

LIGHTING

EQUIPMENT NEWS

DECEMBER 1991

In brief...

- **Precision Lighting Ltd** has been formed as from 1 January to assume responsibility from Interlux for designing and making luminaires. The company is based at Unit 4, Brook Street Business Park, Tipton, West Midlands.
- **Parkersell** has added a louvre reconditioning service to its range of maintenance programmes.
- **GT Lighting** has been acquired by the company's former senior management. It is continuing to make the same range of emergency lighting from the same head office address. An extensive capital investment programme has been instigated.
- **Glow Ball Lighting's** correct address is 20 Woodbine Place, Wanstead, London E11 2RH, and not as printed recently in the *LEN* Where to Buy Directory.
- **Electrosonic** is opening an office in Los Angeles to deal with leisure projects in North America and the Pacific rim.
- **Luff Light and Sound** has been rescued from receivership by a team of current and former employees now headed by John Ball as chairman. The company will continue to service theatres, hotels, offices, schools, etc.
- **Atrium** has reached agreement with Kreon, Belgium, to handle its range of modern luminaires, called Tools for Light, in the UK.

New ElectroTech award

A special advertising and marketing award will be made at next year's ElectroTech exhibition to the exhibitor who has created the most effective promotion to attract visitors to the show. This will be presented by Reed Business Publishing Group's Power journals.

The judges will be looking for the most imaginative promotion supporting the organiser's campaign and which makes best use of the budget to bring visitors to their stand at the show – the quality of the promotion will be the criteria, not the budget size.

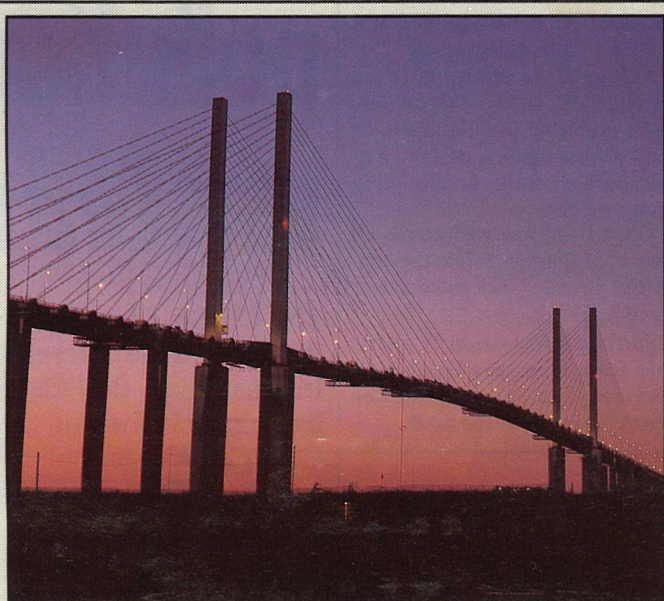
UK relaunch of Fael Lighting

External floodlighting by Fael-Luce is now being relaunched in the UK through a new distributorship, Fael-Luce Ltd of Great Missenden, Bucks.

During the coming months new equipment will be introduced. The range covers floodlighting for domestic gardens, sports grounds, car parks, shopping centres, and industry.

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London's latest river crossing, the recently opened Dartford Bridge, is lit by a total of 193 fittings on 12m tapered tubular steel columns mounted on platforms placed outside the railings of the bridge. The installation, designed, manufactured and installed by CU Phosco, comprises P220/4 LTI lanterns equipped with Sealane baffles to conceal the light sources from passing river traffic. The lanterns utilise 250W SON/T lamps. Main contractor on this construction project was Trafalgar House.



Showroom and office space designed for clothes wholesaler Nicole Farhi has just won Din Associates the National Association of Shopfitters 1991 Design Prize. Located just off Oxford Street, the showroom is an unexpected oasis of light. Daylight pours in through the pitched roof giving the space a light airy feel.

Drama for modelling clothes is provided by the Erco TM Spot, 24V 100W, working from track that runs either side of this elegant space.

Where a spread of light is required the Erco TM is used but this time with HIT lamps. For added effect colour filters can be attached to the fittings.

Proposals on work equipment safety

The Health and Safety Commission has just published a consultative document containing proposals for regulations to implement the European Directive on the provision and use of work equipment.

The aim of the proposals is to form a list of key health and safety requirements concerning the provision and use of work equipment. They are intended to be simple enough for employers to follow and understand, but detailed and specific enough to make it clear what is expected of them.

Most of these regulations can be related to health and safety legislation in this country; but in

most cases the legislation has not previously extended to the whole range of industries and service occupations.

The proposals, which are intended to remove this anomaly, replace many existing laws, particularly on machinery guarding, and repeals legislation which goes back as far as 1905.

General provisions will place duties on employers to ensure that:

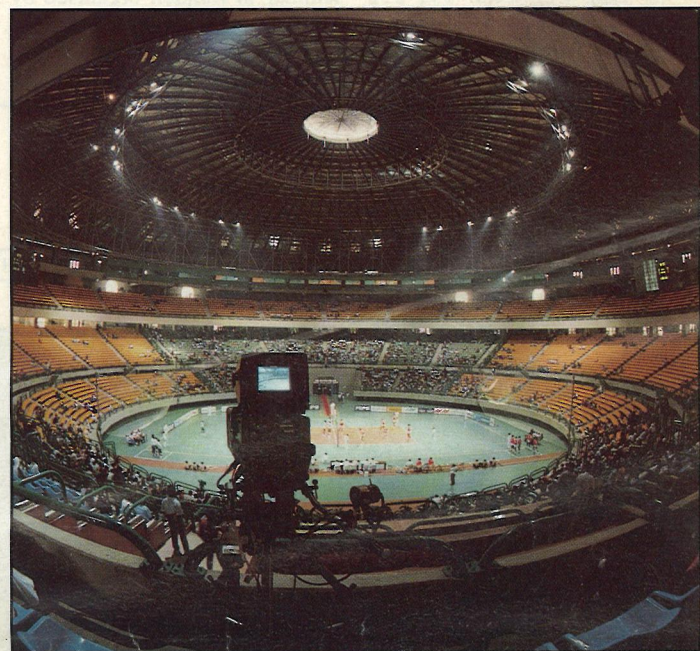
- in selecting work equipment, account is taken of working conditions and hazards in the premises and any additional hazards posed by the use of the work equipment;
- work equipment is suitable

Lighting the dark continent

Athletes from forty-six countries met in Cairo this autumn for the fifth All-African Games. Centre point of this event was the enormous Cairo Stadium holding over 100 000 spectators, and the indoor sports complex which comprises four sports halls.

The stadium, built in 1960 to a design by German architect Werner March, was the setting for both opening and closing ceremonies and housed the football and athletics competitions. This building was lit at the end of the 1970s with a floodlighting installation based on HPI-T 2kW metal halide lamps. When it came to upgrading the lighting to meet current colour television broadcasting requirements Philips was awarded the contract. Using Arenavision fittings on existing masts, it was possible to provide a maintained vertical illuminance of more than 1000 lux in the direction of the main camera. Switching provides for lower lighting levels for training (250 lux) and non-broadcast competitions (500 lux).

The indoor sports complex with a total area of 70 000 sq m – equivalent to the area of ten foot-



ball pitches – was designed and built in just two years. It houses four circular sports halls, including the central hall with a capacity of 20 000 spectators. This has also been equipped with an Arenavision floodlighting system, giving maintained lighting levels for colour TV of around 2000 lux for

sports such as basketball and wrestling.

The main floodlighting system and halogen emergency floodlights were installed on concentric catwalks within the roof dome. This is the first time this floodlighting system has been used in an indoor sports complex.

In brief...

- **Poselco** has received its BS5750: Part 2 certificate as a registered firm for the manufacture of luminaires.
- **WF Electrical Distributors** branches at Park Royal and Dagenham, including the Dagenham distribution centre, have achieved registration to BS5750 Part 2.
- **Bradley Lomas Electrolok** has now received its BS5750 Part 2 certificate.
- **Litetask** has won a contract to supply some 200 000 replacement

lamps for Tesco's 160 northern and Scottish stores.

● **CSM Lighting** has reached an agreement with Metamec Clocks and Lighting to handle marketing, sales and distribution nationwide

for Metamec.

● **Emess** interim report for the half year to 30 June shows a trading profit before tax of £1.3 million compared with £6 million for the same period in 1990.

Season's Greetings

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HELVAR

QUALITY ALWAYS SHINES THROUGH

Reader Service No. 1

DIARY

DECEMBER

2 All the visual world is but a stage. The Waldram lecture 1991, at the National Museum of Photography, Film and TV, Bradford. Afternoon event arranged jointly by the ILE and CIBSE. Details from ILE, 0788 576492.

3 Effect of the intelligent controller on building services engineering. Evening meeting at Brentwood held by London and south east region of CIBSE. Details from Andrew Wincott, 071-387 9671.
Lighting for the electronic age. Evening meeting in Newcastle upon Tyne organised by north east region of CIBSE. Details from Alan Embleton 091-232 8520.
Exterior lighting design practice. One-day seminar in

Birmingham organised by Mid Career College. Details from 0223 880016.

9 Lighting basics 3: lighting design calculations. One-day seminar in London organised by Mid Career College. Details from 0223 880016.

Best of Belfast. Floodlighting tour organised by Northern Ireland region of CIBSE. Details from Jim Patton 0232 732121.

10 3D imaging-holograms: the state of the art. Technical evening and social event in London arranged by CIBSE. Details from Karl Pike, 081-675 5211.

11 Harnessing daylight. One-day seminar in London organised by Mid Career College, 0223 880016.
Lighting in the Don Valley Stadium. Evening meeting in Sheffield,

arranged jointly by CIBSE Yorkshire region and IEE. Details from A M Simpson, 35 Devonshire Way, Harrogate HG1 4BH.

Periodic inspection and testing of electrical installations. Intensive one-day training course in London arranged by IEEIE. For details contact 071-836 3357.

JANUARY

9-14 Salon du Luminaire, Paris. Details from Promosalons 071-221 3660.

14 Visual and aesthetic appreciation. Evening meeting in Nottingham organised by East Midlands region of CIBSE. Details from J G Bettison, 0629 580000

16-17 Interior lighting design. Two-day course in London held by the

Institute of Environmental Engineering, South Bank Polytechnic. Details from the Director of the Centre, 071-928 8989.

Focus will be on Hong Kong in May

From 6-9 May Hong Kong is set to become the focus of activity for specifiers and buyers involved in Asia's lighting industry.

A four-day exhibition called Luminex 92, a two-day conference and the presentation of awards for a lighting design competition are said to be attracting strong support.

The exhibition will cover all aspects of lighting, while the conference is called *The science and art of light*.

Further information is available from Overseas Exhibition Services Ltd, 11 Manchester Square, London W1M 5AB.



The Chartered Institution of Building Services Engineers

Lighting pollution – a wasted resource

The CIBSE Lighting Division is very supportive of the work done internationally by the Commission Internationale de l'Eclairage (CIE), and in the UK by its member organisation the National Illumination Committee. Last month, the Building Services Engineering Centre in Balham hosted the annual NIC seminar entitled *Green Highlights, some environmental aspects of lighting*. The following is a resume of one of the papers given, it deals with light pollution.

The problems of pollution affect everyone and its reduction in all its forms is now firmly on the political agenda for both national and international governments.

Obtrusive Light is the title the CIE has given to a committee in Division 5, that held its inaugural meeting in Melbourne this year together with an open workshop.

The type of problems created by obtrusive light differ from country to country. For example, Australians seem to have major problems with their neighbours' floodlit tennis courts which has spurred them on to produce a draft standard on the subject. Such actions focus on the needs of the lighting profession to be able to define the relevant light technical parameters together with their limiting values, that all interested parties, especially planning authorities, can utilise.

