP LUMENS					
2-5	1-7 lux	3-8	10-2	9-0	3-4
4-0	0-7 lux	4-0	11-2	10-2	3-6
6-0	0-35 lux	3-2	11-0	10-0	3-0
KWIKLITE 8 WATT 180 LAMP LUMENS					
2-5	4-8 lux	6-0	15-5	12-5	5-0
4-0	2-0 lux	6-5	17-0	15-0	5-5
6-0	0-8 lux	6-8	17-8	15-5	5-8

Figure 2. Typical spacing tables for emergency luminaires.

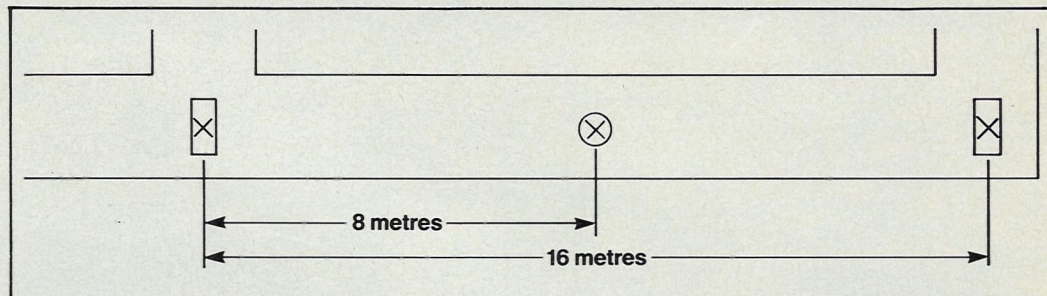


Figure 3. Planning emergency lighting on an escape route, an example.

the manufacturer of the luminaires:

UFO — Utilisation factor at zero reflectance for a range of room indexes for the luminaire. ELDL — Emergency lamp design lumens; this is normally provided either as a total figure for small luminaires or as a ballast factor (BLF) for the control gear, which should be multiplied by the lamp design lumens (LDL).

K — K factor is the amount that the lamp output will reduce because of the effect of battery discharge and in some cases supply cable volt drop. This factor varies and is dependent on the control gear characteristic, the final applied minimum

voltage and the type of lamp.

By calculation
 $ELDL = 0.17 (BLF) \times 2800 (LDL)$
 $= 476 \text{ lumens}$

By substitution
 No of fittings =
 $1 \times 30 \times 20 \times 0.32 \times 476 \times .85 \times .8$
 $5,79, \text{ rounded up} = 6$

This calculation shows that 6 fittings will provide an average of 1 lux. They should be located in a regular array and used, if possible, to cover the hazard points and safety equipment. If this cannot be achieved either additional smaller units can be added to the scheme or the room could be redesigned using fittings producing a greater output.

The above system would be perfectly acceptable to meet the uniformity factor with normal enclosed luminaires — but if low brightness fittings with a sharp cut-off of light output are required, it is very likely that the uniformity factor will be unacceptable. This should be checked by inspection of the polar distribution. If there is negligible light output at 80° it is likely that spacing will need to be restricted to that available by using the spacing height ratio. This problem is also likely to be found with tungsten halogen downlighters which, because of their narrow beam angles, can rarely be fully used.

In addition, uniformity ratios can also be exceeded even with normal distribution luminaires with high light outputs, for example, light outputs of over 2000 lumens at low ceiling heights may well need to be restricted.

Implications of system lighting design

1. Corridors with a 0.2 lux minimum requirement.

Two factors limit the spacing available for this minimum point measurement. They are the cosine correction factor and the inverse square law. These generate a diminishing return for increased light provided and show that the optimum efficiency is normally obtained with light outputs between 150 and 200 lumens.

Values can vary from 0.35 — for a tungsten lamp on a central system, discharged to 85% of nominal, with a 10% cable volt drop — to a factor of 1 for a fluorescent circuit with built-in voltage regulator, maintaining a constant output from the lamp.

SF, or service factor, covers the effect of dirt and system ageing. The calculation procedure for 1 lux average is:

1. Calculate Room Index (RI)
 $RI = \frac{\text{Room length} \times \text{width}}{\text{Height (length + width)}}$
2. Consult the UFO tables for the luminaires — select the value for the appropriate room index.
3. Obtain the ELDL — either directly from the luminaire manufacturer or by multiplying the BLF × LDL for the lamp to be used.
4. Obtain the K factor from the luminaire manufacturer.
5. Determine the service factor for the conditions (normally 0.8 but can be less for dirty locations).
6. The values above should be substituted in the equation to give the number of luminaire needed.

No. luminaires =

$$\frac{1 \text{ lux} \times \text{room length} \times \text{width}}{\text{UFO} \times \text{ELDL} \times K \times SF}$$

A room of area 30 × 20m × 3m requires illumination to 1 lux using self-contained conversion units with a K factor of 0.85 and a BLF of 0.17 on 36W lamps, having an LDL of 2800 in an enclosed plastic diffuser with an SF of 0.8.

$$\text{Room index} = \frac{30 \times 20}{3(30 + 20)} = \frac{600}{150} = 4$$

From UFO Tables

Room Index	UFO Factor
.08	.15
.1	.17
.25	.2
1.5	.22
2	.25
2.5	.28
3	.3
4	.32
5	.33

For RI of 4, UFO = 0.32

(ie for that fitting, in that room, 32% of the light from the lamp will reach the floor directly). In emergency conditions these outputs are normally possible by using an 8W luminaire.

2. Undefined areas

Here, it is very different. The area of coverage is directly proportional to the light output of luminaires with a similar light distribution. As larger lamp outputs are more cost effective generally, the highest light output possible should be used. The limiting factor is the number of luminaires needed to cover hazard and safety points and the need to meet uniformity requirements.

Generally with normally distributed fittings it will be found that light outputs of 500-1000 lumens are likely to be most appropriate.

Conclusion

When the design has been completed it will become apparent that the luminaire performance depends as much on the light distribution as on the light output available. Therefore, it is essential that luminaire types specified for a particular design do not get changed without a reappraisal of the photometric design.

Adequate facilities for testing and recording the system condition should be incorporated. These need to be appropriate to the site. It may well be desirable to test the installation in an office block by isolating the total supply, but this would be inappropriate in a hotel that is occupied 24 hours a day. In this case, separate key locked test switches in the supply to each luminaire or for each sub-circuit would be more suitable.

Finally, to ensure that the system remains at full operational status, essential servicing requirements should be laid down. These would normally be part of the testing routine. Consumable items such as replacement lamps and other spares should be provided for day to day use.

