LIGHTING EQUIPMENT NEWS

SEPTEMBER 1990

Hitech to join Whitecroft

Hitech Lighting pls is the subject of a £3.9 million recommended offer by industrial conglomerate, Whitecroft plc.

Hitech has achieved rapid growth within the markets for retail display, office and industrial/ commercial lighting.

However, in the year ended 31 March 1990 Hitech registered a greatly reduced profit of only £174 352 on turnover of £6.2 m. The company was badly hit by the difficult trading conditions in the retail sector which forms its principal market.

This was compounded by the fact that the company had incurred increased expenditure in anticipation of considerable expansion, including opening a new factory in County Cleveland. In addition, Centurian Components, Hitech's transformer manufacturing subsidiary, made a substantial loss.

Whitecroft's turnover of around £140 million, is generated by a number of activities including engineering, textiles, building products and property. The company also has a major stake in lighting through companies such as Moorlite, Simplex and Silvertown.

In brief . . .

● **Whitecroft plc** has announced profits of £16.5 million before taxation — an increase of 8 per cent. The lighting division, which includes Moorlite Electrical, Simplex Lighting and Silvertown Lighting, had an outstanding year increasing its profits from £4.29 million to £6.24 million.

● **Chloride Bardic** is transferring some of its Southampton operations to its new plant in Peterborough. With major investment at both factories, Chloride is hoping to bring to an end the industrial unrest which has disrupted production at Southampton for many years.

● **P W Thorpe plc** has opened a new advanced photometrics laboratory. Its main feature is a purpose-built fully-automated angular light meter, a goniophotometer, to assess the performance of light fittings from 20W bulkheads to 2000W floodlights.

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Japanese to pay for dumping tungsten halogen lamps

Anti-dumping levies are to be charged on imported tungsten halogen lamps made in Japan, following a recent decision by the EC Commission.

Four companies representing the bulk of EC manufacturers of lamps of this type — Osram-GEC (UK), Osram GmbH (German Federal Republic), Philips Lighting BV (Netherlands), and Thorn Lighting (UK) complained in July 1989 that single ended tungsten halogen lamps were being sold at lower prices in the community than in the Japanese domestic market, and that the resulting price war was leading the European manufacturers to incur substantial losses and even threatening the viability of the European industry.

The Commission found that the European market in halogen lamps of the 200W — 500W rating had experienced a rapid growth with sales increasing from 5.4 million units in 1985 to 22.2 million units in 1989. During this period the volume of exports entering from Japan rose from 1.8 million to 13.46 million units, an increase of 540%, leading to a growth in the market share from 33% to 60% and, thus, giving the Japanese manufacturers a dominant position in the European market. During the same period the community's industry share of the market had declined from 56% to 29%.

Faced with the massive imports, carried out by means of prices which had declined continuously since 1985 and which undercut the prices of European producers by an average of 30% or more, community manufacturers had been forced to bring their prices into line to keep a presence on the market.

The complaint had mentioned 10 Japanese manufacturers — and only three of these had seen fit to cooperate in the enquiry. One firm, Toshiba, had refused to reply to the Commission's questionnaire and others had declared that they had not exported goods to Europe during the period in question. All the rest had failed to reply.

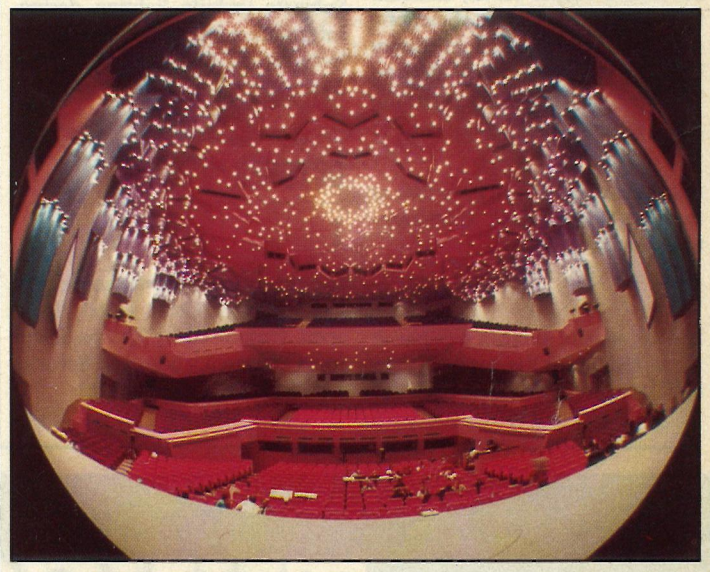
It has, however, proved possible to establish that the price of the product on the Japanese market was much higher than export prices to the EC countries, resulting in the lamps being sold in the community between 97.3% and 148.9% too cheaply.