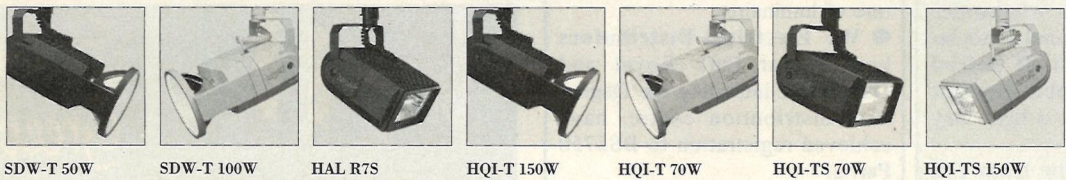
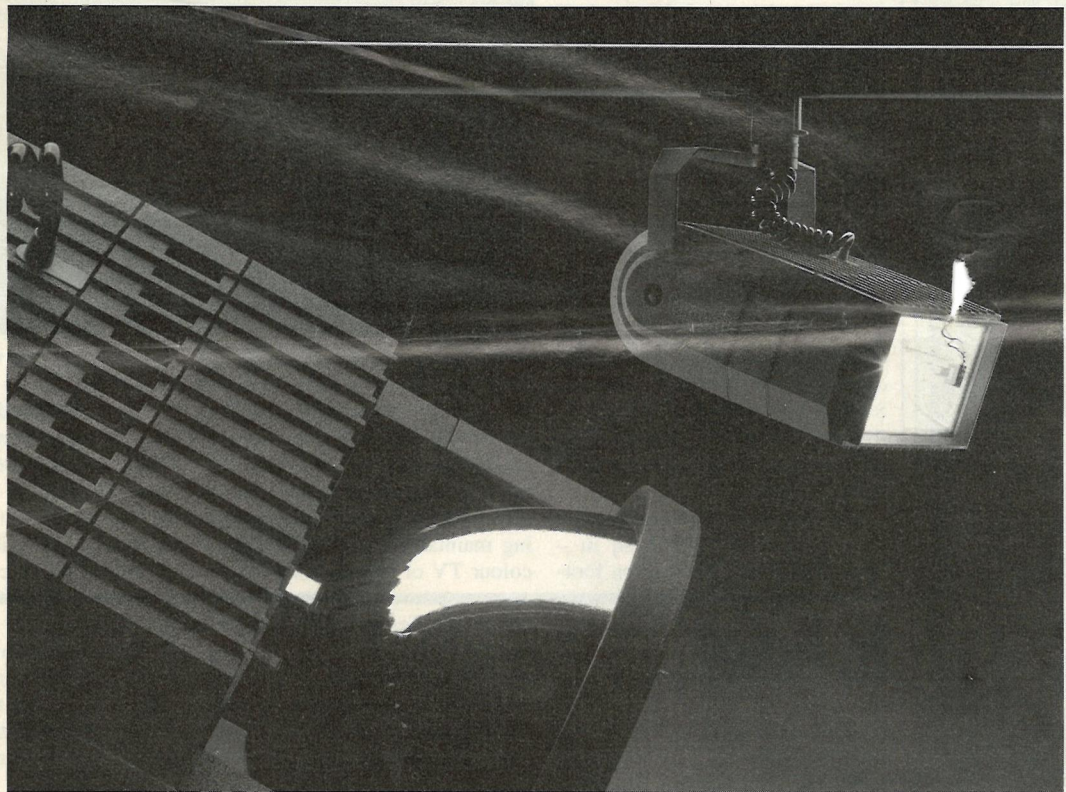
In the UK the only legal document involving such matters is the Town and Country Planning Act. This refers to the brightness of illuminated advertising signs, with limiting values of luminance taken from the Institution of Lighting Engineers' technical report No. 5. The use of luminance as a light technical parameter, is one of the most obvious. Others suggested are vertical illuminance, intensity and threshold increment. The use of all these can play a major part in preventing obtrusive light problems, initially by suggesting limiting values in specific directions to be met at the design stage. A further point for lighting engineers to remember is that obtrusive light is also very often wasted light. Light that should not necessarily be screened, but perhaps re-directed to where it can be useful.

The concern being voiced by international astronomers in their campaign for 'dark skies' can also be used to help the lighting profession. Their ability in attracting media attention in the matter of stray light as a major source of sky glow and, thereby, a form of environmental pollution, can only help to underline the fact that too many lighting installations are of a poor design and, therefore, probably installed by non-lighting engineers.

In this context, astronomers, the lighting profession and those members of the general public with a particular concern, would all agree that obtrusive light is a problem. It is a form of light pollution and is generally the result of poor design and in these energy-conscious times is also a wasted resource. It is one of those rare cases where we already have many of the lighting solutions to hand, but perhaps don't utilise them enough.

Nigel Pollard, IEng, ACIBSE, MILE

FORM AND PERFORMANCE



Targetti, the creator of the internationally renowned Structura spaceframe has adopted for this particular system a new luminaire known as RAY. RAY, a complete and versatile range of luminaires from Targetti, applies the most recent developments in discharge lamp technology, offering the lighting designer a wide variety of beam spreads, lighting intensity and colour temperatures. Solid diecast aluminium housing and glare-free high vacuum metalised reflectors characterise RAY. A disconnect system at the end of lamp life, low operational temperatures and a very high degree of protection (IP41 and IP54) are only some of the advanced technical solutions which have allowed RAY to meet all European Safety Standards. Ray provides ideal lighting for public spaces, commercial areas, stores, offices and museums. RAY fittings can be surface mounted, adapted to track or to Targetti's Structura system.

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NEWS

Energy update

Global warming is one of the greatest environmental challenges facing the world; and energy efficiency is one of the quickest and most cost-effective ways to reduce its threat.

One of the initiatives announced in last year's government White Paper on the environment, 'This Common Inheritance', was the establishment of a new ministerial group, to raise the profile of energy efficiency by working with government departments, local authorities, and organisations representing energy users in all sectors of the economy to stimulate improvements.

At its first meeting in October 1990, the Group decided that, wherever practical, energy efficiency should feature in each department's policy, publicity and management initiatives. It also set itself three key objectives:

- to promote awareness and raise the profile of energy efficiency;
- to encourage an energy efficient lifestyle in the home, at work and in travel; and
- to set an example in Government through the development of policy initiatives and by taking forward the energy efficiency campaign on the government estate.

John Wakeham chaired the group, which is made up of ministerial representatives from all government departments, over the past year. The Group's recently published annual report details the initiatives it has taken. These include:

- the Energy Efficiency Office's winter publicity campaign aimed at home movers and improvers featuring the slogan It pays to be energy friendly;
- the EEO's Home Energy Efficiency Scheme which provides grants for draughtproofing and insulation for low-income households;
- the Department of the Environment's Energy Efficiency 'Green House' Programme which provides additional resources to local authorities towards projects to improve the energy efficiency of local authority housing;
- the Department of Trade and Industry's Environment Roadshows, which informed business people about the environmental pressures and problems facing them, and the advantages offered by energy efficiency; and
- the Department of Transport's expansion of the MOT test which will lead to improvements in vehicle engine tuning and emissions.

In addition the Group has endorsed further actions to be taken in the coming months:

- a publicity campaign, 'Making a Corporate Commitment' launched on 16 October, which aims at encouraging the top management of our major companies to give a high priority to energy efficiency;

□ a major joint publicity campaign by the Department of the Environment and the Energy Efficiency Office to explain to householders that the use of energy is one of the biggest single causes of global warming, and to encourage them to take up energy efficiency measures which will not only help combat acid rain and global warming, but benefit them financially;

□ the launch later this year, with the regional electricity companies, of an appliance labelling scheme which will give consumers easy-to-understand energy efficiency information about the fridges and freezers on display in the electricity companies' 1400 showrooms. This scheme considerably precedes the anticipated EC Directive on labelling.

The Ministerial Group was charged with promoting the energy efficiency message because the government felt there were barriers which hampered the take-up of energy efficiency measures in the market, and that these needed to be broken down.

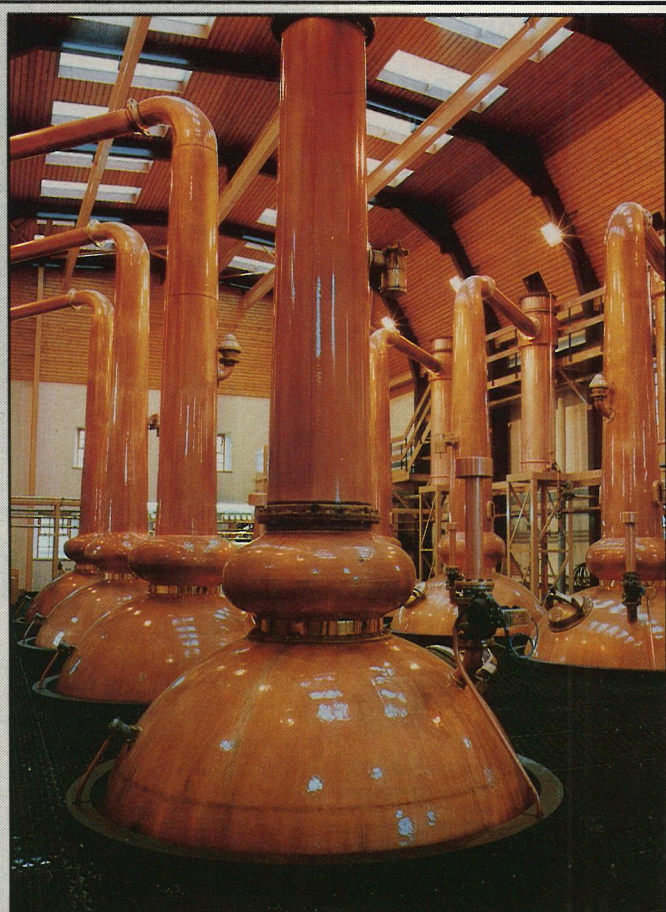
The reason for this is that energy efficiency products tend to be slow to penetrate their market. Loft and tank insulation, for instance, took 30 years to reach 90% of UK homes. Newer technologies such as condensing boilers and low energy lights, have barely scratched the surface of their potential markets. Analysis by the Energy Technology Support Unit has shown that energy efficiency measures could produce a 20% reduction in the energy bill of industry by the year 2000, and similar savings appear possible in the domestic, commercial and public sectors.

Barriers

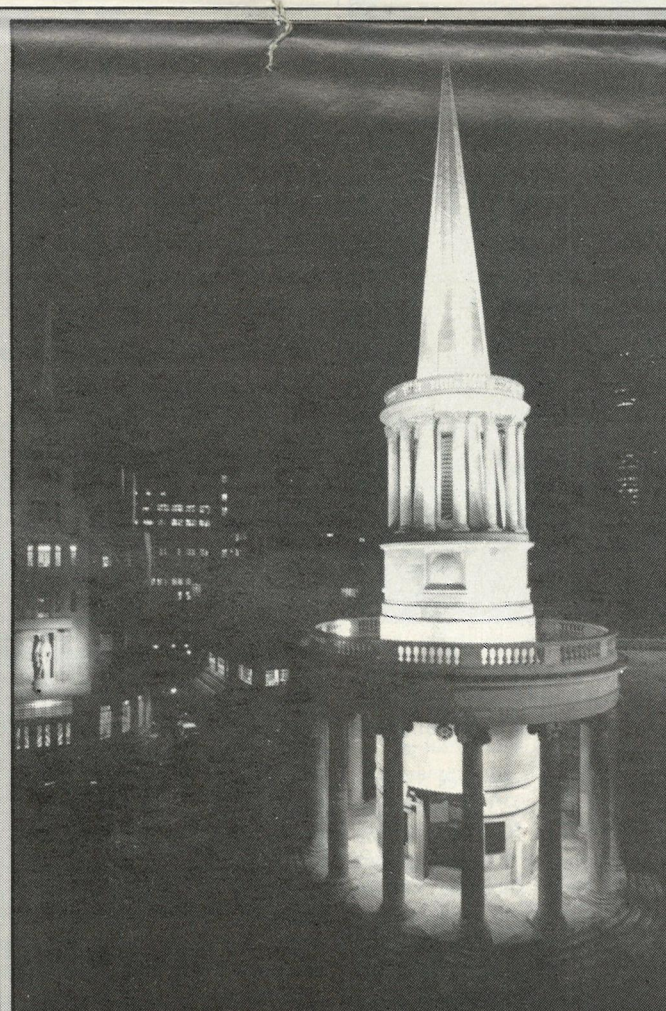
Government research has identified three main barriers to the efficient operation of the energy efficiency market. Market distortions are caused by the fact that energy prices do not reflect environmental costs and that VAT is levied on energy efficiency measures but not on domestic energy supplies. There is also a lack of impartial information about energy efficiency for householders and small businesses.

Finally, individuals and businesses tend to give energy efficiency measures a very low priority and expect very fast returns from their investment. This is particularly true of smaller businesses and people on low incomes.

The programmes developed by the Ministerial Group are primarily designed to tackle the information and investment priority barriers. Market distortions, the government feels, are best tackled on an international scale. Raising energy prices to reflect environmental costs, for instance, would encourage consumers to use energy more efficiently, but would put UK energy-intensive industries at a disadvantage unless competitor countries were prepared to take similar action.



A new lighting scheme graces the Glenmorangie distillery in Tain, Ross-shire, where the world famous malt whisky is produced on the shores of the Dornoch Firth. The golden colour of SON lamps enhances the appearance of the copper stills in the still house, an area which receives many visitors every year. The installation comprises 12 hazardous area (zone 2) floodlights from Thorn, which incorporate 250W high pressure sodium lamps. The lamps were chosen because of their suitability for the hazardous environment of the still room and because of their ease of maintenance. They give an average illuminance of 300 lux.