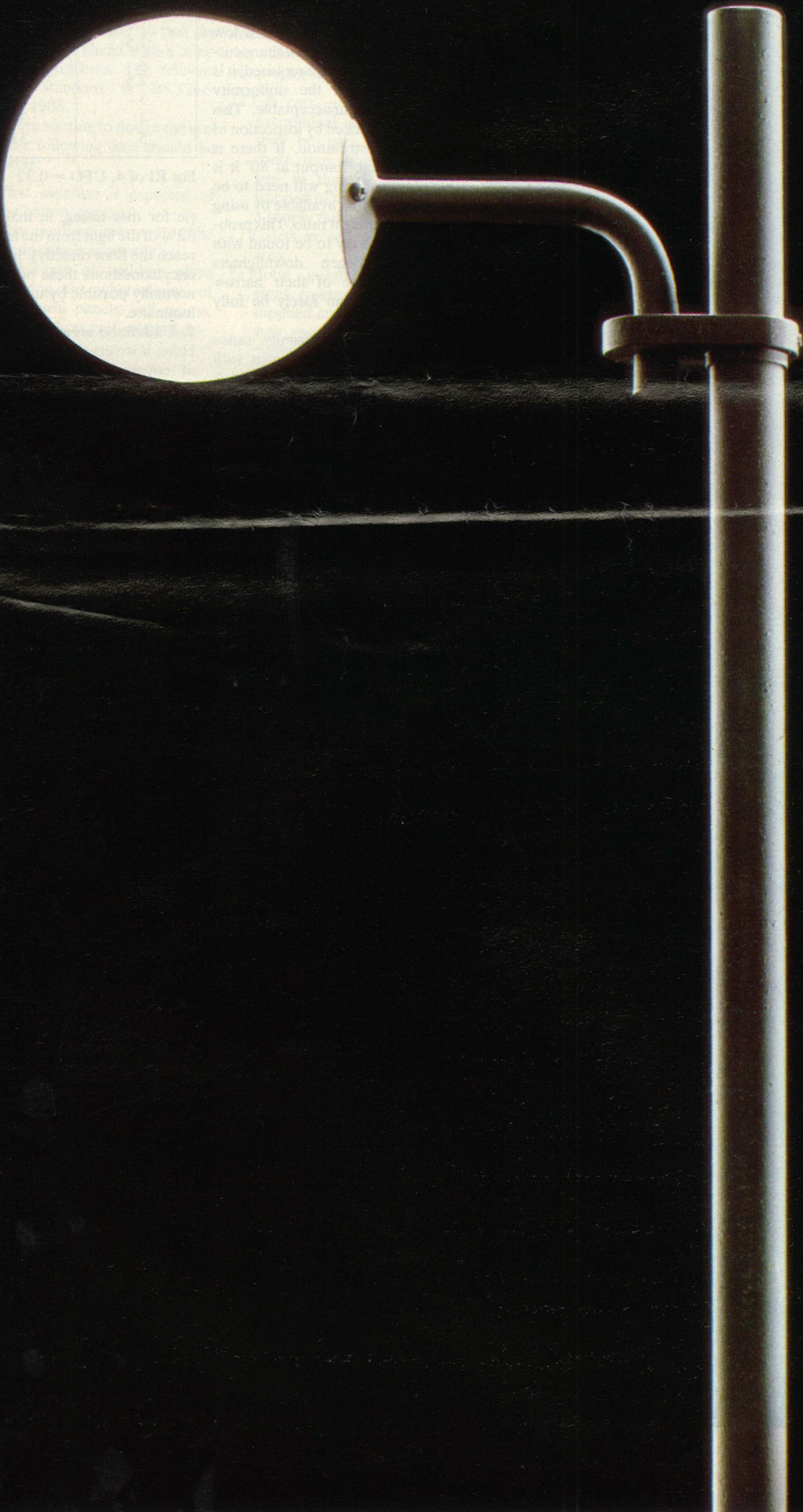
While the design of an emergency lighting system has to meet the requirements of BS 5266: Part 1: 1988, it must be remembered that each system will be individual to the specific building and the usage for which it is to be installed.

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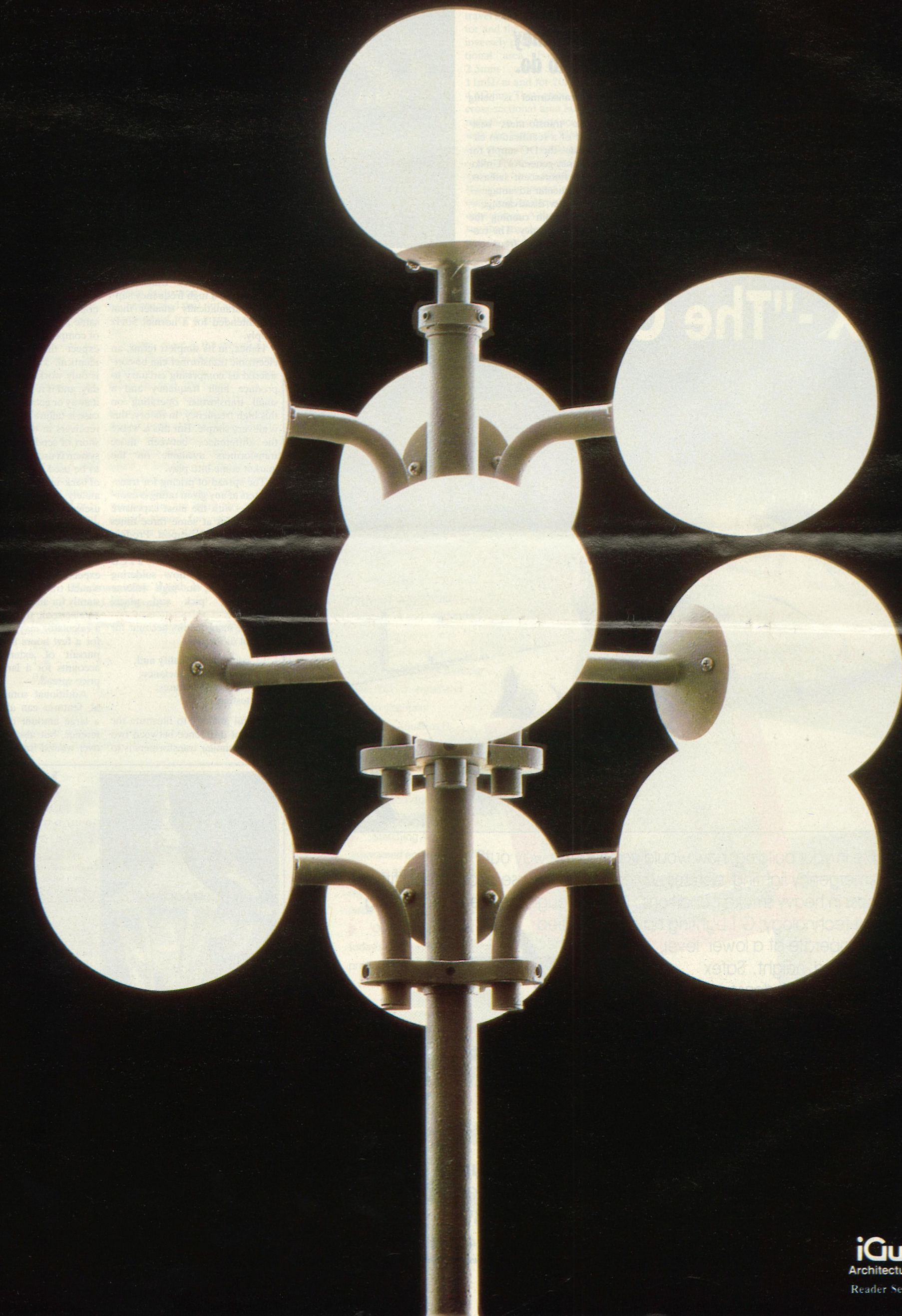
door illumination system for pedestrian and mixed-use zones: crossings, streets, parks and squares.

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Advice on choosing transformers

In the final part of this two-part feature, *Mike Tatem*, of *Tridonic*, looks at electronic transformers — how they work and what they can reasonably be expected to do.