The level of the levy imposed is considerably below the margins and has been determined by the Commission on the basis of the minimum price necessary to permit the domestic industry to compete with imports, to recover its share of the market, improve its financial situation and permit long-term development, while taking account of the interest of consumers of the product.

As a result, a general levy of 85.4% will be made. The two companies which did cooperate fully in the enquiry will be charged at the lower rate of 71.7% for Iwasaki and 84.2% for Phoenix.

In giving its decision, the Commission stressed that the size of the figure was very much in line with the damage caused, which had imperiled the very survival of the European lamp industry.

See LIFline page 5



The Vizier's Hall seats some 1 700 people.

The thousand and one lights

The Moroccan city of Marrakesh now has one of the largest business and conference complexes in North Africa following the opening of the new One Thousand and One Congress Centre.

Not only was the conception on a grand scale — the actual construction work was completed by a mammoth work force of 4 000 in a record period of 18 months.

The centre, built as a private venture, includes the 1 700 seat Vizir's Hall — a conference hall constructed with theatre wings, boxes, orchestra pit for operas, concerts or films which can be projected onto an 18m wide screen.

The smaller Ambassador's Hall seats 450 people, while 12 other rooms can cater for groups ranging in size from 30 to 280 people. In addition, a Royal Hall provides banqueting and reception facilities for between 1 500 and 2 800 people.

Lighting, provided by Strand Lighting, is controlled by means of a Gemini 2 board, a Taskmaster, one Action 48 and one Action 24, plus 240 dimmers. More than 350 luminaires includes Preludes, Cantatas, Cadenzas, Punchlites and Nocturnes.

In addition, the lighting installation includes 25 5kW Pollux, 25 Iris 2s, 12 Parscrollers and one autoscroll, eight Parscan 2s and 12 1000W Beamlites.

A dramatic environment both by day and night was one of the key requirements in lighting the Greenoaks Mercedes Benz dealership in Slough. The client further demanded a quality ambience appropriate to the luxury product on display, and accurate colour rendering to aid the salesmen in their negotiations.

The 3200K version of Sylvania's 70W and 150W HSI-TD double ended metal halide lamps in Lee Environmental Lighting's Pyraflood/EWE downlights were specified for the lighting installation.

The space created in the car showroom in vast, and is emphasised by a display of only six or seven cars at any time and by the highly reflective ceiling, mirroring the car display and distinctive floor pattern.

Enter for EMILAS '90

Entry forms for EMILAS '90, the Lighting Industry Federation's annual energy efficiency award scheme, are now available.

The scheme, launched by the LIF and the Electricity Council 15 years ago, is open to all UK organisations which can show a high level of efficiency in new or refurbished installations. It embraces three sections covering industrial or commercial refurbishments and new lighting schemes.

Last year, the EMILAS '89 winners achieved average savings in energy of 40%, with improvements in illuminance — in some cases, over 200%. If all sectors were to follow the example set by award winners, national electricity demand could be cut by 8% and the total emission of greenhouse gases would be reduced by 5%.

Reducing current acid emissions in this way would be a major contribution towards achieving the government target of holding emissions in the year 2005 at today's levels. Moreover, energy savings equivalent to the output of 2 average-size power stations are possible with energy efficient lighting.

The closing date for receipt of entries is 30 November 1990.

DIARY

SEPTEMBER

18-20

Institution of Lighting Engineers, annual conference, York. Details from ILE 0788 76492.

24

Insight on-site security seminar at the Strand Palace Hotel, London. Organised by Philips Scientific Communications and Security Division. Details from Sharon Pilkington 0223 245191.

25

Insight on-site security seminar at the Post House Hotel, Southampton. Details as before.

27

Insight on-site security seminar at the Stakis Inn on the Avenue, Cardiff. Details as before.

27-28

L'Association Française de l'Eclairage national lighting conference in Nice. Registration closes 16 August. Details from AFE, 52 Bd Malesherbes, 75008 Paris.

Computers in Electrical Building Services. South Thames College Department of Engineering starts the next of its series of Tuesday evening courses on 18 September. Subjects include lighting design. Information from F S Smith, senior lecturer 081-870 2241 ext 389 or 315

OCTOBER

1

Insight on-site security seminar at the Runcorn Crest Hotel, Runcorn. Organised by Philips Scientific Communications and Security Division. Details as before.

2

Insight on-site security seminar at Hinckley Island Hotel, Hinckley, Leicestershire. Details as before.

3

Lighting: the state of the art. One-day conference and exhibition at the Sachas Hotel, Manchester. Organised by Industrial Media Ltd. Details from Lyn Sangster 0732 770049.

4

Insight on-site security seminar at the Swallow Hotel, Waltham Abbey. Details as before.

10

Communications standards for building and energy management systems. A one-day colloquium organised by the BEMS Centre of the BSRIA at the National Motor Cycle Centre in Solihull. Information from BEMS Centre 0344 426511.