All Souls Church, in London's Langham Place has a new floodlighting scheme which both shows off the cream stone of the John Nash building to advantage and is more energy efficient than the previous installation.

The £14 000 project begun in September 1991, involved the installation of 24 metal halide fittings by LDMS Lighting. Eighteen metal halide fittings with 150W lamps are positioned on the church spire, clock tower, portico and back roof. Six 250W metal halide lights are positioned on buildings facing All Souls - four on the BBC's Henry Wood House and two on balconies of the Langham Hotel. The previous scheme comprised 500W and 1kW tungsten halogen lamps.

The project was sponsored by the Westminster Initiative, a drive by Westminster City Council to improve and protect the local environment in partnership with local residents, businesses and amenity groups.

COMMENT

Why make do and mend?

In this country we are sometimes too prepared to adapt what we have rather than to go back to first principles when looking at a problem. As a result, the final solution can be too much of a compromise and, hence, prove unsatisfactory. Yet, at the same time, it ends up by costing more than a satisfactory solution arising out of a radical rethink.

This approach has been particularly evident in the field of workplace - or, more particularly, office - lighting. Now office practice has changed radically in the past few years. Once relatively uncommon, the VDU is today at the heart of office information processing.

So what happens when this machine is introduced for use by the majority of clerical workers? Those charged with the running of the building - if they take a responsible attitude towards their employees, or are aware of such things as European directives - invest in lighting of an appropriate category and then wonder why their staff still complain of headaches or eyestrain and find the working conditions far from ideal. After all, they've done all that could be asked of them, haven't they? In the main this is passed off as the fact that some staff just find it difficult to adapt to the new realities.

In fact, what is necessary is to reconsider the whole distribution of the light. A competent overview of the installation provided by an independent professional can yield dividends in terms of a cost effective and user friendly system - one that will boost staff comfort and, hence, improve their efficiency. By his services he can save the manager his professional fees in the cost of the system.

But in the UK this is hardly ever done, with the exception of new-build work. There seems to be some feeling that it's all right to spend money on hardware - that is to say, on something that is tangible - but that expert advice is an unnecessary, almost an immoral luxury.

Perhaps employers should really be asking themselves whether they can afford to risk losing their employees' goodwill and putting their eyesight in jeopardy for a one-off cost rather lower than the sums they annually pay their accountants or auditors for services whose necessity they never think of questioning.

This would seem to be a very positive approach for the professional institutions representing lighting designers, engineers and independent consultants to adopt - not can you afford us, but rather can you afford not to use our services?

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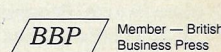
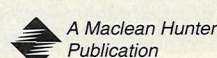
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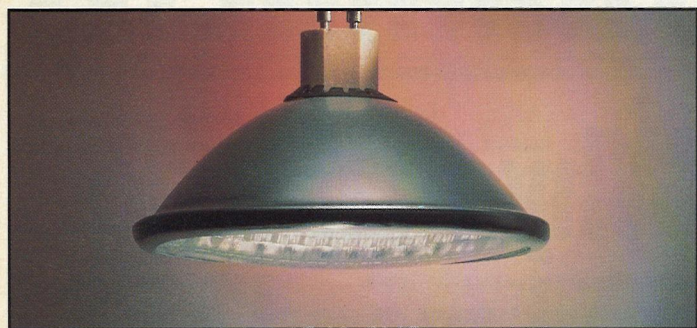
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NEW PRODUCTS



Larger, LV twist-and-lock lamp

GE Thorn Lamps is introducing a high output, Twist and Lock 100mm diameter sealed metal reflector lamp.

The 12V TAL100 has been developed to meet the growing demand for accent lighting used in conjunction with high levels of ambient light from high intensity discharge light sources, such as mercury lamps.

The twist-and-lock movement

allows the lamp to be inserted into a GL1252 lampholder by a simple action that makes installation quick and easy.

Although it is twice the diameter of 50mm low voltage dichroic mirror lamps, the product is stated to be thermally and electrically compatible with the 50W 50mm versions. This allows luminaires to be designed for use with either TAL100 or TAL50 lamps.

There is a range of wattages and beam angles and a high lumen output is claimed.

Reader Service No 157

Fluorescent range with choice of reflectors

Zumtobel's recently launched Miral series of fluorescent luminaires is stated to incorporate the latest developments in photometric engineering, making it suitable for a wide range of applications. It introduces bivergent reflector technology.

The flange acts as a light trap, with the louvre cross blades and end diaphragm ensuring a rigid and durable construction.

There is a choice of five interchangeable reflectors and the luminaires, which can be either surface mounted or suspended, can also be mounted as a continuous system.

High frequency electronic, conventional low loss, or economy ballasts are available.

Reader Service No 158



Lantern for QL lamp

Solaris lantern from Urbis features the Philips' QL induction lamp in a luminaire designed to be totally sealed for life.

The optical unit has been designed specially for this 85W lamp, allowing the whole unit, complete with external electronic control gear, to be discarded and replaced on lamp expiry.

Rated lamp life of 60 000 hours is equivalent to 13 years' night-time use. The only maintenance

required during that time is external cleaning, which is minimised by the wide "brim" of the design.

With its low light depreciation and economy of operation this lamp and lantern combination is ideal for long burning hours, making it particularly suitable for inaccessible places and locations where reliability is particularly important.

Reader Service No 161

Versatile spotlight has dimmer

Solartron low voltage spotlight from Staff Lighting is a compact luminaire for display and accent lighting. The transformer is in a separate housing beside the luminaire; the combined unit is small enough to fit in the hand.

Solartron uses either dichroic reflector lamps, or tungsten halogen capsule lamps.

The diecast aluminium housing is ribbed to provide a heat sink which assists in maintaining the



temperature of the transformer at 40°C or below.

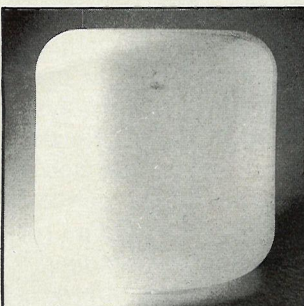
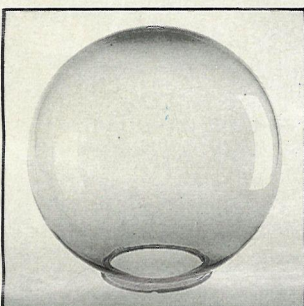
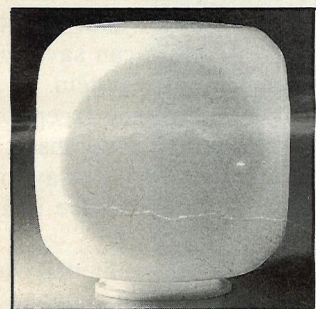
A dimmer is built into the transformer. Versatility can be increased by the addition of front retaining supports for a honeycomb louvre, coloured filters, or infra-red or ultra-violet reducing filters.

Reader Service No 166

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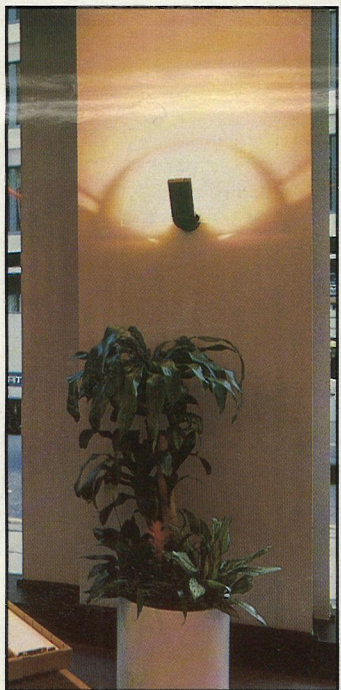
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Reader Service No. 3

Wall light with glass diffuser

An Italian-designed wall light, which projects light onto a large semi-circular glass diffuser, has been introduced by Crescent Lighting.

The Bilumen Diadema luminaire is a sculpted metal and glass uplight with a 300W double-ended tungsten halogen lamp. The lampholder can be



adjusted to allow light to be thrown at various angles onto the etched and tempered glass diffuser, producing softly diffused upward lighting.

The diffuser measures 580mm in width and is 320mm high. Metallic grey or black is the basic colour, or a second colour can be added - shocking pink on the circular metal clasp which attaches lampholder to glass.

Reader Service No. 159

Lamp is softer than pearl

Soft White is a GLS lamp from GE Thorn, launched under the Mazda banner.

It is available in 40W, 60W and 100W ratings with a BC cap. The lamp sheds a softer, more soothing light than a pearl lamp, with little loss of light output, says the company.

Soft White GLS is intended for the domestic market and priced about 5p more than pearl lamps.

Reader Service No 160

Electronic HF control gear

Two types of fully electronic, high frequency control gear designed for the optimal operation of conventional fluorescent tubes have been introduced by Osram.

Quicktronic Economic incorporates soft start for lamps, gives flicker-free light and is silent in operation. It is available in single and twin lamp versions for ratings from 18W to 70W.

Savings of up to 21% in energy costs are claimed. Automatic shutdown of defective lamps, improved lumen maintenance, and longer lamp life, are other benefits.

Reader Service No 162

Emergency lighting becomes decorative

Chloride Bardic has extended its range of emergency lighting and is offering selected models with a

decorative brass finish.

The new luminaires, called the Architech range, are available in a choice of styles, including models suitable for reception rooms, where decor is important.

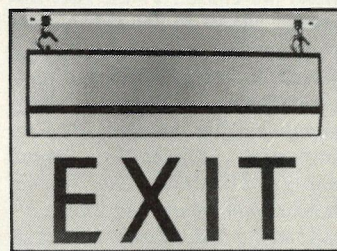
There are versions for self-contained, mains, or central battery operation.

Reader Service No. 163

Hanging emergency exit sign

Ring Electronics has added a hanging exit sign to its Flashpoint range of emergency lighting. It is designed for applications where appearance is important, such as hotels and restaurants.

It uses an 8W linear fluorescent lamp and is available in



maintained, non-maintained and matching mains-only versions. Metalwork is either polished brass or polished chromium plate with the legend on a plastic panel

Reader Service No 164

Security switch bridges a gap

Dusk Switch is a new type of security switch from Danlers. It incorporates both a photocell and a timer.

The switch turns lights on at dusk at an ambient lighting level which is adjustable between 10 and 150 lux. Lights remain on for 30 minutes to eight hours (again

adjustable) and the pattern repeats every day.

Any type of load up to six circuit amps may be controlled and surge protection is built-in. The vandal resistant polycarbonate housing is ingress protection rated IP54.

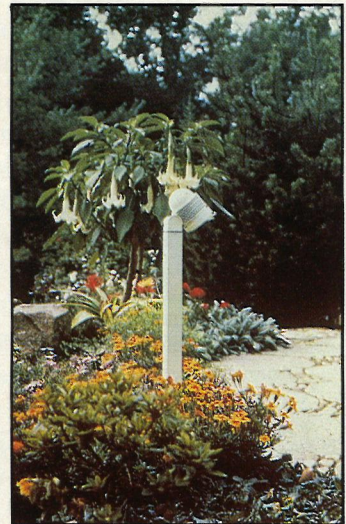
This device fills a gap in the market between photocell switches that turn lights on all night and PIR detectors which turn lights on for only a few minutes.

Reader Service No 165

Spotlights for outdoors

Concord has extended its range of Bega exterior lighting with the addition of wall and pillar mounted spotlights.

The bullet shaped housings are louvred and accept either 60W or 100W GLS lamps, or 13W or



18W PLC compact fluorescent lamps.

Made of diecast aluminium and stainless steel, the luminaires have crystal glass diffusers. They are ingress protection rated IP44.

Standard colour is black, but they can also be supplied in white at no extra charge.

Reader Service No 167

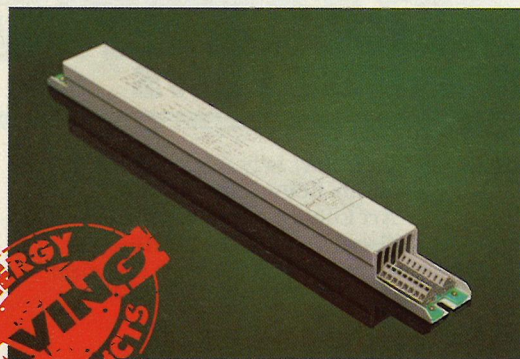
Spots on linear lighting system

Versatility of Triaga 1, Menvier Linear Lighting's modular lighting system, has been increased by the addition of a module carrying either four or six spotlights.

These low voltage luminaires can be rotated through 340° as well as tilted.