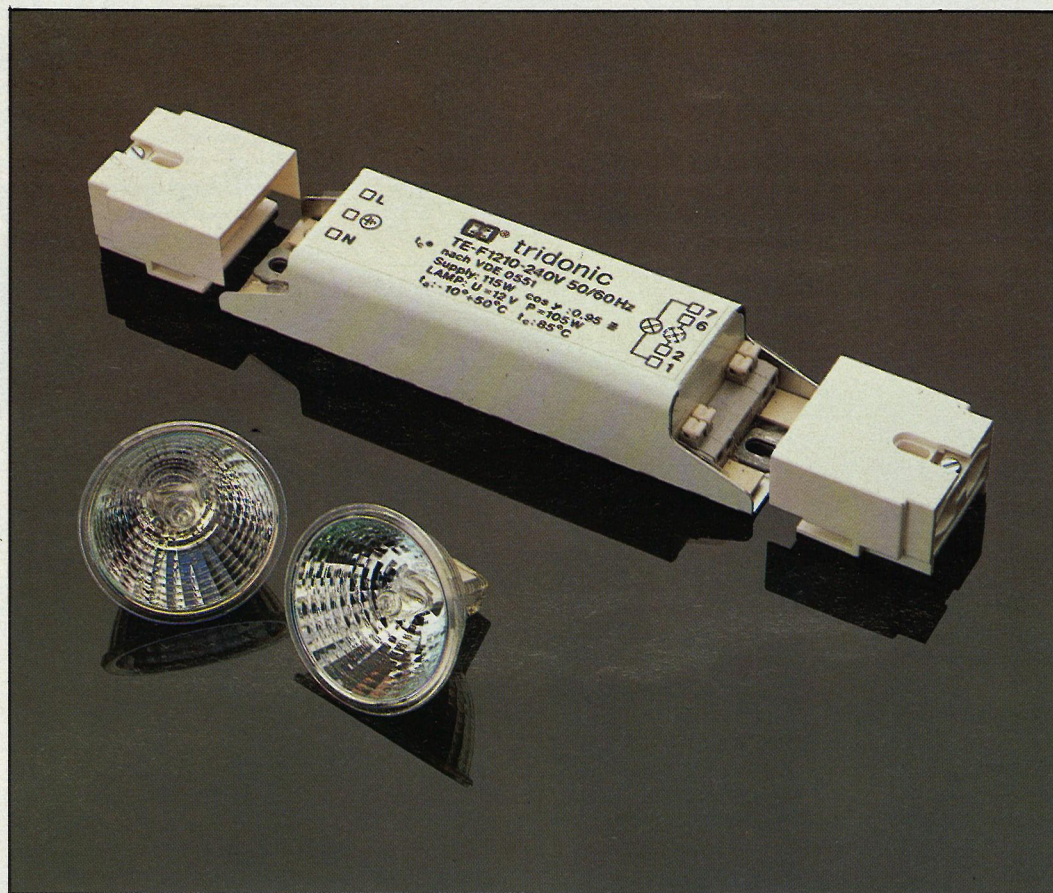
Electronic transformers have been available for many years, one early application being for use in portable overhead projectors where weight is a prime consideration. It was natural, therefore, that they should be developed for low voltage lighting where weight and size are equally important. It seems ironic that such a compact light source required a heavy, bulky

item such as a transformer. Electronic transformers, on the other hand, have the advantages of smaller size and light-weight (the latter only about 10% of that of a wound transformer).

But, what are the advantages and disadvantages of electronic transformers? This question is actually not quite as simple as you might think because it depends very much on which model of

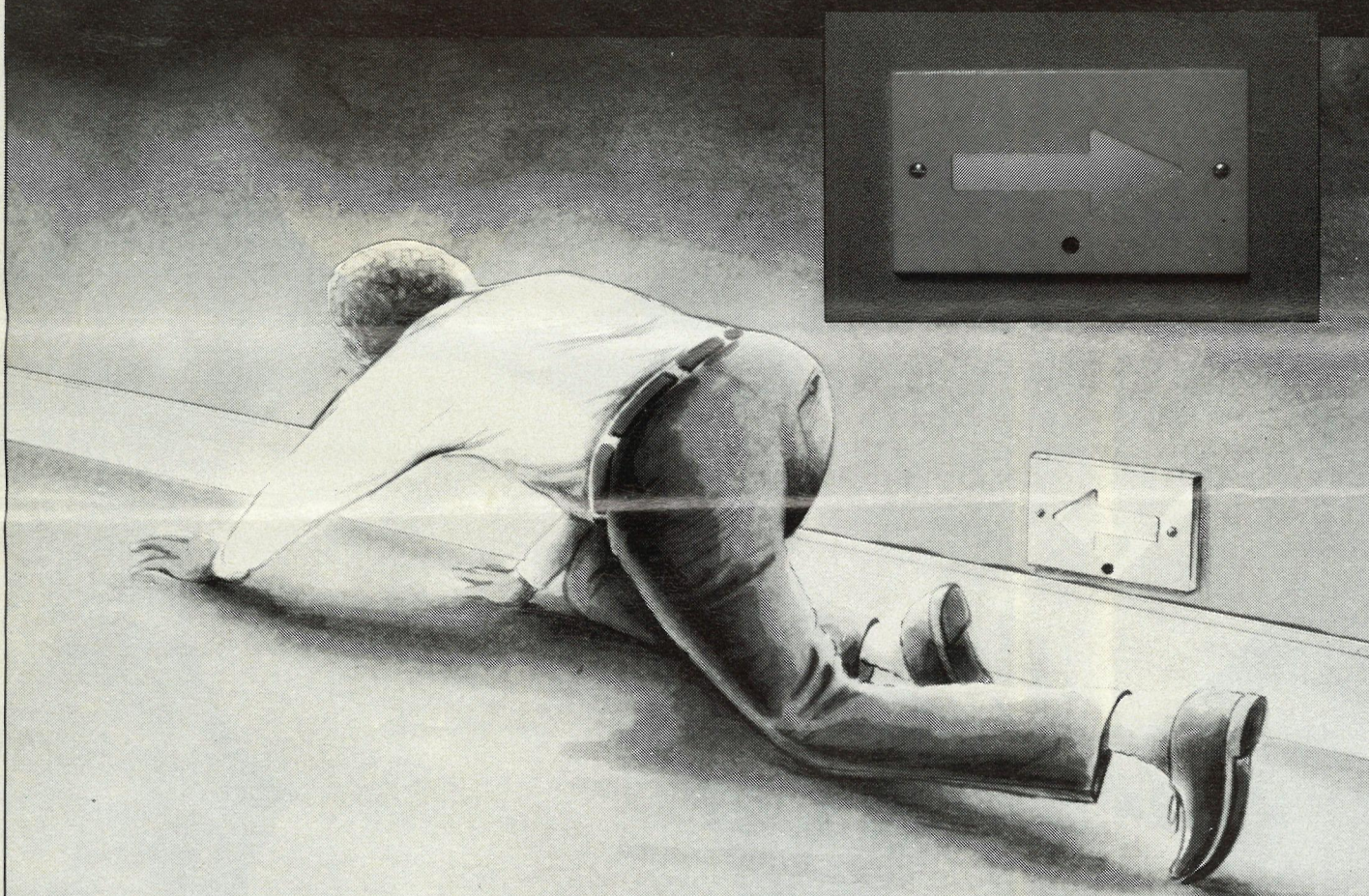
electronic transformer is being considered.

Electronic transformers basically consist of a rectification circuit to produce the DC supply for a high frequency generator. Unlike the case of fluorescent ballasts, there is no particular advantage — or, for that matter, disadvantage — to be gained from running the lamp at high frequency. The reason for adopting a high frequency



An electronic transformer designed to give a low voltage lighting supply.

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supply is 'that the transformer required for a high frequency supply is dramatically smaller than one intended for a normal 50Hz supply.

Hence, in its simplest terms, an electronic transformer can be considered as comprising circuitry to produce high frequency and a small transformer operating on this high frequency. In theory, this is all very simple. But this is where the differences between those transformers available on the market come into play.

The spread of pricing for transformers at any given rating is enormous — with the most expensive working out at some three times the cost of the cheapest. Production is normally by putting the components manually onto a PCB and then using flow soldering machinery or, in high volume production, 'pick and place' machinery.

Three main factors account for the cost difference:

- ☐ component quality and, hence, life expectancy;
- ☐ additional features;
- ☐ testing.

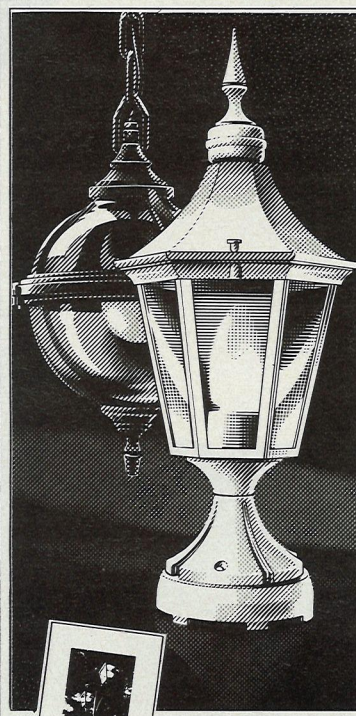
A useful analogy to illustrate the degree of difference between two basically similar transformers is to

compare a household radio and the receivers in a telecommunication satellite. Both are doing the same job and using the same type of components, but nobody would expect the components to be identical. The radio, for instance, is only working for a few hours a day, and if it falls you either throw it away or get it repaired; in neither case is failure a catastrophe. If the receivers in the satellite fail then, short of sending a shuttle up, that system is useless and a back-up has to be used. However, the number of back-ups is not infinite and ultimately the satellite is rendered useless.