Lighting Education Forum. Open debate on lighting education in the 90s. An afternoon event at the Building Services Engineering Centre, London. Details from Karl Pike, CIBSE, 081-675 5211.

16

Lighting in the electronic age. CIBSE Lighting Division, chairman's address, by Lou Bedocs. Evening meeting at the Institution of Structural Engineers, London. Details from Karl Pike, CIBSE, 081-675 5211.

Exhibition of lighting and associated products. One-day event at the Bristol Exhibition Centre. Details from Institution of Lighting Engineers 0788 76492.

Lighting: the state of the art. One-day conference and exhibition at the Crest Hotel, Walsgrave, Coventry. Organised by Industrial Media Ltd. Details from Lyn Sangster 0732 770049.

CIBSE

The Chartered Institution of Building Services Engineers

Young lighter of the year scheme 1990

The reaction and response to the brief 'trailer' in last month's column for this new CIBSE initiative has been extraordinary, both from would-be entrants and from would-be sponsors.

Young lighters are the lifeblood of our profession and of our industry. It is they who will develop the new products, design the new schemes, and continue to bring fresh ideas to the art and science of lighting.

It is in acknowledging this 'debt to the future' that CIBSE Lighting Division, as part of its commitment to encouraging young engineers, scientists, designers and trainees to choose lighting as their profession, has conceived and set up the Young Lighter of the Year Scheme.

The enthusiasm for this concept of stimulating the minds and ideas of the young people in our profession is almost tangible within Lighting Division, spearheaded by our chairman, Lou Bedocs. Lou is adamant that the industry must take on the responsibility for creating its own future workforce and has been eloquent in his presentation of the scheme to entrants and sponsors alike.

In recent weeks, Lighting Division has been in touch with some two dozen potential sponsors of the scheme and has been encouraged by the declarations of support and enthusiasm from over one third. They all commend the objectives of the scheme and several have been prepared to assist with funding.

At a recent meeting with John Foster, MD of Marlin Lighting, Lou Bedocs has successfully reached an agreement whereby Marlin have been appointed sole patron of the CIBSE Young Lighter of the Year scheme for the first three years.

Lou Bedocs urges "This is a marvellous, unique opportunity for youth to have its say in lighting matters, and the really exciting prospect is that, through its impact on young lighters and the attendant publicity of the annual awards, the Scheme will be contributing towards building a solid foundation for the future of the lighting professional in this country".

The first young Lighter presentation will be made at a CIBSE Lighting Division sessional meeting on 15 January 1991. Full details are available from Karl Pike at CIBSE (081-675 5211).

Karl Pike,
Secretary, *Lighting Division.*

NEWS

Video on innovative lighting

A recreation of *Lighting communiqué '90,* a presentation at the National Lighting Conference at Cambridge University in April, is available as a 65 minute VHS video.

The presentation reviews the progress in lamps, luminaires and lighting installations over the previous two years with the accent on innovation.

Robin Aldworth, for the Lighting Industry Federation, introduces the Communiqué. The speakers are Brian Morgan of Luxonic Lighting, Barbara Trigg of *Lighting Equipment News,* and Iain Maclean of Thorn Lighting.

As well as being useful to those with an interest in promoting good lighting, it is a valuable training aid for students, lighting engineers, salesmen and marketing personnel.

Copies of the video can be obtained, price £20, from Member Services Department, CIBSE, 222 Balham High Road, London SW13 9BS.

Opportunity or threat?

A lecture called *European Standards: opportunity or threat,* will be given by Gordon Gaddes, president of CENELEC and director general of the BEAMA Federation, at the Royal Institution, Albermarle Street, London, on Tuesday evening, October 2.

This lecture is the inaugural Bill Simons lecture established by the England Section of ISA International as a tribute to William Richard (Bill) Simons who passed away in October 1989.

Bill Simons devoted some 40 years to the engineering profession and served on numerous BEAMA, BSI and international committees.

Admission will be by ticket available free of charge from Alan Reeve, president, England Section, ISA International, 14 Tavistock Gate, Croydon, CR0 2AS (telephone: 081-316 3132, fax: 081-316 3422).

Trade literature in brief

● **Quest Emess** has a new catalogue for its 1990 collection of lighting products (tel. 071-321 0127).

● **Property Services Agency Specialist Services** has a poster displaying extracts from the Electricity at Work Regulations which came into force earlier this year (tel. 081-760 8652).

● **Mattalex Ltd** has produced an illustrated folder of facts about its emergency lighting systems (tel. 0789 490900).

NEWS

Shopping centre combines sources

The Newlands Centre in Kettering, has been extensively refurbished to bring its early 1970s architectural style into line with contemporary retail design.