Reader Service No 168

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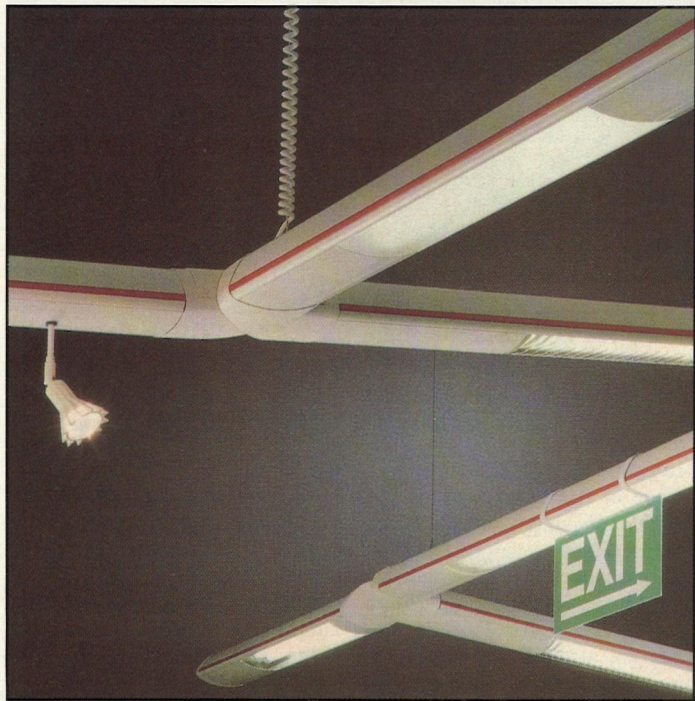
ADVANCED LIGHTING INDUSTRIES

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Reader Service No. 4

NEW PRODUCTS



System matches decor

A modular linear lighting system called Laser is available in the UK through Britannia Bargellini. It is oval in cross section and incorporates separate channels to carry cables for telephones, computers and other equipment.

There are elements for single or twin fluorescent lamps and L and PL compact fluorescent lamps. The incandescent modules accommodate mains and low voltage tungsten halogen lamps, enabling downlights and spotlights to be used with the system.

As well as louvres and diffusers, there are special darklight

louvres for VDU areas.

A feature of the Laser system is interchangeable coloured strips that clip into the sides of the luminaires to match the decor.

The system can be flush mounted on ceiling or wall, or suspended on cables or rods. To enable designers to form patterns with the system there are X, T and L couplers.

High frequency electronic ballasts can be provided, as can emergency lighting facilities. The linear elements are made of polycarbonate.

Reader Service No 150



Multi-storey car park luminaire

A luminaire specifically designed for multi-storey and underground car parks is available from LDMS. The PGL is stated to create a bright ambience without unnecessary glare.

It performs three functions. As an indirect luminaire it illuminates the ceiling and avoids the cave effect, or feeling of entering a dark insecure place.

Because it is designed with a light cut-off, there is minimum glare, while higher lighting levels up and down the driving lane are

claimed, giving optimum driver and pedestrian visibility.

When a car leaves the driving lanes and is parked, light is required in the area between cars to provide a secure environment for people leaving or re-entering vehicles. This is provided by strategically placed prisms which direct a portion of the light downwards into the parking bay.

PGL is delivered ready lamped with either a metal halide 70W-150W elliptical, 70W high pressure sodium elliptical, or 150W SON-T lamp. A speed fix mounting plate facilitates installation which is carried out without opening the luminaire.

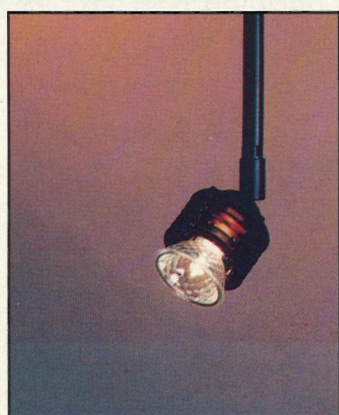
Reader Service No 151

Versatile LV spotlight

Microturn is a lightweight, low voltage spotlight from Micro-lights designed to use the range of 50mm diameter dichroic lamps from 20W-75W.

It has a well ventilated housing and can be ceiling, wall or track mounted. Microlights says it can be supplied fitted to any make of track adaptor.

For display applications such as shop windows, supporting rods of different lengths are available. Standard finishes are satin



black or white. Other colours and finishes are available to special order. Reader Service No 152

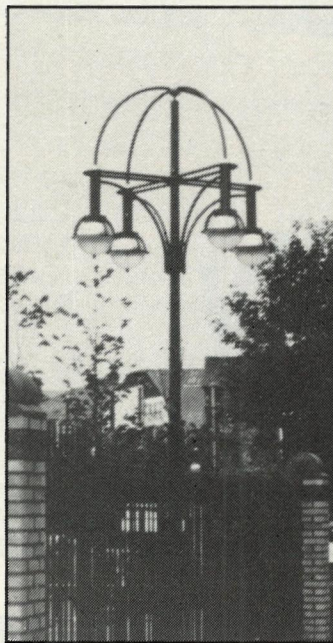
Co-ordinated lighting system

Urbi exterior lighting system offers town planners a co-ordinated range of lighting that can also incorporate signage.

It consists of a family of tapered steel poles, brackets and curved elements which are joined using a patented device to form a variety of styles.

In addition, there is a choice of three luminaires which can be mounted either singly or in clusters. Lamp options include one 70W or two 150W high pressure sodium, or one 125W mercury lamp.

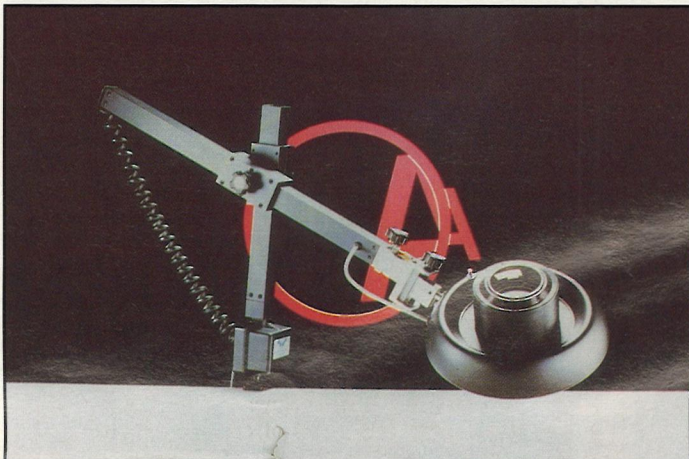
This gives scope for designing decorative, high level road lighting and amenity lighting for pedestrian areas, combined with signs and seasonal decorations, without a proliferation of single-purpose poles. There is also a complementary range of street furniture, including bollards, seats



and cycle supports.

The Urbi system, manufactured by Se'lux, is available in the UK through The Woodhouse Company.

Reader Service No 153



Magnifying inspection light

Macroscopic inspection light from Nietronix is claimed to be the only 4 x magnifying light to meet the USA government military specification DOD 2000-1B, with which UK component suppliers must comply.

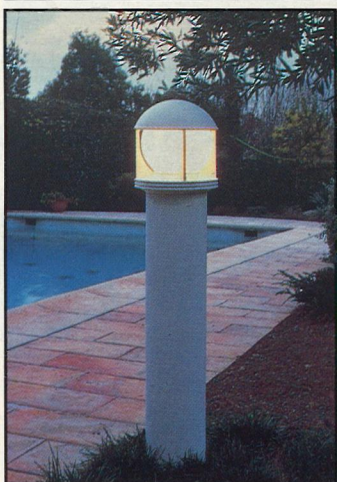
Its prime use is in the electronics industry, for inspecting solder connections and surface mounted design work without the use of a

microscope. It provides a larger than usual field of view.

The arm tilts up and down and is held by a security pin. The lamphead, which houses a 22W circular fluorescent lamp, can be adjusted from side to side and also rotated through 360°.

This inspection light, made by O C White, is available with a choice of bases including a double width benchclamp, wall bracket, and a bracket for mounting on slanting surfaces.

Reader Service No 154



Low energy bollard

Latest addition to the Compact Line range from Noral is the Patriot bollard, designed for installations where attractive appearance is important. It can be used with either an 11W or 13W PL compact fluorescent lamp, or 50W mercury or a GLS lamp.

Made of cast aluminium finished in either black or white, the Patriot has a 20 year guarantee.

Applications include quadrangles, prestige office buildings, patios and swimming pool surrounds.

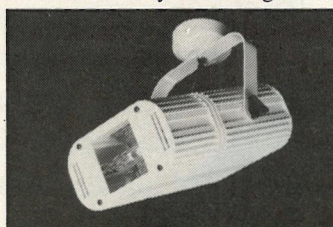
Reader Service No 155

Metal halide projectors

Environmental Lighting has launched its Pyraspot range of metal halide luminaires with integral control gear. The compact, aluminium extruded housing is ribbed to aid heat dissipation.

The luminaires are intended for use where good colour rendering is required. There is a model that accepts a 70W double-ended lamp, and others for 35W, 70W or 150W single-ended lamps.

A reflector system designed to



give a high light output produces a wide but controlled beam of light. This is projected through a smaller than usual aperture 67mm square, which helps to reduce glare. Barndoors and ultra-violet filters can be supplied.

Pyraspot is available in either white or black, in a housing measuring 80mm x 160mm x 205mm. It weighs 3.5kg.

Reader Service No 156

LIF LINE

The assurance of a life saving product

There are numerous studies made about the correct level for emergency lighting that will help save lives during the evacuation of a building. As Europe currently undergoes discussion as to what the new levels are likely to be, the lighting industry recognises that providing assurance about manufacturers' claims to users means that modern emergency lighting luminaires and modules should be: constructed and certified in accordance with appropriate standards; should be assembled in a factory employing recognised and suitable quality assurance procedures (BS 5750: Pt. 2); and should be correctly installed in accordance with the manufacturers' guidance data.

ICEL (the Industry Committee for Emergency Lighting) sets these standards for its members and other reputable manufacturers. The result is assured quality, assured building standard and assured performance claims through the new ICEL photometric registration scheme (inaugurated September 1991).

The current ICEL scheme is designed as far as possible to conform to the new requirements likely to stem from the Construction Products Directive (89/106/EEC), which in its interpretative document entitled 'Safety in use' (TC 4/104), states that luminaires must have, among other requirements, measurement of light output. Where emergency lighting is concerned, the measurement of light output on its own is relatively meaningless. It is how the luminaire makes use of that light in terms of light distribution that is important. ICEL is working closely with the CEN Technical Committee Working Group 7 (CGN/TC 169/WG7) which it is hoped will soon be mandated by the EC to produce the relevant standard to which the CPD will refer. This working group has just completed its second meeting in Berlin for the measurement and presentation of photometric data, and the new ICEL scheme was warmly received.

The CPD, under its interpretative document TC6/012 which covers energy, economy and heat retention, also requires that the efficiency, and the geometric and spectral distribution of luminaires is established and maintained. ICEL have borne this requirement in mind, but the new scheme is not just about performance.

ICEL works hard to promote the importance of quality through this scheme. All products registered have previously been certified to the appropriate national standard. Thus the products are entitled to display their national mark in the UK, the BSI kitemark – which shows conformity with the harmonised European norm (EN 60.598). In the UK the relevant standard is BS 4535.

Since the introduction of the new scheme, users have been able to see the new ICEL product registration mark on the products of reputable manufacturers. But stock labelled with the old style certification labels may still be in circulation. Unfortunately, some not so reputable manufacturers may still be using the old ICEL registration mark on products that do not meet these more stringent requirements, and cannot, therefore, provide the user with the same assurance.

If users are in any doubt as to the validity of a registration mark, they should contact the ICEL's executive director immediately. ICEL's primary objective is to formulate and promote standards for emergency lighting equipment. This commitment to quality means that only products registered under the new ICEL scheme will be entitled to use the ICEL product registration mark, and we will investigate claims of unauthorised use of the mark and take the appropriate action.

ICEL exists to help and guide users, specifiers and contractors in all matters which touch upon the emergency lighting industry world-wide. Details of the product registration scheme and the mark may be obtained from the executive director, Industry Committee for Emergency Lighting, Swan House, 207 Balham High Road, London SW17 7BQ.

Lists of products registered under the ICEL scheme are available on request and these will direct users to products of assured reliability, quality and photometric performance.

Better lighting for efficiency and productivity

In part two of this overview for the practising manager, **Bob Bell** looks at the energy saving and productivity that can be achieved by using better lighting.

Efficient lighting in the workplace aids safety and contributes to the effectiveness of costly staff. Good lighting starts with good design, but that does not mean to say that equipment does not matter – so, this month's feature starts by looking at the hardware.

Lighting systems

The type of lighting system is important. Don't confuse this strategic decision with the details of which equipment to use. That comes later.

General uniform. The traditional way to light an interior is to use a regular array of lighting to provide uniform illumination over the entire working area. However, a large proportion of the space may be devoted to tasks which are not visually demanding – such as walking about, or filling – and it's wasteful to illuminate these areas to the same standard.