Reliable

This analogy is particularly true for electronic transformers. Users expect them to be as reliable as wound transformers and run constantly for about 10 years, whereas an electronic transformer used for a calculator may only be required for a few hours a week. It is this pursuit of extended life that accounts for a large part of the price spread.

Additional sometimes optional, features can also account for a large amount of the price difference, but also give advantages over wound transformers. All the



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OCCUPATION





The LE28 twin 50W luminaires from Connect Lighting have a transformer incorporated into the ceiling rose.

basic electronic transformer provides is a means of transforming mains to low voltage, albeit a lighter and more compact one.

Two features which should be standard — but often are not — are RFI suppressors and harmonic filters. The biggest problem with wound transformers is voltage regulation. As described earlier, with electronic transformers it is possible to regulate secondary voltage regardless of load. Short circuit and overload protection can be built in to give auto-reset without the use of conventional fusing, and this also goes for thermal protection. Thus, you have a unit which, provided the terminals are covered, is a totally self-contained transformer that does not require

further protection. Again it must be emphasised that not all features are standard for a given transformer.

Finally, there is the question of testing. It can be shown that some 2-5% of electronic components fail in the first 100 hours.

This can be simulated by burn-in tests with overvoltage at higher than normal ambient temperature. In this way a large percentage of premature failures can be eliminated — but this costs money.

So, having chosen an electronic transformer instead of a wire wound one, are there any special considerations for wiring? The answer is very definitely yes!

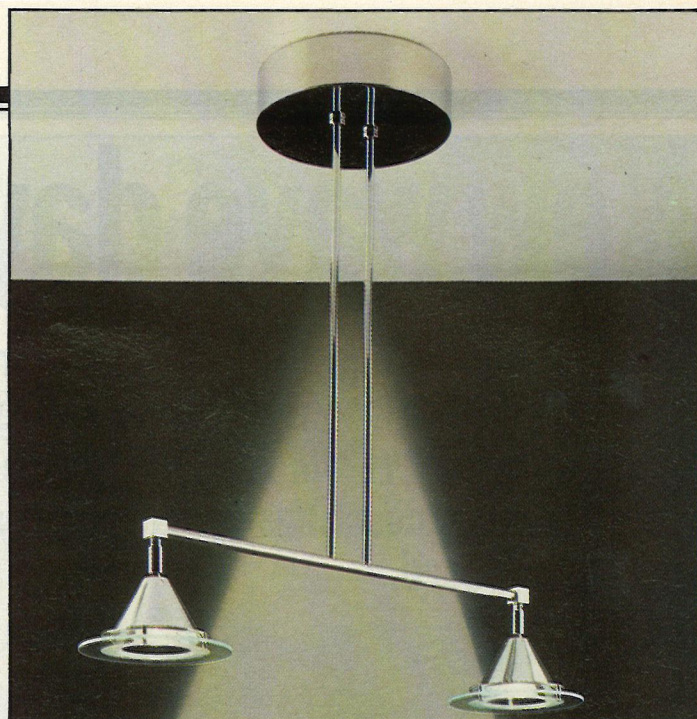
With electronic transformers there is not only the question of

voltage drop to consider, but RFI (radio frequency interference) as the secondary is operating at high frequency, typically 35 kHz. Secondary cables must be twisted together every 250mm and the overall cable length must be no more than 2.5m. This produces a revised table for electronic transformers as shown in the table.

Resistance

The so called 'skin' effect has also been taken into consideration. At high frequency the current tends to travel at the surface of the conductor and the resistance is no longer inversely proportional to cross sectional area. For instance, for 2.5mm cable the figure is 11mΩ/m and for 10mm cable it is 4.6Ω/m. That gives 4 times the cross-sectional area but only 60% reduction in resistance, compared with the figure of 75% reduction that might be expected.

In conclusion, electronic transformers have significant advantages over wound versions. The only real question mark is life expectancy. Although it is safe to say that an electronic device cannot on average, last as long as a



The built-in transformer for the Connect Lighting fitting.

wound transformer, how near it gets to this is dependant upon the factors described above.

A statement made in an article by Dale Kitching of GTE Sylvania (*LEN* November 1989, pages 12-13) asserted that a certain manufacturer's transformer was the most reliable on the market. How-

ever, this statement was totally unsubstantiated.

It is up to the purchaser not to take such claims at face value, and certainly not just to seek the cheapest solution. Similarly, the features built into the unit should be examined to ensure that the transformer has all those required.

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New wave daylight

Innovative daylighting systems can improve the distribution of daylight in a space and exploit the lighting power of direct sunlight. *Dr Paul Littlefair, of the Building Research Establishment, describes the techniques available and how they can be used.*



Figure 1. Manchester Airport departure lounge with solar chandeliers

In electric lighting, luminaires with reflectors or refracting prisms are available to provide controlled diffuse light wherever it is required. 'New wave' daylight aims to do the same with natural lighting. Mirrors, prismatic glazing, light shelves and light pipes can all be used to redistribute light from the sky and sun. If properly designed, these systems can brighten up gloomy areas in a building, and it is claimed they can even be used in a controlled visual environment such as a VDU room.

Light pipes

Piped sunlighting is perhaps the most technologically exciting of the new systems. Figures 1 and 2 show an example — the refurbished departure lounge at Manchester Airport. Sunlight is collected with a solar tracking mirror and beamed through an empty shaft into a 'solar chandelier' which emits sparkling light into the interior.

For this type of decorative lighting application, the fluctuations in sunlight intensity add to the interest of the installation. But for workplace lighting, sunlight-only systems would be unsatisfactory on partly cloudy days; when the

sun goes behind a cloud light, output is virtually reduced to zero. Even if a back-up lamp is fitted, the resulting sudden changes in lighting level during changeover would inevitably be annoying to occupants. Light pipe systems, therefore, seem to be inappropriate for workplaces in the United Kingdom.

Sidelighting systems

Systems which use diffuse skylight to supplement sunlight are more satisfactory in this respect. These include sidelighting systems which use mirrored louvres or prismatic glazing to redirect the light. Figure 3 shows how this technique works. Sunlight — and some diffuse sky light — is reflected or refracted onto the ceiling where it is diffused throughout the rear of the room, improving uniformity of lighting in the space as well as providing a degree of solar shading.

Of course, the system must be able to cope with the movement of the sun; and because both mirrors and prisms tend to block views out, they will normally be used only on the top part of the glazing. Prismatic glazing in a sealed unit is easier to maintain, and some forms of prismatic glazing (Figure 4) can reject sunlight altogether, providing even greater control of the visual environment.

Light shelves

The light shelf is a simple variant on the mirrored reflector. Figure 5 shows a good example at the South Staffordshire Water Company headquarters in Walsall. The light shelf is a horizontal, or nearly horizontal, baffle mounted some way up the window. Both interior and exterior light shelves can be fitted.