The new three-storey extension comprising shopping mall and car parks, brings the size of the centre to nearly 20 000 square metres and the number of shop units to 55. It is finished in glass and steel, with an atrium forming a focal point over the main square. The lighting brief — to create an attractive ambient and decorative scheme with lots of sparkle — had to take into account the large amount of daylight from the atrium and from mall roof-lights, and the individual shopfront lighting.

Consulting engineers Ralph T King, together with Light Years, planned the lighting design using a mix of incandescent decorative wall brackets for atmosphere, metal halide lighting to flood the main atrium area with light, and low voltage lighting to provide ambient and effect lighting throughout the centre.

Exterior double wall brackets in a black with octahedron diffusers were positioned at regular intervals along the perimeter of the square and malls to create an outdoor flavour.

Light Years specified the metal halide Exposhop fitting to provide general lighting over the Gold Street and Newland Street malls. The fitting, with integral control gear, uses the 250W Powerstar lamp, giving an intermediate light of 4300K.

Central atrium

Low voltage lighting was used around the central atrium where three tiers of small recessed fittings guide the eye from daylight levels to the artificial lighting of the centre.

The three malls, each featuring rectangular coffered ceilings. have each been lined with decorative wall brackets, heightened with low voltage starburst and adjustable recessed fittings in the coffers which give a warm, vibrant atmosphere.

Together, the combined sources result in a warm colour temperature, giving a contrast with the display lighting of the individual shopfronts.

A horizontal illumination of 200-250 lux at floor level has been established throughout the public areas. This gives a bright interior which is economic to run and which does not compete with the shop window lighting.

Computers in building services

The next course on computers in building services at the South Thames College, London, will commence on 18 September. It consists of 13 Tuesday evening sessions.

The course is intended for anyone who wishes to familiarise themselves with computers and some of the latest software. Lighting design is among the topics considered.

For further information and reservations telephone F S Smith on 081-870 2241 extension 389 or 315.

Paris lighting exhibition

The next International Lighting Exhibition is Paris will take place on Thursday 10 to Tuesday 15 January 1991 at the Porte de Versailles.

The exhibition will be open from 9.30am to 7pm from Thursday to Monday. On Tuesday 15 January, the opening times will be from 9.30am to 5pm.

The exhibition will be open to the trade only. A complete panorama of international lighting products will be on display.

Hotel lighting seminar

Philips Lighting is to hold a seminar on the lighting of hotels, clubs, pubs and restaurants on Tuesday 9 October. It will look at the effective use of light, energy efficiency and design.

The venue is the company's Lighting Application Centre in Croydon, where lighting effects can be demonstrated.

Anyone interested in attending should contact Sandra Nelder at Philips Lighting on 081-665 6644.

Electrocomponents, Newey & Eyre link

Electrocomponents plc has announced the formation of a joint venture between its subsidiary, Pact International Ltd, and Wellco, a division of Newey & Eyre Group Ltd, a BTR subsidiary.

Both companies are distributors of consumer electrical products to the retail trades.

The joint venture is formed by Pact acquiring Wellco in exchange for the issue of new shares to Newey & Eyre, representing 30% of the enlarged share capital of Pact and the payment of £2.2 million cash.

At the same time, Electrocomponents has acquired the trading/business operations of Hopson Bridgers, the lighting division of Newey & Eyre Group Ltd. These will be absorbed into Electro Lighting Group Ltd which will acquire certain assets for £1.5m.

All night street lighting cuts car crime

Car crime has fallen by over 67% in part of Hastings thanks to an all night street lighting scheme.

East Sussex County Council joined Sussex Police and the South Eastern Electricity Board to develop the £20 000 initiative. Forty new white sodium street lights were installed in three streets which had a high rate of vandalism and theft in connection with cars — 31 incidents reported from January to April 1989.

In the same period this year reported car crime in these streets dropped to 10 — with only six of these at night.

In other parts of Hastings with similar problems, car crime increased by 100%. Overall in the town, statistics rose during these four month periods from 598 to 878 incidents.

The scheme used 70W high pressure sodium lights in Philips SGS 203 lanterns at 6m mounting height on Phosco steel Forest columns. They replaced 29, 80W mercury vapour lights in open lanterns at 4m mounting height.

The new lamps supply nearly 40% more light with an average illuminance of 10 lux, compared with the old ones which gave aluminance value of below 1 lux.

A street survey carried out during the project showed that more than half the local people interviewed felt safer walking after dark, and 86 per cent thought the new lighting more attractive.

Torch lit exhibition

The Sport 90 exhibition at the Design Museum in London emphasised the relationship between athlete and equipment and the way in which new materials and technology have expanded human potential.

Equipment, machines and clothing were mounted against a deep blue cyclorama, presented in a witty and dynamic style in attitudes suggesting movement, eg the tennis racket was angled as if in mid-serve.

The design scheme's emphasis on cleverly enhancing the objects meant that the choice of lighting was particularly important. Torch 75 spotlights by Concord Lighting Ltd were chosen for their ability to focus a tight bright beam of light from the considerable 4m height of the Design Museum's ceiling.