Lighting systems reduce this waste by relating the positions of the lighting equipment to the workstations to provide high levels at the work station and lower levels elsewhere.

Localised lighting can be used over a production line with a general lighting system in the roof, to light the space to a lower level for safe movement.

Localised systems are gaining popularity in offices. Uplighter systems, for example, direct light from extremely efficient discharge lamps onto the ceiling, where it is diffused and reflected onto the tasks.

A high lighting level is provided at work stations with lower levels in the circulation space. The elimination of a ceiling supply saves costs and the free standing uplighters can be relocated when the office layout changes.

Local lighting. Unlike localised lighting, local lighting provides illumination only over the small area occupied by the task and its immediate surroundings. Some form of general lighting is also needed to provide sufficient ambient illumination for safe movement.

Local lighting must be carefully designed and positioned to minimise shadows, veiling reflections and glare. Units which use conventional tungsten lamps are inefficient, and fluorescent fittings are normally a better choice.

VDUs. Visual display units are now commonplace, but can cause many problems. Reflections in the screen from conventional lighting fittings degrade contrast and cause other visual difficulties. A good solution depends upon more than just using the right equipment and is, in fact, a lighting system problem to which one possible solution is uplighting.

The new EEC directive on



Thorn's Borehamwood offices, where the C-VAS system saved over 70% of energy consumption.

visual displays calls for thorough audits of work stations to be carried out. Although self-audits can be helpful in eliminating most of the key problems, some will require expert advice beyond the scope of the employer or the normal health and safety officer.

Professional advice from appropriate consultants is needed. CIBSE and the Society of Ergonomists can help. The former can deal with the complex environmental and visual issues, the latter with ergonomic issues such as seating.

Manufacturers may be able to give professional advice but it will not be impartial. Employers need to be very wary, particularly of the 'add-on solutions' offered by some companies. Expert advice may be the cheapest solution in the long run.

Control. Another system issues is controllability. The occupancy patterns, type of work and availability of daylight will help determine the best control strategy for the space. For instance, remote control switches could be used to improve switching flexibility in a refurbished office.

Equipment. When it comes to equipment, the choice of lamp affects the range of suitable light fittings but frequently the performance of the light fitting is ignored. Many manufacturers make fittings which look similar and use the same lamps, yet their efficiency can vary by a factor of more than 2:1. So, it is very unwise to just select luminaires without comparing their performance.

Luminaires. Luminaires can perform well for their intended purpose (eg VDU reflector fittings) and still be exceedingly efficient. And remember, if the fittings are more efficient, fewer will be needed and the installation costs will be lower, so it is often a better economic choice even if at first sight, it seems to cost more.

But the real measures of efficiency and effectiveness are how well can operators read the VDUs, is the environment pleas-



Energy saving with good lighting standards – VDUs in use at Hewlett Packard, Bristol. Photo courtesy Thorn.

ant and does it enable good office productivity?

Fluorescent lamps. The performance of fluorescent lamps has dramatically improved in the last decade. The new lamps have the same connections and lengths as the old ones but are only 25mm in diameter instead of 38mm. They are also filled with a mixture of Krypton and argon gases rather than just argon.

They provide similar colour quality and light output to conventional cool white, white and warm white lamps – but typically use 9% less energy. Before they fail, the lamps will have paid for themselves at least 3 times over in saved energy.

Another technological advance made at the same time was to change the coating on these lamps to a mixture of rare earth phosphors. These multiphosphor lamps not only consume about 9% less power, but they emit 7% more light and the colour quality of the light is excellent and comparable to de-luxe lamps.

The new energy saving lamps can match the colour quality of either white or the better natural fluorescent tubes respectively. But they are as much as 70% more efficient. It's no wonder, therefore that the Lighting Industry Federation recommends that lamps of these types be used whenever possible because of their clear economic advantage. In fact, the increased light output of the multiphosphor lamps will also reduce the numbers of luminaires needed.

Compact fluorescent lamps. About 3% of all electricity is used for domestic lighting but it's a very inefficient use. This could be easily slashed to about 1% if the new generation of energy

saving lamps were used.

To be completely acceptable in the home the new lamps must have a colour quality indistinguishable from the lamps they replace, and they must be a worthwhile investment.

The 16W compact fluorescent lamp has roughly the same light output as a 100W light bulb but lasts over 8 times longer. The larger versions have roughly the same light output as 150W and 200W light bulbs, but last over 10 times as long.

They all make use of the high quality phosphors to achieve their high output and excellent colour, they operate at a much safer temperature, and have a lampholder in which the electric contacts cannot be touched. But they do need control gear to operate.

New control gear can be installed in existing fittings, but special conversion packs make the job quick and simple using existing fixed centres.

But the new lamps really come into their own with new designs that can exploit their advantages to the full. Shallow designs are not possible with ordinary lamps and even if they were, the heat build-up would be destructive to most materials.

In the halls of residence at Edinburgh University, 740 conventional fittings with 100W light bulbs were replaced by new compact fluorescent fittings. In the first year they saved £17 000 – which paid for the new equipment in only 9 months. Not only that, but lamps have to be replaced 8 times less often – with obvious reductions in manpower costs. Even allowing for the cost of lamp replacements, the annual savings in subsequent years will be £13 600.

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Investments such as this which can be recovered in the same financial year cannot be ignored. It's like investing money in a bank at an annual interest rate of over 123% per annum.

The biaxial lamp series is similar in colour quality and high performance to the smaller compact fluorescent lamps, but is designed to replace fluorescent lamps twice the length. This means that commercial fittings can be smaller and more efficient. The 40W lamp, for instance, is designed to optimise the popular 600mm square module.

The lamp emits more light than two conventional 600mm lamps – or even one 1200mm lamp. This alone makes the light fitting more efficient. However, the efficiency improvement doesn't stop there. Most conventional lamps are longer than their fitting modules. Not only does this cause design and installation difficulties, but the light from either end of the tube gets wasted.

Control gear. New electronic

The light which is produced by the mains supply in conventional fluorescent fittings, ripples 100 times a second. This can be irritating to some people and is certainly detectable in the brain, even when we think that we can't see it. High frequency electronic fittings don't cause this problem, and are preferred by workers.

It is, of course, possible to design electronic control gear which does more than just simply operate the lamp. It can form part of a controlled visual amenity system, enabling the lamps to switch or dim in response to a number of control decisions.

This means that the lighting can be intelligent and dynamic, responding to the needs of the occupants as they change and adding an extra dimension to give variety and flexibility.

High pressure sodium. High pressure sodium of SON lamps have gained widespread acceptance in sports halls and for exterior and floodlighting. They have the longest life and highest efficiency of any light source for working interiors, at about 100 lumens of light for each watt of power (that's about 8 times more efficient than a household bulb). But the colour quality is only just acceptable for interiors and it is unsuitable where colour discrimination is important.

A few years ago a revolutionary new form of high pressure sodium lamp was introduced, called de luxe high pressure sodium (or SON-DL). These lamps are interchangeable with standard SON lamps but sacrifice some life and efficiency to achieve excellent colour rendering. The colour rendering is better, in fact, than standard white fluorescent tubes.

The colour quality is so good that they are even being used in food stores where good colour is important and has a direct effect on sales.

New 'white light' SON lamps now exist which, although having a shorter life, are whiter and ideal for shops and commercial areas where white light is important.

Metal halide. Another development of the discharge lamps is the metal halide lamp. 150W compact metal halide lamp has excellent colour rendering, high efficiency and compact size makes it the ideal choice for commercial uplighting and display use.

Low voltage tungsten halogen. These spotlights are more effi-



C-VAS installation at L'Oreal Golden's South Wales factory – an EMILAS winner.

cient and more controllable than their mains counterparts. This means that a 50W or 35W lamp can often provide a better display effect than a 150W conventional spotlight.

However, their main value is the compactness of the fittings and the precision of their performance. This means that displays work better. The lamps not only use less energy, they focus far less heat into the beam, so customers and merchandise stay cooler. There is an added bonus that they last 2-3 times longer than most of the lamps they supersede. They are also more robust and can withstand the vibration in a shop window caused by passing people and traffic.

Electronics has been applied to the transformers that low voltage lamps need, and the result is reduced size and weight, and improved performance.

Electrical safety

Light fittings have to withstand a variety of physical conditions, involving such things as vibration, moisture, dust, high or low ambient temperature or vandalism. They must also be electrically safe.

In a swimming pool, for example, the lighting must be capable of withstanding the harsh environment and must be easy to maintain without draining the

pool. But above all, it must be designed to enable swimmers in difficulty to be seen easily in the water.

The 15th edition of IEE wiring regulations states that electrical equipment must satisfy the appropriate British Standard. For lighting fittings in normal use this is BS 4533.

Equipment which complies with this standard carries the BSI Safety Mark, which is an independent guarantee of engineering and manufacturing quality and electrical safety.

Despite the obvious importance of the safety mark scheme, and the legal implications and liabilities in the event of an accident, few specifications call for safety marked equipment. Indeed it is rare to see safety mentioned at all.

Controlling use

Substantial savings can be made by controlling the hours of use for lighting. The lighting may be on unnecessarily while the building – or part of it – is unoccupied and it's not uncommon to find buildings fully illuminated at night for a small band of cleaners to do their rounds.

Switch control. If the building receives adequate daylight for part of the day, then artificial lighting is not required and can be switched off. The simplest method of control is to encourage people to switch off unwanted lighting – this is not usually a very effective measure. But self-adhesive labels, reminding people to turn off unwanted lights are

always a worthwhile investment. In short, you can rely on occupants to turn lights on, but not to turn them off.

Daylighting and switching. The probability that lights will be switched on varies with window design and time of day.

Suppose that the daylight factor at the desks in an office is about 1% to 2%. If the workers come in at about 8 o'clock then, on average they will tend to turn on 50% to 60% of the lights, and they will stay on throughout the day.

If, however, we could trigger the lights off at lunchtime, then only about 20% would be switched back on because there is enough daylight. More lighting will be turned on as the daylight fades, but overall there will be a saving.

Of course we could keep on turning the lights off through the day, but this would be annoying and save little extra, so a lunchtime switch-off is all that we would normally recommend during the working day until going-home time.

Infra-red, ultrasonic and other forms of remote switch can help provide more flexibility in switching, and are becoming increasingly popular. These allow individuals or small groups to control lighting in their part of the office.

Combined daylight and artificial lighting systems can be designed in which the inadequacies of daylight are supplemented by electric lighting. These can be automatic or manual, with the rows of fittings near the windows being switched off or, preferably, dimmed when there is sufficient daylight.

Savings are made by dimming the lighting when daylight is available. If the daylight factor at the desk is 2% and we simply want to maintain a level of 500 lux, then a dimming system linked to daylight levels could save 60% of the lighting energy during the working day.

Lighting management systems. Lighting management systems control the use of lighting in accordance with software logic.

High frequency light fittings, for example, can be adjusted in response to management commands. The lighting then adjusts to match daylight availability. This saves energy and creates natural variety and change of modelling. The lighting can respond to the occupancy pattern, so that lighting is on when it is needed and is off or dimmed when it isn't.

It can be programmed to change lighting levels to match the different activities that occur in the course of a normal day. These range from normal office work, to cleaning and security.

In any real building, the type of work can alter with time. This can operate on a short scale, when people need to increase or

decrease their lighting, or in the longer term as the nature of the work changes. The lighting can be adjusted to reflect this.

These days offices get reconfigured regularly, and the lighting can be reprogrammed to match the new use for the space.

In modern buildings it is often difficult to predict the intended uses of different spaces, and flexibility of control can ensure that all likely uses are catered for.

Lastly – and this is the most important factor – giving flexibility and control to the occupants increases their efficiency and effectiveness. These are sound psychological and psychological reasons why people work much better when they like their environment and can control it.

Building management. A final approach is to link the lighting to the other services by using a central processor to control the whole system according to a defined but flexible program. This type of approach is still expensive, but such systems are becoming more attractive.

Maintenance

Many lighting installations are wasteful and inefficient. Not because of poor design but because of neglect. The abysmal standards of maintenance that many organisations adopt without realising it, often result in a 60% or 70% reduction in efficiency. No one would buy a car and not service or clean it – yet we expect to do this with lighting.

Lighting design in the UK is currently based upon an average or 'service' condition. This is the value between maintenance points. In practice, however, the cleaning and relamping does not happen, so levels are well below recommendations and often below safety values.

New European practice linked to legislation will introduce maintenance illuminance as the design criterion. This is the value which must be exceeded at all material times. And an employer who lets his lighting drop below this minimum value will be negligent.