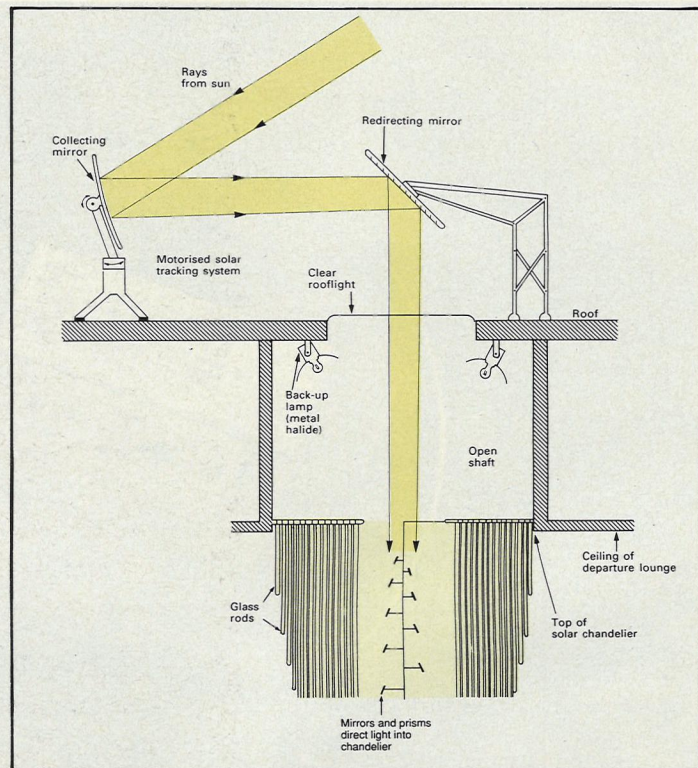


Figure 2. Piped sunlighting system at Manchester Airport: schematic cross-section

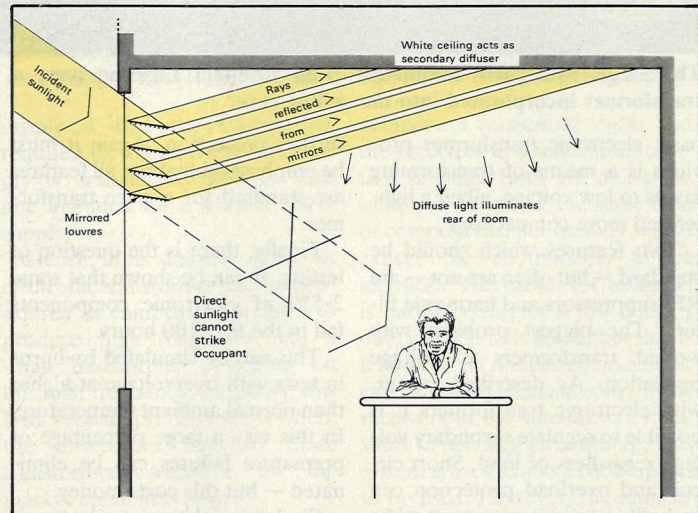


Figure 3. Beam sunlighting in a side-lit room

Effective lighting control is also required if the energy benefits of the innovative daylighting system are to materialise. Any ceiling mounted photoelectric sensors need to be calibrated with care, as they will receive unusually large amounts of reflected daylight.

Overall it can be concluded that new wave daylight has considerable potential. But it needs to be designed with care if the full benefits are to be realised.

Further information

This work forms part of BRE's ongoing programme of lighting research and this paper is published by permission of the Director. A full review of innovative daylighting is to be published in *Lighting Research and Technology*, Vol. 22 (1), 1990. A shortened, illustrated version with a design checklist is now available as BRE Information Paper IP 22/89. Crown Copyright 1990, Building Research Establishment Department of the Environment.

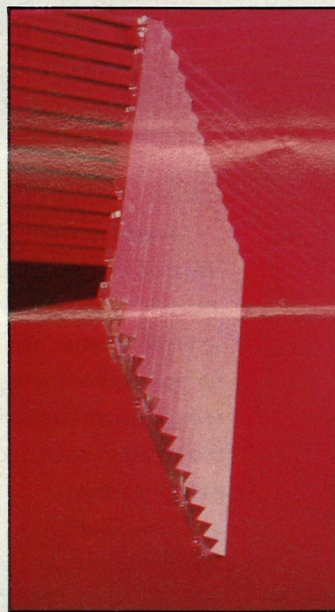


Figure 4. Prismatic glazing

The light shelf provides shading to occupants near the windows, while allowing daylight into the room.

Light from the upper part of the window is reflected off the top of the light shelf onto the ceiling, and, thence, throughout the interior. For this reason a high reflectance, specular or semi-specular surface is best for the top of the light shelf. Regular cleaning is required, and a high ceiling helps the light shelf to work properly.

In winter, low altitude sunlight may enter above a shallow light shelf and cause glare; if this happens moveable blinds or curtains may need to be fitted.

Design issues

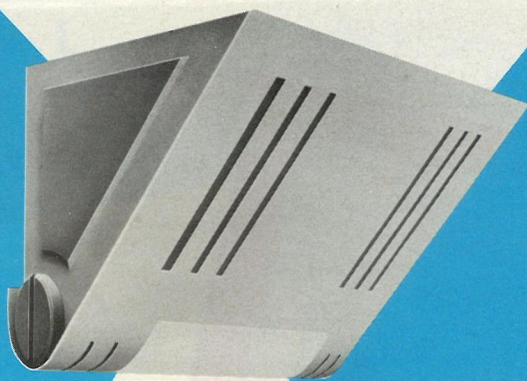
It is worth remembering that these systems do not increase the amount of daylight entering a window. Instead they use that light — especially sunlight — to fuller advantage, by improving the distribution of natural light in the room.

Good window design is required, as is good electric lighting design. With the changing flow of natural light the ceiling becomes a critical design element and, therefore, luminaires should be unobtrusive.



Figure 5a, b. The South Staffordshire Water Company headquarters, Walsall.

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Reader Service No. 16

Lighting matters — in Cambridge

Topical issues on all aspects of lighting were discussed by lighting engineers, engineering consultants, architects and others involved in lighting at an international gathering in Britain in April. *LEN* reports on the highlights.

In 1990, Britain's National Lighting Conference qualified fully as an international event. Among some 260 delegates were representatives from Australia, China, the USA and the USSR, as well as all around Europe, including Greece and Hungary.

At the four-day event held in April at Cambridge University, topics ranged from difficulties experienced with equipment, through lighting installation techniques, to reports on research work and a review of new products.

However, recurring themes were designing for non-uniform patterns of light in interiors and the human response to lit interiors.

A report on some of the highlights of interest to readers follows. Space prevents publication of a detailed report of the sessions, but copies of the proceedings are available from the organisers, The Lighting Division, Chartered Institution of Building Services Engineers, 222 Balham High Road, London SW12 9BS (telephone 081-675 5211). The price is £45 (£30 to CIBSE members).

Uniform — or not?

Tony Slater, Building Research Station, had been studying the effect of uneven patterns of light

on desks. The experiments showed that for tasks that occupied only part of the desk, an illuminance uniformity below current recommendations was acceptable.

However, there was decreased satisfaction at low uniformities and the most sensitive measure was the evenness of lighting across the task itself.

Where there was a smoothly varying illuminance, uniformities (maximum/minimum) of at least 0.7 were likely to be satisfactory.

Another aspect of lighting uniformity was tackled by Dr Joe Lynes, Hull School of Architecture, who described the treatment of non-uniformity of lighting as one of the skeletons in the cupboard of illuminating engineering.

From his work on the perception of shadows and striations, he explained the phenomenon where even though it appears evenly lit in the foreground and far distance, a large area can appear unevenly lit in the middle distance. It was possible to predict this effect, said Dr Lynes, and make practical use of it in lighting installation design.

Whereas linear fluorescent lamps were associated with uniform lighting and soft shadows, increasing use of high intensity discharge lamps and compact fluorescent lamps was raising problems of shadow and non-uniformity, he

reported, and he warned the audience of difficulties ahead in the 1990s.

Human response

Belinda Collins, National Institute of Standards and Technology, USA, reported the findings of a detailed analysis of post occupancy evaluation data from



A view of Robinson College, University of Cambridge, venue of the 1990 National Lighting Conference.

912 work stations in 13 office buildings.