COMMENT

Keeping it in the family

Once again the lighting industry is suffering for reasons over which it has no control. Unfortunately for us, construction — traditionally the key indicator of the state of the domestic economy — is the big brother on whose coat tails we ride.

Continuing high interest rates have persuaded manufacturers to put off plans for expansion; and office and commercial schemes, planned in the full light of an expansionist economy, are left unfinished as developers hesitate to throw good money after bad. Far from the outlook looking rosy, recent forecasts suggest that work loads will continue to fall, resulting in ever increasing levels of unemployment.

Just as we seemed set to absorb this shock, the fires of inflation were further fanned by the onset of the Middle East crisis, producing yet another hike in the price of oil. And, finally, the threat of war in that explosive part of the world has unnerved stock markets, leading to substantial losses in shareprices.

Although less directly sensitive than most of our European colleagues to increases in oil prices — after all, we are still ourselves numbered among the oil producing nations — we are in many ways more likely to be affected by movements in share prices. The family business is not as powerful and influentual a force here as in the rest of Europe.

And family firms have one advantage — they do not always have to keep looking over their shoulders at the possible effect on share prices of any step they plan to take. In short, they can afford to plan for the long term.

In spite of this lower perceived profile of family businesses in the UK, a recent report by Stoy Hayward and the London Business School comes up with the surprising fact that some three-quarters of the top 8 250 companies in this country (76% to be precise) are either family owned or family controlled.

And in the luminaires sector of the lighting industry — effectively a batch processing industry with no great need for capital intensive research and development — this figure is probably considerably higher.

And the possible down side of family ownership? Apparently, less desirable features may include a resistance to change, lack of management experience and the failure to give priority to commercial objectives.

LIGHTING EQUIPMENT NEWS

Editor: Judy Sewell
Associate Editor: Barbara Trigg
Art Editor: Lorna Francis
Midlands Area Manager: Jim Hughes
Northern Area Manager: Robert Ditchfield
Southern Area Manager: Jim Hughes
Classified Sales: Alastair Moyes
Production Manager: Lee Hibbert
Circulation: Kirtee Parmar
Associate Publisher: John Bull
Publisher: Nigel Foster

Directors: R W Osborne, (Chairman), G J F Brigg (Managing Director), N C G Foster, D L Jones, D B Wright.
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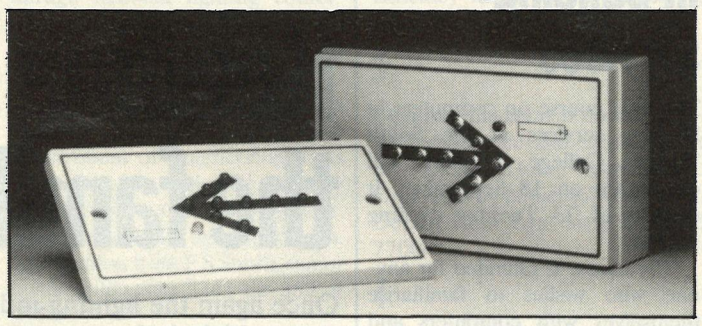
NEW PRODUCTS

Flashing arrows show the way



Ring Electronics Ltd has launched DirExit, a bright, low level indication of emergency escape routes. High intensity light emitting diodes in the shape of an arrow flash on and off and were chosen because LEDs provide a point source visible in adverse conditions.

DirExit fittings are mounted on the front plates of standard, double-gang, pattress boxes. The design allows the arrow to point either left or right.

DirExit has been designed to be mounted within 500mm of the floor so that it is visible in a partially smoke filled room. It illuminates either when the mains fails or from a fire alarm signal.

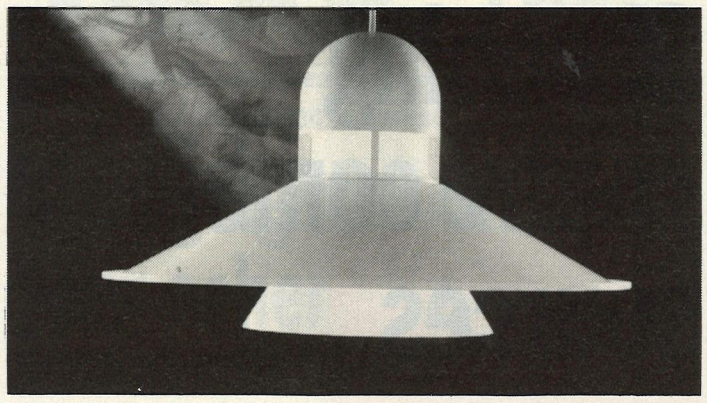
Nickel cadmium batteries provide a three-hour emergency duration after a 24 hour charging period. **Reader Service No. 151**

Emergency conversion modules

Six emergency conversion modules for fluorescent lighting are available from Tamlite Emergency Lighting.