Conclusions

Most lighting installations in use today are inefficient. This is mainly because of:

- ☐ Inadequate briefing of the scheme designer.
- ☐ Too much emphasis on capital cost and a lack of thought during design and installation.
- ☐ A failure to realise the importance of a sensible maintenance programme.

Good lighting uses energy wisely, but that is only a minor part of its true value.

People function better and more happily if the lighting is right. The benefits in this area far outweigh the rest. A better office environment means less absenteeism and remember:

- ☐ Each reduction of 3 hours' absenteeism per person per year saves as much money as the most energy efficient lighting scheme. A reduction of 1 day per person per year will pay for the lighting completely.
- ☐ Each annual 0.2% improvement in worker productivity is worth as much as the most energy efficient scheme, and 0.6% will pay for the lighting.

These may seem difficult things to measure accurately, but they do occur and they are worth much more to the organisation than mere energy savings. But this isn't a trade off. You can design lighting to provide an efficient and effective environment and you can make it use energy efficiently and effectively. All it takes is a willingness to use good design.

HALOSTAR FROM OSRAM.

In order to achieve spectacular lighting effects, you need the lamp which is so small that it almost appears to consist solely of light: HALOSTAR from OSRAM.

Thanks to advanced tungsten-halogen technology, the low voltage OSRAM HALOSTAR lamp – in spite of its miniature size – achieves very high luminous efficacy.

With robust bulbs made of hardened glass or pure quartz, OSRAM HALOSTAR

lamps can be used for decorative purposes such as "starlit sky" backgrounds. Versions with integral gold or silver reflectors can be used to create other special effects in light.

These reflector lamps are available in three diameters and wattages – from a very narrow spot which pinpoints the object, to a floodlight which illuminates large surface areas.

An added bonus for you is the long and energy-saving life of OSRAM HALOSTAR lamps.

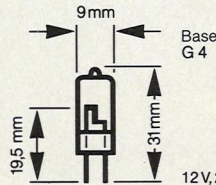
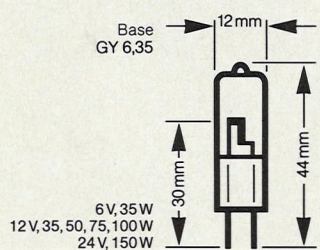
OSRAM HALOSTAR: lots of light from little lamps.

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Reader Service No. 5



Centre stage for theatre lighting

All the world's a stage — as far as lighting goes. *Andrew Collier, of Strand Lighting, looks at the applicability of stage lighting techniques to the built environment.*

You are unexpectedly invited to a cocktail party, and you feel uneasy. Fractured conversations surround you. "How's the city?"... "What exactly do you do?"... "A brain surgeon... how fascinating."... You join in. "Er, I'm in theatre lighting." "Do you need a medical degree for that?" Laughter. You fade to a blackout.

If the theatre is a minority interest, then stage lighting, the part of the entertainment that has to be devastatingly poor to be noticed at all, is often disregarded completely. Even amongst the lighting fraternity, stage lighting always was a bit precious; the 'fun' thing to do in the church hall for the local drama club, but not really serious lighting. Yet light is light, and like it or not, the aims, ambitions and techniques that we all use, whether professionally or at home, are reproducing some fundamental principles that have been honed through traditional use as the theatre's tools of the trade. If you look back 60 or so years, these techniques weren't peculiar to the theatre. They were all part of the

wonder of modern lighting. In recent years, lighting in the theatre has developed an aura which is perceived to be remote from life. Yet the old tricks, and the specialist equipment designed for the stage, are as much at home in a shopping mall or restaurant as they are in the local rep.

Novelty

In the theatrical heyday of the twenties and thirties, lighting was under the control of the chief electrician, directed by the producer. Electric light was still considered to be something of a novelty by those who remembered earlier gas-lit days, and who still relied on gas light for their domestic requirements. In the theatre, rows of compartment battens were suspended above the stage, providing an even wash of three colours and open white, which could change the tone of the ambient light as the relative intensity of the constituent colours was altered by dimmers. Highlighting was performed by spotlights with lenses.

Light was considered more than just the means to illuminate.

It directed the audience attention; it changed the mood; it could create both subtle and obvious effects: all through a thorough understanding of the human response to the stimulus of light. Our eyes have to cope with an enormous range of intensity of light in nature: a range in intensity of 1:500 000 when daylight and moonlight are compared. And although some detail is lost at low light levels, we can still see to cycle in moonlight with the torch lamp appearing bright on the road.

In the theatre, lighting levels are carefully balanced to make the most of the contrast. The eye can perceive very subtle differences in intensity: a face in the crowd in an operatic scene magically attracts your attention as soon as she joins the crowd. When the crowd parts, and she walks centre stage to deliver the aria, we commend ourselves for our perception in noticing her in advance, unaware, of course, that a narrow shaft of soft light has been following her progress through the chorus.

As she continues to sing, we



Cityscape: how artistic lighting can enhance the architectural environment.

fail to notice the complex operation which fades the general lighting gradually to black, as our attention is held by the face of our prima donna. The dark stage empties of chorus, the scenery flies out, and a new scene is ready at the conclusion of the aria, gradually brought before the audience as the general lighting fades up once again.

Magic? We, the audience, think so. But it is simply an understanding of the human response to light. Without fixed reference points, we cannot judge slow changes in intensity — it is generally known that a slow change of up to half the original level cannot be perceived if the change is gradual enough — and this can be enough to create a secondary illusion.

One of the fundamental ways in which the brain manipulates the information from any of the senses is that it relies on contrast either to make a decision or to remember. The brain always anticipates the norm in an effort to minimise the amount that has to be remembered. We assume that floors are horizontal and church steeples vertical, and that light is usually daylight and of a 'normal' intensity, even if we are told otherwise.

Atmospheric mood

We believe our eyes before any other sense. Thus, a dim table lamp can appear bright if the only reference point is a candle, even when we are told that it is only a 25W lamp. Monochromatic sodium streetlighting looks like dim daylight if there is no other colour with which to compare it.

Colour was always of great importance on stage, not only to create an atmospheric mood, but also to play tricks with the audience's senses. In the variety shows of the twenties and thirties, the use of different coloured light was a common technique to change the appearance of costumes and even the pigment of the actors' faces. The trick was very simple. Imagine a woodland scene with a backcloth depicting a woodland glade, with rolling hills and a forest. The actors have pale coloured faces, and wear plain costumes with black stripes.

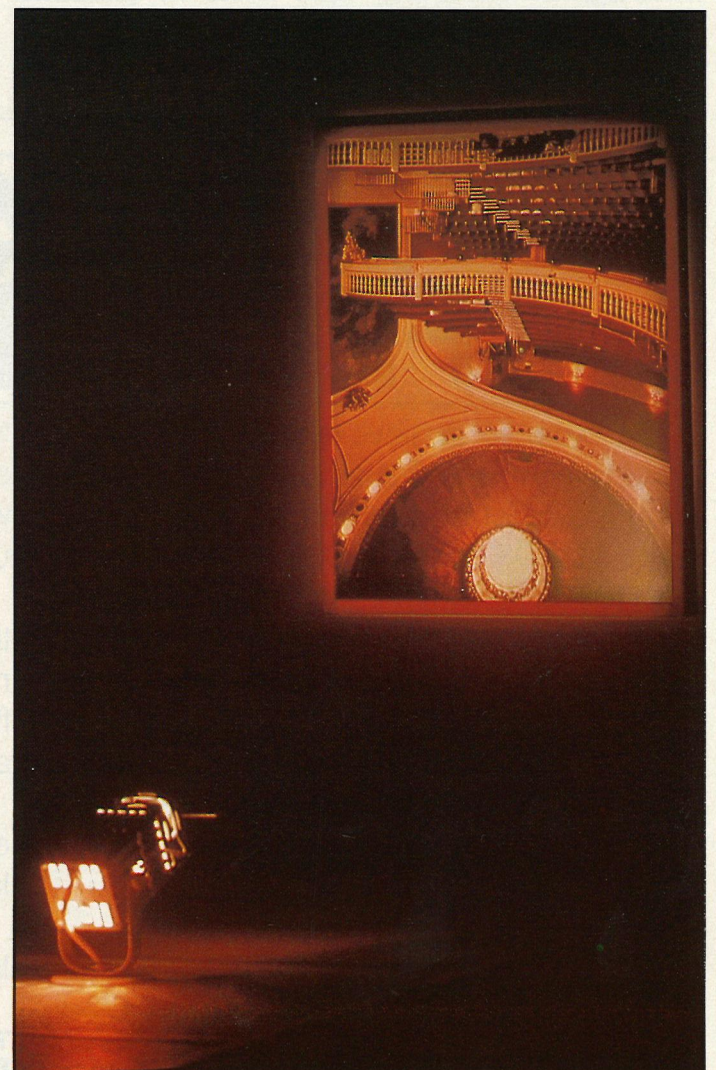
At the flick of a switch, the woodland scene transforms into a village scene, with the actors switching from white-faced country yokels to coloured minstrels in dark suits with white stripes. The trick? To convince the eye that it is seeing a scene lit in white. And yet in reality the woodland scene is lit in green, but painted in red, the green costumes have red stripes, and the actors faces have green make-up. Under red light, the woodland scene dissolves into the surrounding colour, and the village scene, actor's costume and faces (painted in green) appear black, and in contrast to the previous scene.

Lighting designers were legitimized as a profession in the 1960s. Although they were active before that time, it took the big

musicals and high profile lighting designs to bring the profession of lighting designer into the lighting vocabulary. But by that time the theatres were waning in popularity against the relentless onslaught of the cathode ray tube.

Lighting as an art

Reassessing Art Deco interiors of the thirties, it is clear that lighting played an important part in creating an environment. Glass lampshades, rear-illuminated glass panels, translucent uplighters and hidden ceiling lighting defined the age. Lighting had grown from the purely utilitarian to the creator



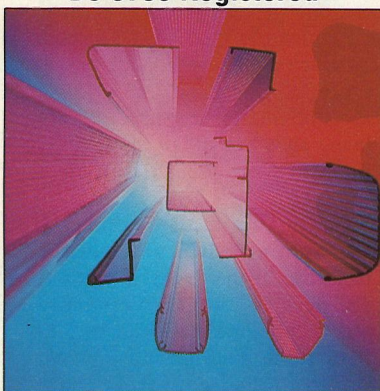
A picture can be accurately highlighted using a profile spotlight.



EXPANDING THROUGH THE 90's

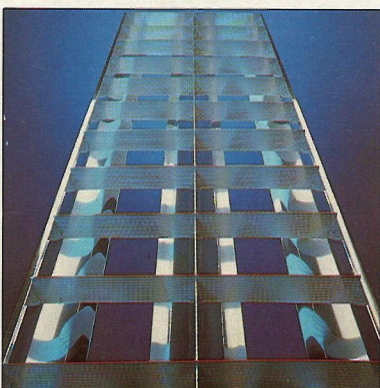
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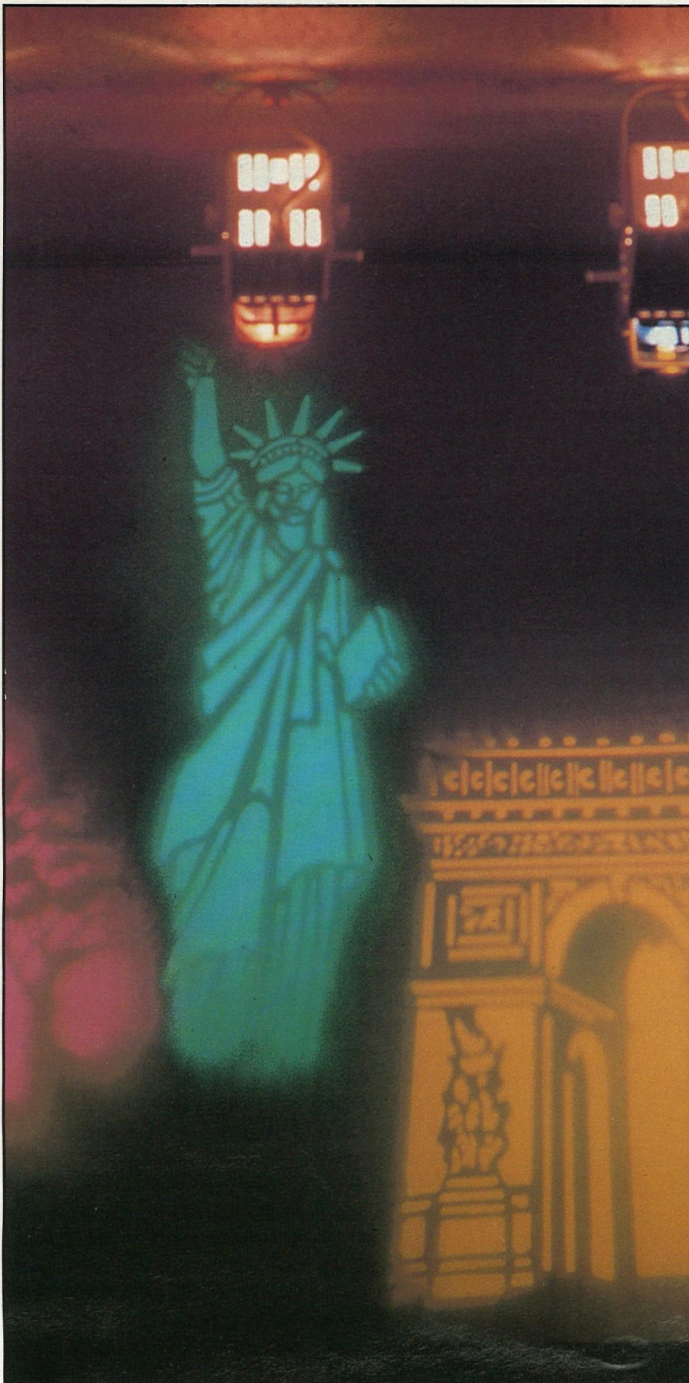
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of an illusion – the softness of a film set which transported the depressed masses into a mythical world of make-believe. To quote an opinion of the time, "Lighting to-day tends to be regarded more and more as an art, instead of merely as a convenience".