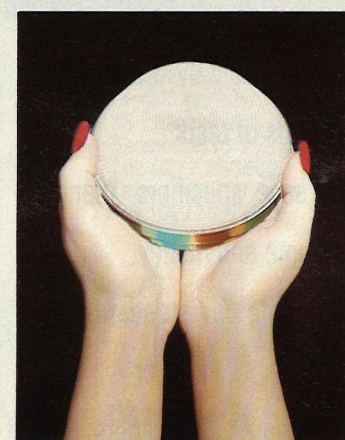
The first conclusion was that the majority of occupants, 69%, were satisfied with their lighting. Mean

illuminances on the task were within the range 344-807 lux, depending on the lighting system.

A further conclusion was that lighting satisfaction and the per-

ception of lighting quality appeared to be related primarily to the luminance distributions within the room rather than to task illumination.

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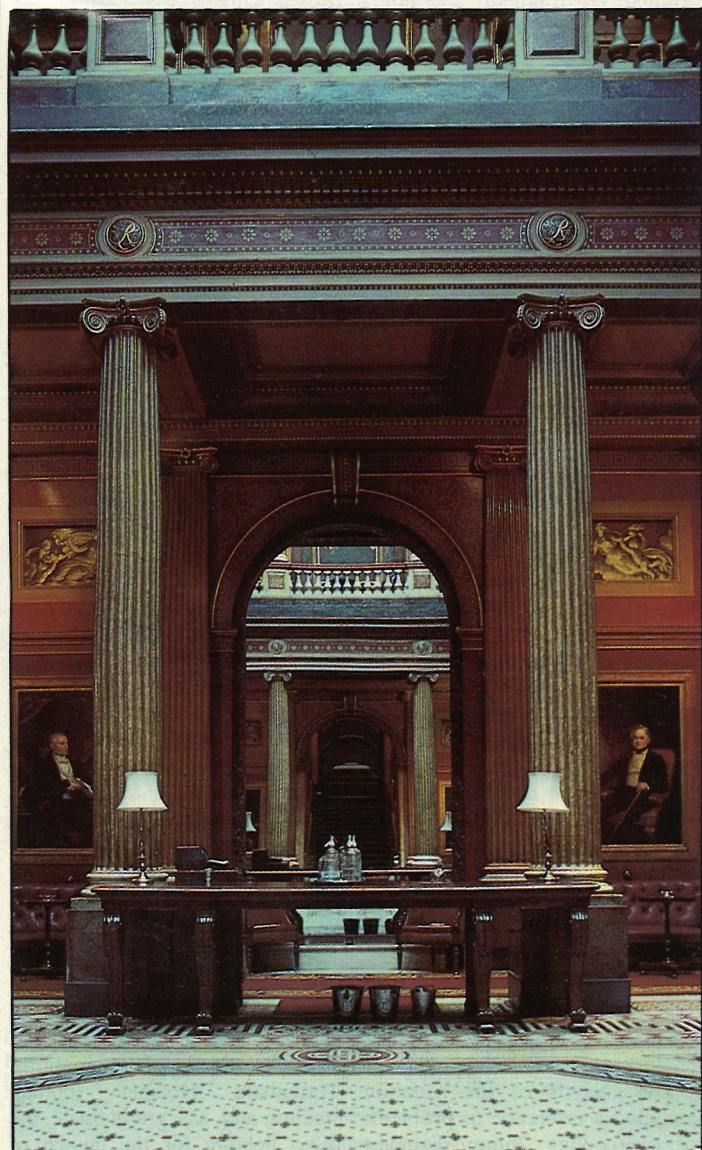
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Relighting historic buildings: the Reform Club, London. Low voltage spotlights have been added behind columns to light paintings at ground floor and gallery levels; a gasolier in the gallery has been converted to use PL lamps.

The analysis showed that a combination of indirect ambient lighting and task lighting integrated into furniture (at the back of the desk below a shelf) was particularly unsuccessful from an occupant's viewpoint. Moreover, satisfaction tended to decrease with increasing illuminance on the task at these work stations.

A possible reason for the unfavourable response was thought to be the average luminances for these work stations: room luminances were much lower than for any other lighting system studied, while mean task illuminances were higher.

The analysis suggested that these spaces were characterised by extremes: very bright tasks and very dim surroundings.

In comparison, a direct lighting system was rated much more favourably, even with the same type of systems furniture.

In a paper on collecting subjective and objective data on lighting in offices, R Kinkeldey, of Kinkeldey Leuchten, spoke about a research project in Germany.

This had shown that among 1197 people questioned about

their office environment in general, 92% preferred to work in smaller offices. Apart from that, the most important factor was brightness differences in the room.

In small rooms, brightness differences between the room itself and the work station were more favourably viewed than in larger rooms.

Designing installations

Jonathan Speirs, Lighting Design Partnership, talked about communication between members of the design team and showed slides of some of his partnership's work, such as shopping centres, city floodlighting and illuminated staircases and towers.

He thought it would help understanding and co-operation between members of the design team if architects were trained in the application of light and engineers learned a little about architecture.

Lighting historic buildings was the subject of Derek Philips, DPA (UK).

He divided such buildings into three main categories: those retained in their original form to be

enjoyed as an element of history; those to be retained in their original form but where improved lighting was required for continued use, and buildings for which an entirely new use was envisaged and where modern lighting standards were essential.

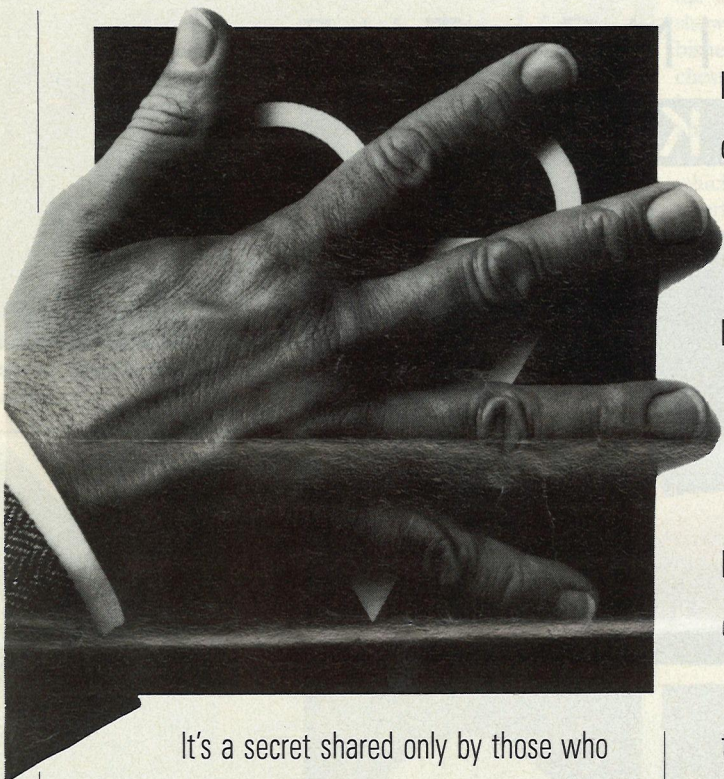
Among the recommendations he made was that where a building was considered to be a museum, daylight should be sufficient during the day, while at night only light sources appropriate to the period, and which left the fabric of the building unchanged, should be used.

Where lighting needed to be upgraded to modern standards, he said the first point was to consider what the original architect would have done. Here again, damage to the building fabric should be avoided.

When a significant change of use was involved, it was the problem of the architect to retain something of the quality and character of the old building while achieving changes vital to the success of its new function. In such a building, lighting must inform the architect's new concepts for the spaces but



Only three compact source iodide fittings floodlight the Equinox sculpture in an office centre in Dallas, Texas; an example shown by Brian Page, Thorn Lighting, in his talk on discharge lamps.



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In this instance, Mr Philips said it was unreasonable to expect the fabric to remain untouched.

Illustrations with this lecture ranged from the British foreign secretary's office to a Buddhist temple in Sri Lanka.