They include a fully enclosed charger, inverter and changeover module, nickel cadmium battery pack and wiring instructions. They have the option of being wired for either maintained or non-maintained operation.

Reader Service No. 154



Pendants for modern interiors

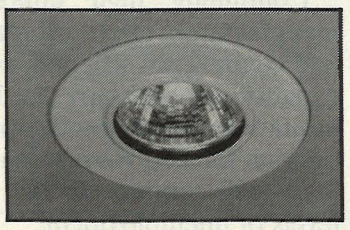
Glashütte Limburg has created the 4510 series of pendants derived from one basic shape, to complement modern interiors. The fittings are available in different dimensions and accept either tungsten halogen, incandescent or compact fluorescent lamps.

The pendants consist of white aluminium shades and reflectors with either three-ply opal glass or crystal glass. Models taking low voltage tungsten halogen lamps accommodate the transformer within the aluminium canopy.

The aluminium shades direct the light, which also spills above the reflector to provide a good light distribution.

Reader Service No. 155

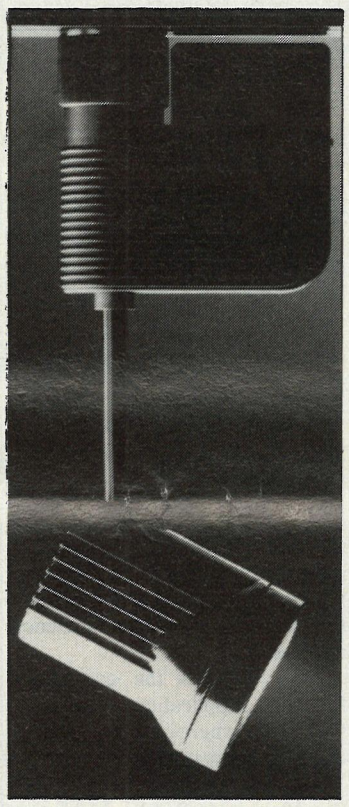
Weatherproof downlight



Luna Lighting Ltd has a low voltage weatherproof downlight that can be used outdoors or in other moist atmospheres.

The downlight has ingress protection rating IP55 which makes it suitable for lighting environments such as leisure centres, swimming pools, saunas and shower rooms. Low voltage 50mm dichroic reflector lamps up to a maximum of 50W are used.

The front trim is white with a black inner bezel and a sealed front safety glass. A practical design feature is that the front trim is attached magnetically allowing easy access for lamp replacement. **Reader Service No. 152**



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

Track adaptor houses transformer

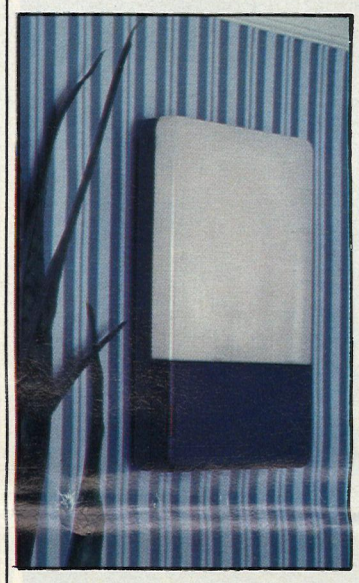
Multitron is an electronic adaptor-transformer from Staff Lighting Ltd. It enables the Multitec range, the smallest of Staff's low voltage spotlights without integral transformers, to be used with either single- or three-circuit mains track.

The spotlights are connected to Multitron using the small Multitec plug-in connection which forms the end of the supporting arm and provides electrical and mechanical connection.

Multitron is particularly useful for prestigious retail and art gallery lighting which requires regular repositioning of luminaires, because it avoids the necessity of recalculating the electrical loading. Multitec spotlights are available with three different lengths of supporting arm.

The adaptor-transformer housing is available in either black or white. Among the safety features are short circuit and overload protection.

Reader Service No. 153



Slimline emergency light

Tualuce is a slim emergency light from Hitech Lighting plc.

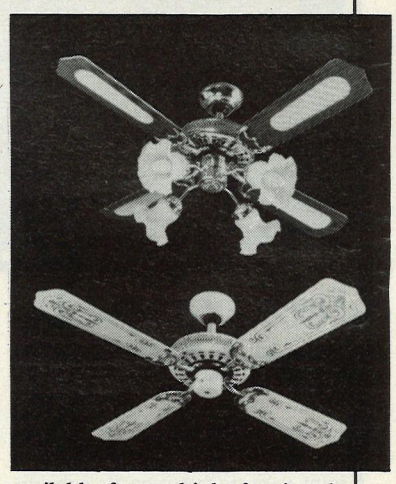
With an overall depth of 64mm, the stylish self-contained design is available in three colours: grey, black and burgundy. It is fitted with a 22W circular fluorescent tube and has a high efficiency electronic ballast.