The love affair with the bland fluorescent light had yet to sweep the world. The combination of moulded, coloured glass, and plentiful light sources gave free reign to experiments with lighting effects. The foyers of cinemas and theatres used all the theatrical know-how to create an illusion for an audience anticipating the theatrical event shortly to be witnessed. Hotels, restaurants, and department stores were edifices to the creative lighting art. Lighting and architecture in the thirties were as passionate partners in the Art Deco era as furniture and architecture had been in the Art Nouveau period thirty years before. So what went wrong? Why did the lighting crafts of the theatre and the architect divorce with such ferocity?

Arrival of the fluorescent tube

The general acceptance of the fluorescent tube marked a change from looking at illumination as a multi-faceted resource to relying on it as a utility. The fluorescent tube produced light by which the world could see. Exciting variations in phosphors changed the colour of the dim, directionless, characterless light from white to warm white. Contrast was out. The morning sunshine and moonlight of conventional lighting was replaced with the grey overcast sky of fluorescent. At last we could wake up, breakfast, be transported, work, be entertained and retire, to the unchanging



A dramatic use of gobo projection.

50Hz flicker of the 'florry tube'.

The new light source brought with it a new generation of champions. The language of contrast, quality, position and colour which was close to its theatrical brother, was replaced with the science of lux, utilization factor and British Zonal Classification. Colours were transformed from romantically-named hues to degrees Kelvin; photometers and slide-rules were all-powerful, and could not be questioned; calculation triumphed over creativity.

TV gripped the nation

The public's awareness of light and its capabilities reduced to the lowest common denominator. Theatre audiences dwindled to a hard core as television – watched in the dark, or in the gloom of a fluorescent tube – kept the general public riveted to its arm-chairs. The picture palaces, the foyers of which were as much theatres as the theatres themselves, gradually lost custom and re-grouped into multi-screen warehouses. The glory of shopping in an Art Deco lit department store was gone, as fluorescent tubes marched on unceasingly into every corner of the public's awareness of illumination.

Like the dinosaur, the ubiquitous tube began to disappear from new public buildings in the 1970s – someone switched on to tungsten lighting again. Put it in a confined box and a shaft of light is produced: a spot. Ceiling downlighters popped out of ceiling voids like goose pimples and spotlights emerged from shop window displays to light the 'Habitat' lifestyle home. But the return to illusion illumination of the 'theatrical' variety was set to do battle with the norm. Although the theatrical use of light was



Strand Lighting's Quartet range of theatrical spotlights are now frequently used for architectural purposes.

slowly coming back, shop windows and restaurants began to sprout mock theatre spotlights that spewed light from every orifice. It was the aim rather than the practice that was being addressed.

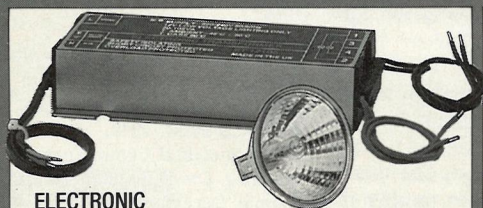
Thankfully, the renewed interest in lighting – caused to some degree by the panic over energy conservation which set in at the

time of the oil crisis – has spawned some imaginative uses of lighting sources. We now see discharge uplighters in the very best offices. Shopping malls are equipped with profile spotlights to highlight exhibits and draw your attention to the focal point of the display. (Where have we heard that before?)

Occasionally, you can see some

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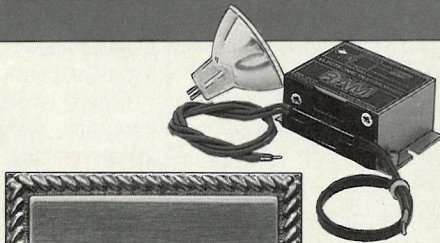
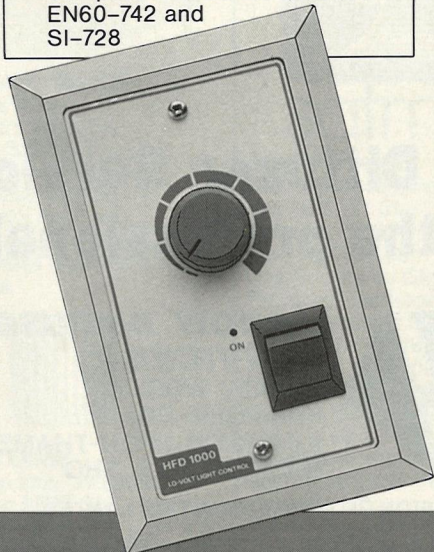
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Adding interest to a shopping mall – snowflakes are projected using profile spotlights with gobos.

contrast in light texture. This is an area which is still at the experimental stage in the theatre; the use of discharge lighting, fluorescent and tungsten simultaneously to provide a contrast in colour

(strictly, colour temperature), power, and texture. How do you define the texture of light? You don't. That's too scientific. If you see a play (usually in Germany) and a crisp blue-white metal

halide beam cuts across a tungsten-lit set, you will feel what texture is all about. The discussion of how you describe the raw power, hardness, cleanliness of the contrast needs a vocabulary

on the scale of a wine expert's. There isn't space to begin it here.

Many new architectural lighting designers had, and also have, a theatrical background, and it shows in their work. Others don't – and it does. It is heartwarming to hear the enthusiasm which surrounds the lighting of a portrait painting, where the light source is hidden, and the beam is shaped to illuminate the portion of the work inside the frame only. It's called a profile spot in the theatre, and they've had it for years.

Let's take another example. Imagine a coffee table and four low chairs, with a large potted plant alongside. Put it in an office, and light it. The ambient light is sufficient to see whilst sitting at the table, but the designer may choose some low-voltage downlighters to highlight the table surface. The plant would be lit from beneath to accentuate the leaves.

Now take the same group of objects and place them on a stage. The designer would ask what the mood was – happy, relaxed, friendly. Some general spotlighting would be used to ensure the



The 'Step into Limelight' resource pack for schools and colleges.

actors were lit in a flattering coloured light. The table would be lit in a tightly-focused beam to give a focal point. The area would be flooded in pale green to mimic the colour of the plant. The plant would be lit from beneath to emphasise the leaves. A gobo (a metal slide to project images) with a leaf effect pattern would also be focused over the area, in contrast with the green light, to give the impression of light passing through the leaves. There is no reason at all why the attractiveness of the 'stage' setting could not or would not work in an office environment.

So how are we seeing this good work of theatrically trained designers developing around us? A move away from light for illumination only, for one thing; the use of dimmers to contrast lighting levels; localised lighting positions; the sensitivity of colour temperature correction; the use of spotlights to create a 'focal point'. But there is more in the theatre's Pandora's box that has still to be let loose on an unsuspecting and bored public.

The use of texture has to be explored further. The contrast of different light sources, beam angles, diffusion and focus. The change from one lighting state to another is being addressed by the latest computer-controlled management systems, but the emphasis is on the freedom to set any one of a series of static presets. Crossfade and movefade techniques could provide some tantalising dynamic lighting for hotel foyers and atria.

Where is colour? There have been many experiments in prisons and psychiatric hospitals to determine the best coloured light to suppress and subdue. The theatre uses colour balances to alter the

atmosphere from warm and friendly to cold and isolated, but colour is rarely on the agenda in other spheres of illumination.

The newest craze to hit theatre is the automated light. Although remote controlled lighting has been with us for decades, it has taken the advances of the microchip, and the funding of the rock 'n' roll business to develop the science into an art form. Moving lights are used in static and dynamic situations, the dynamic effects preying on another 'theatrical' trick, that nothing draws the attention of an audience more quickly than a moving light.

Much to offer

A start has been made in the direction of a broader understanding of the equipment and techniques of theatrical lighting with the launch this September of 'Step into the Limelight', a teaching resource pack for schools and colleges. Published by Strand Lighting, the pack takes the various groups of theatre lighting equipment as the themes for 15 colour wall charts and support notes. A lighting design kit is also included.

The stage lighting business has a lot to offer the architectural lighting designer. Not only in technique, but also in equipment. Many designers are using these effects already, but there are areas of the lighting business which consider the theatre as a specialisation outside their sphere. Open the box, come inside and take a look.

1. Light in daily life, J. Stewart Dow (editor of Light and Lighting), The Technical Press, 1939.
2. Architectural lighting control and dimming, David Brooks, The Lighting Journal, December 1988.

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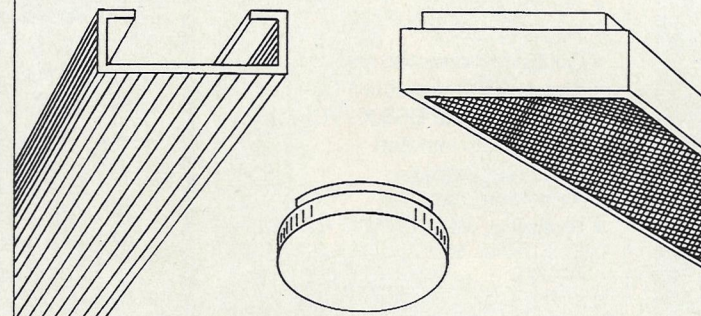
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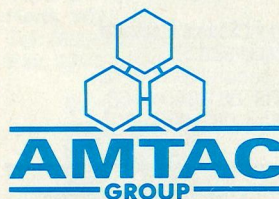
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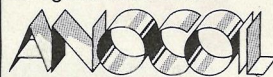
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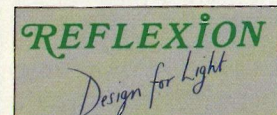


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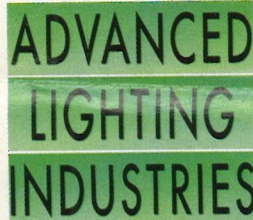


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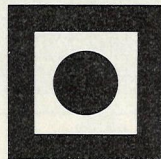
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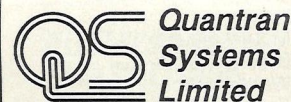
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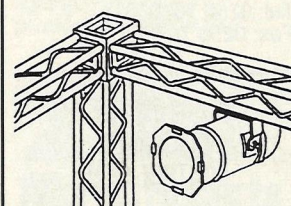
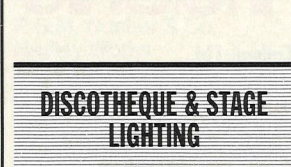


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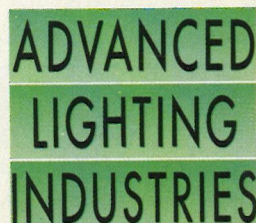


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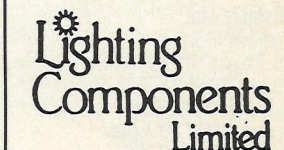


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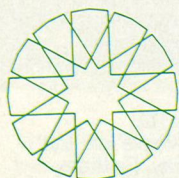
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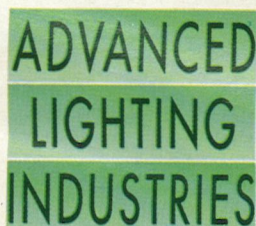
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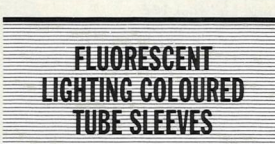
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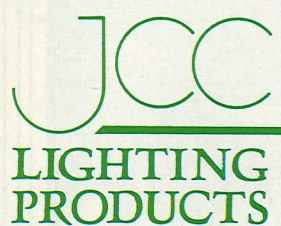
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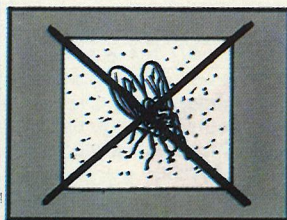