Mike Simpson, Philips Lighting Ltd, spoke about a more flexible approach to designing office lighting schemes.

Office tasks were changing, he said, and each worker was expected to do a variety of jobs, often including using a VDT. In addition, after 1991 there would be less entrants to the job market so a better environment would be needed to attract staff.

He identified three design elements: lighting to perform a specific task, lighting to create a comfortable environment, and effect lighting for a prestigious image.

To illustrate this approach, Mr Simpson suggested a scheme for a senior manager's office. There would be lighting over the desk, additional lighting over a conference table and wall washing. The notice board would have highlighting, and accent lighting of pictures or other features would be provided by spotlighting for "image" purposes.

With modern design techniques and control systems, the lighting designer was well set to match the lighting needs of the user in the 1990s.

Looking at equipment

P W Smith, independent lighting consultant, discussed air handling luminaires. Today's compact lamps meant that luminaires were smaller and that made thermal problems more difficult, the speaker said. Some of the advantages of using air handling luminaires were savings in air conditioning, cooling of lamps and extended gear life.

Although the concept of air handling luminaires was well known, an understanding of the design, precautions required, limitations and potential were not widely appreciated.

Mr Smith said there was confusion in the minds of many lighting engineers and air conditioning engineers.

His analysis of the situation included a reference to problems of overcooling 26mm diameter fluorescent lamps, with a subsequent drop in light output, and the complexities associated with PL type compact fluorescent lamps

which have cool spots in different places according to manufacturer and electrical loading.

Lighting and air conditioning engineers must co-operate, said Mr Smith, and he suggested that the CIBSE should set up a panel to help with air handling problems.

In the discussion on this paper, several delegates spoke in favour of the suggested panel.

Lighting Communique '90 was a review of recent developments in lamps and luminaires, together with a look at some outstanding lighting installations.

Brian Morgan, Luxonic Lighting Ltd, spoke on lamps, including further variations of compact fluorescent types, linear fluorescent lamps with improved colour rendering and additional low voltage tungsten halogen lamps from several manufacturers for display work.

He commented on the important development of front glasses for low voltage tungsten halogen light sources.

Higher output high pressure sodium lamps were mentioned and developments in metal halide, while on the domestic scene, HalogenA mains voltage tungsten halogen lamps were available.

Barbara Trigg, *Lighting Equipment News*, reviewed interesting and innovative luminaires such as uplights for offices, new designs of emergency lighting, including the use of fibre optics, and two self-testing emergency systems.

In the retail field, a number of low voltage bare wire and rod systems were shown and also spotlights using White SON or metal halide lamps.

Domestic fittings ranged from bathroom lights, through unusual table lamps, pendants and wall lights, to a talking nursery light.

As well as outdoor lighting, theatre, TV, disco and rock concert lighting was reviewed.

Iain Maclean, Thorn Lighting Ltd, for his review of outstanding lighting installations concentrated mainly on award winners in national and European lighting competitions.

The selection included BP Oil's new headquarters, Courage Brewery, several upgraded shopping centres, street lighting at La Rochelle, Blackpool illuminations, Tottenham Hotspur football stadium and, as a grand finale, the disco lighting for the launch of Ford's Fiesta car.

The last day of the conference will be reported in next month's *LEN*.

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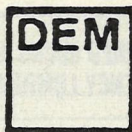


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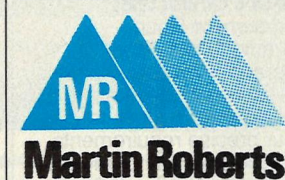
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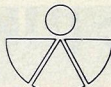
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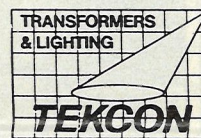
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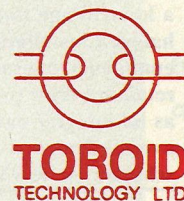
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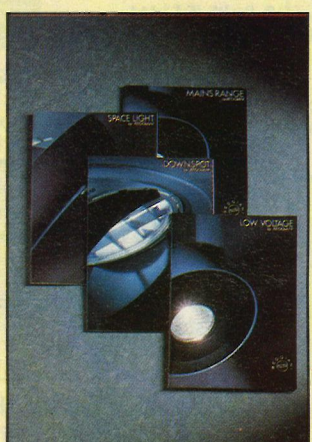
Please reply to Box No.1477, Lighting Equipment News, Maclean Hunter Ltd, Maclean Hunter House, Chalk Lane, Cockfosters Road, Barnet, Herts EN4 0BU

CATALOGUE DIRECTORY

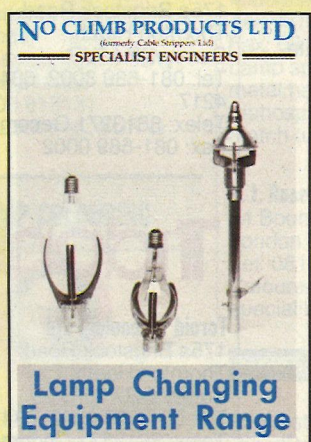
Connect manufacture a comprehensive range of uplighters that use low energy high performance light sources. Free standing, wall mounted, pendant or partition mounted units are available. Wattages range from 13W to 250W and there is a choice of colour temperature from 2500K to 4200K: circle 90



Channel Safety Systems Limited: The LASER PACK Low Voltage Conversion Kit presents the opportunity to convert selected luminaires in a low-voltage tungsten halogen installation to emergency operation, whilst retaining their primary role as an integral part of the overall designed lighting scheme: circle 91



Reggiani UK introduce four new catalogues: Down Spot: recessed luminaires adjustable to 60 degrees. Low Voltage: adjustable, fixed, ventilated downlighters, spotlights, track systems. Space Light: ambient/accent uplighters for large areas. Mains Range: downlighters, eyeball and semi-recessed luminaires: circle 92



No Climb Products produce a range of lamp changing equipment comprising a series of inter-connecting insulated poles with three-fingered grabs for changing any lamps up to 30 feet high. The apparatus saves time and expense, avoiding the cost and disruption of having to hire/buy and set up scaffolding or platforms: circle 93

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RONALD D _ _ Y

Canadian culture on display

Canada's arts and customs are featured in the new \$300 million Museum of Culture, located in Ottawa. In particular, an Arts and Traditions Hall, over 3300m² in area, highlights multicultural aspects of Canadian life and history.

Large displays demanded a dramatic lighting solution, and one capable of interesting with AV equipment and the central computer control system of the building. Theatrical luminaires were judged to offer the precision and control need for display work, and Strand Lighting were approached to help the exhibition designer

evolve a series of static and moving displays.

Some of the exhibits are so light sensitive that they needed precise levels of lighting to prevent further deterioration. So, it was decided that these objects could only be illuminated when someone was actually standing in front of the exhibit.

The solution came with Strand's Lightboard M and CD80 24 x 1.2kW dimmer packs. The packs were installed directly into the exhibits themselves, connected via multiplex control lines to the various control consoles.

Three Lightboard M consoles



Chinese exhibits in the Arts and Traditions Hall at the Museum of Culture.

and 13 CD80 dimmer packs (312 dimmers) were needed to manage the project. All the consoles were tied to the building computer-system via the function key inputs. Function key commands were written to start the exhibits at the beginning of each day and go to a night setting at the end of the day. Additionally, many other cues were written to provide fixed and cycling lighting effects throughout the exhibit space.

For the exhibits which could only be illuminated when someone was actually present at the display, a special motion detector and timer circuit was designed and developed by Servispec inputs of the Lightboard M consoles. Whenever an observer is 'sensed' standing in front of the exhibit, the display lighting cues on and the submaster fades up.



Shopping the light way

Clayton Square Shopping Centre, in central Liverpool, is formed by two shopping malls, which meet in a domed glass central point. The large area of glass in the architectural design means lighting plays a key role — but also poses problems of reflection and glare.