In common with all Hitech's emergency lighting units, Tualuce has a patented clip-on mounting plate.

The unit is also available as a mains only fitting.

Reader Service No. 156

Let there be light and air: cool and warm



The Alaska range of ceiling fans from Stuart Dixon Ltd has been expanded. Warm or cool air circulation can be provided and all models can be fitted with lighting.

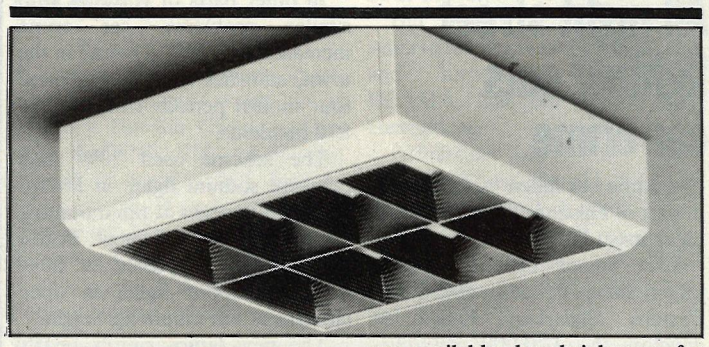
There is a choice of six luminaire styles and sizes with individual switches.

Different sizes of blades are available in materials such as cane, brass, and white stencilled designs. The fans can be adjusted for ceilings of different heights and for sloping ceilings.

The most important safety feature is that a three-speed switch control is used, rather than a pull-cord which can be tampered with by the public. A central control is available for multiple fan installations.

As well as being used in hotels and other public places, some conservatory manufacturers are reported to be offering them as standard fittings because of the facility for either warm or cool air.

Reader Service No. 157



More Quattro luminaires

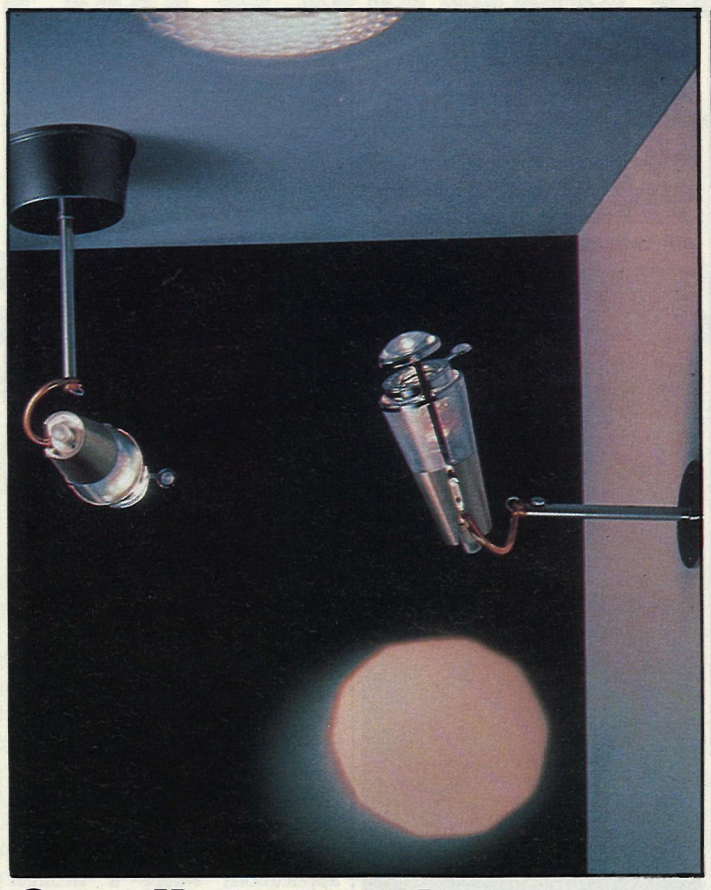
Thorn Lighting Ltd has extended its surface mounted Quattro range.

2D Surface Quattro is a 300mm square luminaire which uses a 38W 2D lamp. Two louvre options are available: low brightness, for general areas where glare is to be avoided, and a specular wedge shaped version for VDT areas.

This luminaire is also suitable for corridors, foyers, small offices, boardrooms and other applications where lower light levels but good light control and a high quality appearance are required.