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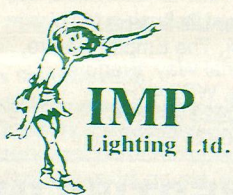


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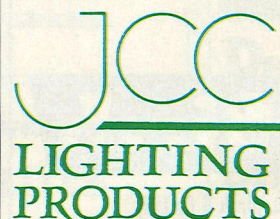
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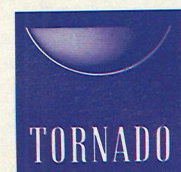
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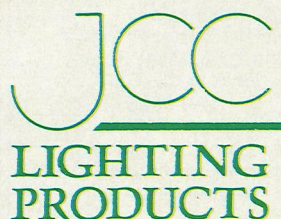
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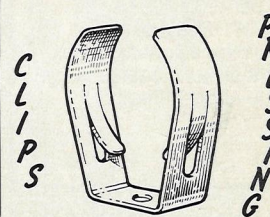


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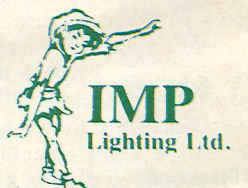
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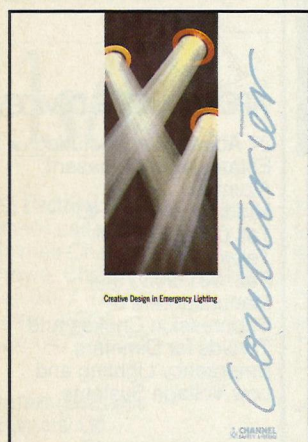
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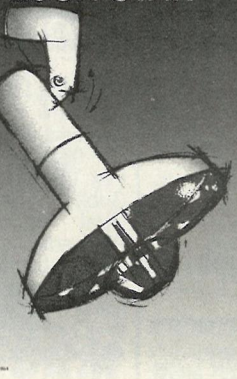
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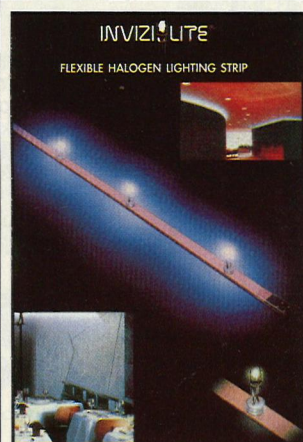


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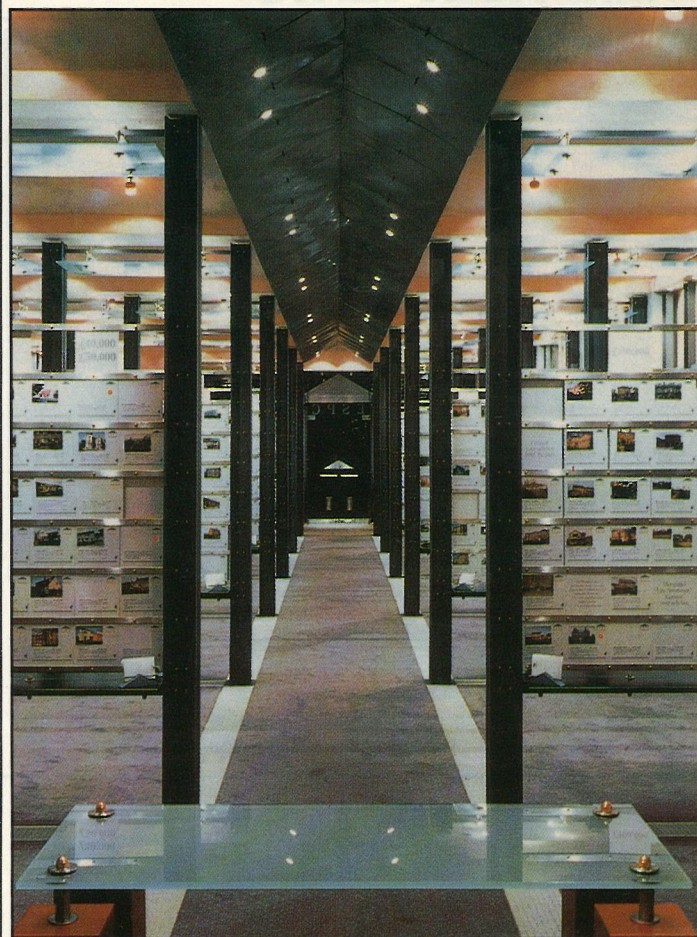
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is required to join **CHELSON LIMITED**, one of the country's top decorative contract lighting and furniture specialists to cover the Northwest of England calling on architects, interior designers, specifiers and retailers. A working relationship with specifiers from the hotel, brewery and leisure industries together with an appreciation of good interior design is essential. Lighting design and basic electrical knowledge could be an advantage. For exciting prospects, please apply in writing with full C.V. to A.C. Smith (Director), Chelsom Limited, Heritage House, Clifton Road, Blackpool, FY4 4QA.

**January Classified Copy Deadline
DECEMBER 13th**

NEWS



Property shop

Low voltage halogen lighting was chosen as a key interior design component in the UK's largest property showroom, the Edinburgh Solicitors Property Centre. More than 700 lamps and electronic transformers, 200 of which are from Philip's new Masterline range, were installed to provide eye-catching illumination for the 4000 property display cards in the 2500m² centre.

Extensive accent illumination was required because the display cards were arranged on display screens which formed three-sided bays on both sides of the central aisles of the ground floor and basement.

To ensure that the integrated lighting and screen design worked to full effect a mock-up was constructed and a lighting demonstration proved that a bright and fully functional solution could be achieved with the Masterline lamps.

In both the ground floor and basement, Montana 651 50W 12V downlights, fitted with Masterline lamps, were installed into the plaster ceiling directly above

the screens. Ceramique 320 spotlights, each featuring an opaque cowling, were fitted into the ceilings in the bays.

On the ground floor, Montana fittings were mounted above sand-blasted glass plates suspended at high level above the screens. This produced bright, but attractively diffused illumination on to the display cards.

The overall effect of vertical illumination from downlights and slightly angled light from the spotlights focuses illumination directly on to the display cards.

Each Montana downlight has been connected to an electronic transformer, providing optimum performance for the dichroic lamps.

At the front of the shop, a steel bridge, balcony and staircase have been illuminated by a curved line of Ceramique spotlights above the edge of the balcony, and four Montana downlights in the ceiling adjacent to the front doors.

In addition four Philips metal halide fittings with 250W lamps throw out light into the voids each side of the entrance bridge. Around the area at the front of the basement, a series of niches has been fitted with Montana 651 low voltage downlights to punctuate the space with pockets of light.

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LIGHTING

EQUIPMENT NEWS



Lighting the big sheep

An unusual application of floodlighting can be seen in Goulbourn, New South Wales, one of Australia's leading wool producing

centres. Mindful of the basis of the wealth in their part of the country the city fathers have erected a 12m high 'Big Merino' sheep. The floodlighting scheme is provided by Thorn Son-Pak fittings.

No to universal plugs

It is not feasible to change to a common plug and socket within Europe in the foreseeable future. This is the conclusion reached by a recent CENELEC leaflet published in the UK by the Electrical Installation Equipment Manufacturers' Association.

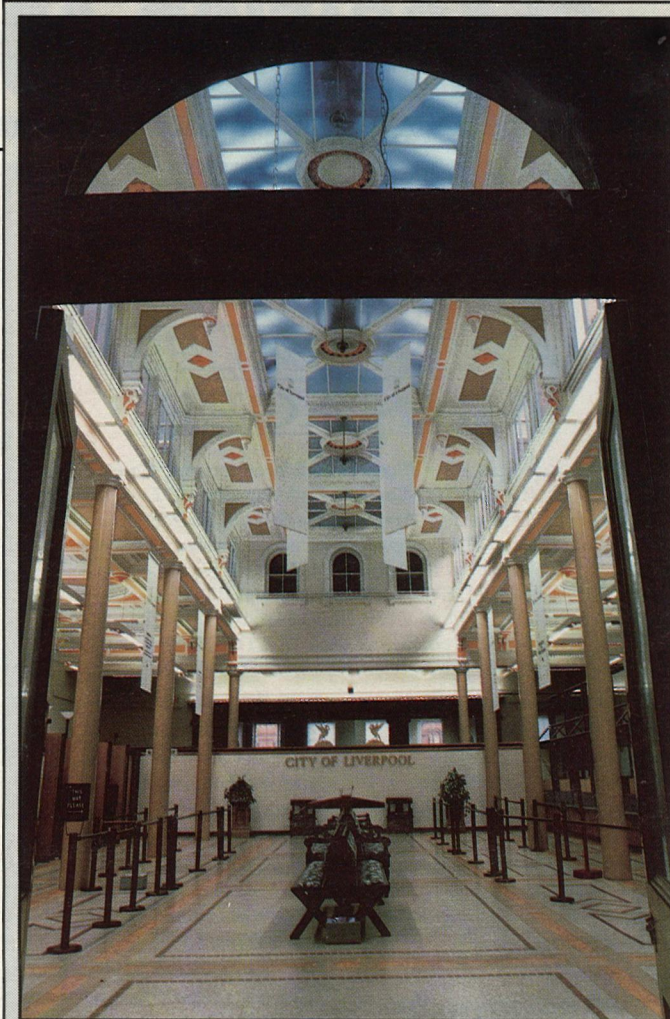
According to EIEMA director, Ken Jackson, there are approximately 22.5 million homes in the UK, to say nothing of installations in commercial, industrial and public buildings. The system adopted in the UK is the ring circuit. Continental European installations are normally based on separate radial circuits, but even these vary in types and ratings of socket outlets. There are believed to be over twenty plug and socket standards in current use within

the EEC and EFTA countries.

No logical economic or safety reasons had been put forward for the introduction of a European dimensional plug and socket standard. However, common basic safety requirements were being adopted through CENELEC, for example for shock risk, fire hazards and mechanical performance.

The introduction of an untried common European plug and socket outlet system would involve a major transitional safety period of 40 to 50 years and represent a considerable cost to consumers and the manufacturing sector, always assuming a common solution could be agreed.

By comparison, the number of those needing to take appliances between countries was small, and adaptors were widely available. In short, the total cost and safety risk during the transition period could not be justified by the limited advantages of a unified system.



Liverpool City Council has recently refurbished the Rates Hall, part of the Grade II listed municipal buildings complex in Dale Street. To combine good lighting performance with sensitivity for the elaborate Victorian interior, specially designed lighting from Moorlite Electrical was chosen.

The Rates Hall is similar in section to a large banking hall, rising to an imposing 9.5m in the center of the ornately plastered ceiling, which also incorporates celestery and laylights. The central area, open to the public, is flanked by ten cast iron columns and contains screened bank counters and interview booths for collection of the poll tax.

The continuous suspended uplighter/downlighter luminaires for the public area was developed jointly by the city architect's department and Moorlite. The lighting system is designed to light the ornate ceiling sympathetically, while ensuring effective, glare-free illumination for the public below.

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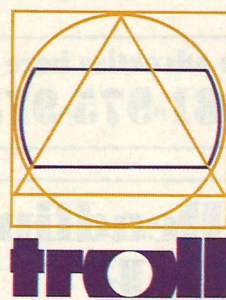
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Reader Service No. 11



Site lights

The London skyline is being lit up in a competition to find the best dressed crane in the City of London. In support, Mazda is donating £100 for every crane decorated in a Christmas theme and entered in Capital Radio's 'Share a Capital Christmas' competition.

The funds will be used to help light up the lives of thousands of London children and their families.

To begin the festivities, Mazda donated 1500 amber lamps to decorate a Trollope & Colls tower crane on London Weekend Television's 6 O'clock Live programme on 1 November 1991.

A chance to learn more about lighting

The next Lighting Certificate course run by the Lighting Industry Federation will start in January and continue until May.

In addition to the distance learning part of the course, two seminars will be held at Aston University, Birmingham. One

will take place on 28 January and the other on 17/18 March.

An advanced module course, on interior lighting, will start in May. In this case there will be one seminar on 18/19 May, also at Aston University.

For full details contact David Pritchard at the Lighting Industry Federation, Swan House, 207 Balham High Road, London SW17 7BQ.

IN YOUR NEXT ISSUE

The January 1992 issue of *Lighting Equipment News* is a special celebration edition marking the magazine's twenty-fifth anniversary. We take this opportunity to look back over a quarter of a cen-

tury of the lighting industry and review developments in lamp and reflector technology.

We also preview Lightshow 1992 which takes place at the end of January.