When developers Wimpey appointed Maurice Brill Associates to create a suitable lighting scheme, the lighting designers took into consideration the effect of natural light both in terms of variance with season of year and the more obvious daytime variations — and used this to its fullest potential.

A combination of discharge sources, HQ-1 and white SON, and carefully spaced low voltage downlighters provide an effective level of light while preserving the dramatic effect of the glass roof.

Given the need to draw potential customers into the malls, the entrances were also given a strong visual impact.

The key to a project of this type is the importance of highlighting the merchandise in each shop unit, while retaining continuity through the circulation areas — so the scheme had to provide a careful combination of the dramatic and functional.

Safer than safe

An outstanding safety record achieved by Strand Lighting at its Kirkcaldy, Fife, factory is likely to go unnoticed — simply because there have been no accidents!

In past years the company has entered safety awards competitions organised by local authorities, the British Safety Council and ROSPA and has carried off many major trophies.

But more recently, Strand has

achieved a zero accident rating — and while that is exactly what the company set out to achieve, it means they cannot enter any more safety competitions.

As safety and security officer, David Swinton, explained, "Our problem is that once you have got to the happy stage of having no accidents, you set yourself a record which you cannot possibly better. It is a strange fact that to win a safety award you have to have had some accidents because only then can you improve the situation."

Trade Literature in Brief

● **Accent Lighting Ltd** has produced a catalogue of its low voltage downlights and a 1990 price-list (telephone 0933 460344).

● **Superswitch Electric Appliances Ltd** has a 1990 catalogue of home security, control and safety products (telephone 061-431 4885).

● **Illuma Lighting Ltd** details downlights for a wide variety of lamps, including GLS, compact fluorescent, HID and LV tungsten halogen, in an illustrated brochure

(telephone 0895 72275).

● **Candela Ltd** has a brochure on its low voltage spotlights and downlights (telephone 071-720 4480).

● **Bradley Lomas Elektrok Ltd** has published a short form catalogue/price list of its emergency lighting and fire alarm products (telephone 0246 260789).

● **Smiths Industries Environmental Controls Co Ltd** gives information on its time controls, security lights and safety devices in a consumer products catalogue (telephone 071-450 8944).

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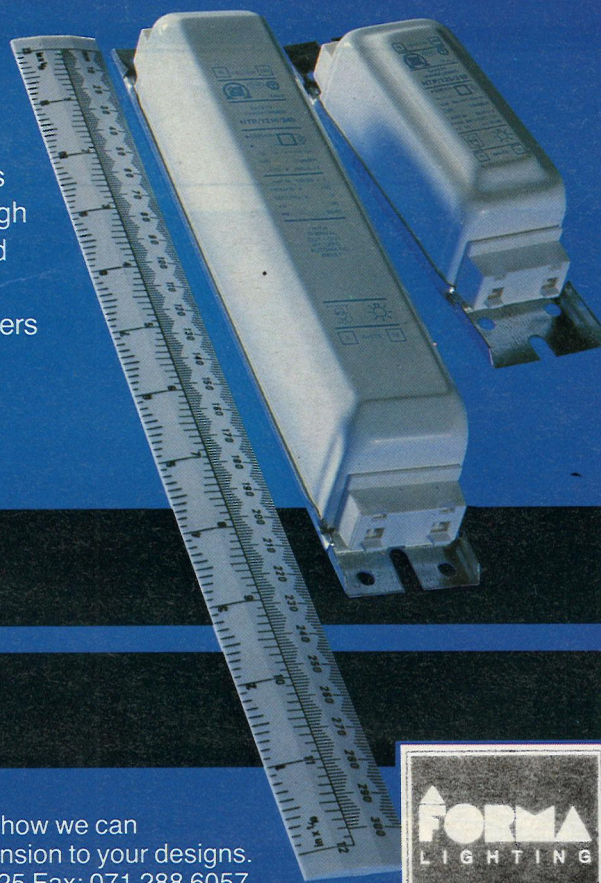
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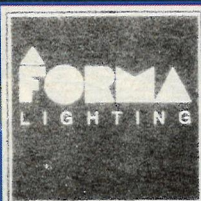
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Please send more information on Strand architectural lighting systems.

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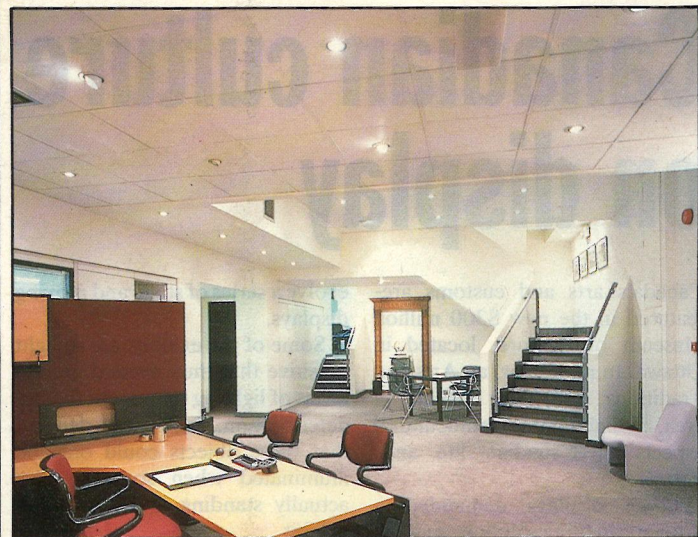
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LEN/5/90

LIGHTING EQUIPMENT NEWS



Furniture in a single light

A single luminaire type has been specified to provide a variety of lighting tasks, ambient lighting, accent and spot highlighting, throughout the new Castelli office furniture showrooms in London's Regent Street.

The showroom interior, which reflects the company's international corporate identity, has been planned by Castelli's own team in Italy in co-operation with a British group of designers.

It has been planned as a gallery where desks, chairs and office stations can be displayed almost as art-forms against a specious and neutral background of charcoal and white. This theatrical approach called for a general level of illumination supplemented by spot downlighting on the desk surfaces and accent lighting to focus

attention on the latest launches. Wall washers illuminate the graphics at ground floor level and the range of chairs lining the walls at basement level.

The Castelli logo is illuminated at an angle to throw it into sharp relief. Reggiani Down Spot Luminaires have been placed in linear and rectangular configurations in the dropped ceilings at both gallery levels, and each luminaire may be used either as a fully recessed luminaire or as a directional spotlight.

The flexibility of this luminaire means that lighting can be changed in line with the monthly change in ground floor displays and is also able to cater for the occasional sponsored travelling exhibition of Italian art which Castelli plans to circulate worldwide.

Marlin introduces design aid

Marlin Lighting will give many architects, engineers and lighting practices sophisticated software free of charge. Many leading consultancies using existing computer hardware will be able to use MARCALD (Marlin Computer Aided Lighting Design) which comes on floppy disk format.

Special features include the ability to orientate each individual light fitting and to calculate the effect of wall reflectances and show shading diagrams of the overall effect of lighting in the room. The name of the consultancy will be incorporated in the package and shown on each print-out.

The CAP system is a version of Marlin's in-house lighting design software, developed in 1987 for use on its Hewlett Packard computer. Marlin will continue to offer a lighting design service, but the new PC version allows selected specifiers to have the main benefits permanently at their fingertips.

The system works simply by entering the dimensions of the room into the computer, along

with the position of all light sources. The computer then calculates areas of the same light or lux levels and these can be printed out as isolux diagrams. These show areas where the light levels are too intense or not strong enough and calculates the average.

MARCALD enables the designer to change the type or position of the luminaires in order to achieve the required light levels. New lay-outs can then be printed confirming the suitability of the changed lighting scheme. Data can be printed out on laser printer or dot matrix.

IN YOUR NEXT ISSUE

The lighting of sports buildings, arenas and stadia of all types is the theme of the June issue. The football stadia completed for the 1990 World Cup form a series of case studies, and we also hope to

bring you a progress report on Britain's largest sports development taking place in Sheffield.

A final feature reviews lighting trends at the Hanover Fair.