Reader Service No. 158

NEW PRODUCTS



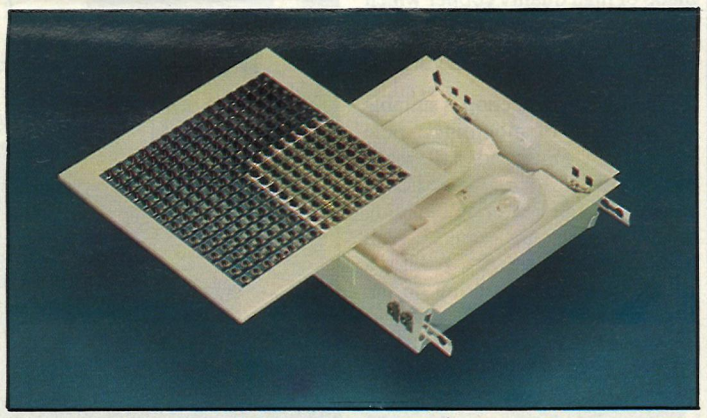
Spotlight has lens and diaphragm

Galileo, a low voltage spotlight system from Light FX, has a lens to control the focus and a diaphragm to adjust the width of the beam from the dichroic lamp.

The rear of the housing is in cast aluminium, with the front part in expanded steel mesh, to provide ventilation for the lamp.

There are floor standing, ceiling, wall and desk top versions. All have telescopic arms. The desk light has a switch that gives a choice of three different intensities of light.

Reader Service No. 159



Wider choice for Aztecs

Interlux's Aztec range of compact, recessed luminaires using 2D lamps has been redesigned to accommodate a wider range of louvres and diffusers.

Aztex has standard dimensions of 300 x 300mm and is 95mm deep. It is suitable for either 28 or 38W 2D lamps.

Reader Service No. 160

Device to extend lamp life

An automatic voltage controller for use with incandescent lamps, including low voltage types, is available in the UK through Light FX.

The Intralux LC3000, an electronic device made in Australia, is designed to maximise lamp life. As well as stabilising voltage, it provides a soft start for lamps. More reliable lamp life in turn assists in planning maintenance schedules.

Reader Service No. 162

Dimmer offers four levels

Richmond Lighting Ltd has produced a compact, four-level dimmer called Micropush. The fading sequence occurs over five seconds.

The self-contained, flat plate design in three finishes fits a standard 41mm box and can be

used to control either tungsten or low voltage lighting.

Micropush avoids problems caused by current surges due to lamp failure by the fitting of the Richmond surge bypass which protects the circuitry without the need for a fuse.

Reader Service No. 163

Metal halide wall light

A wall mounted metal halide uplight from Trichord Ltd is suitable for modern offices and is also stated to blend with period interiors. Black, white, brass and chromium plated finishes are available.

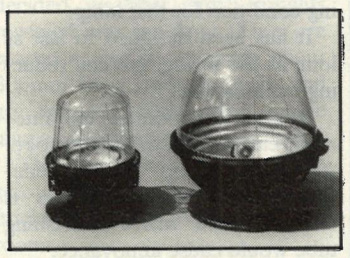
Installation of the ATL100B is aided by a separate wall mounting chassis, to which the fitting is simply slotted when building work is completed.

Reader Service No. 164

Portable lighting for industry

Gray-Campling Ltd has a range of portable lighting units designed to withstand the harsh treatment encountered in industrial use. They are made by Willey Meyer & Sohn, Germany.

Model UN120 uses GLS lamps



up to 200W and can be supplied with either a BC or ES lampholder. The UN150 accepts lamps up to 500W and incorporates an ES lampholder.

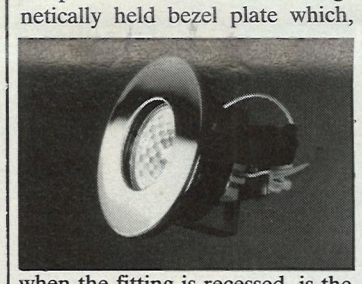
Both models are made of reinforced moulded rubber with the lamp enclosures made from high impact resistant, clear, sectionalised polycarbonate.

A cable-housing recess in both units allows the cable to be neatly wound and retained by anti-strain cleats in the moulded base.

Reader Service No. 165

Modified magnits

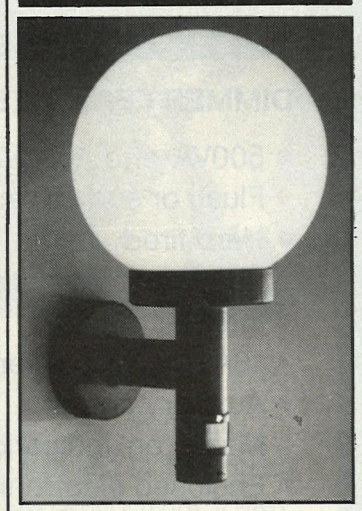
Microlights has modified its range of low voltage Magnit downlights. A lip has been added to the magnetically held bezel plate which,



when the fitting is recessed, is the only part visible. Microlights offers the bezel plate in any colour of finish to co-ordinate with interior design schemes.

The ease with which the bezel plate can be removed facilitates speedy relamping.

Reader Service No. 166



Security wall light

Simplex Lighting Ltd has launched PIR Sphere, a security light.

This luminaire with its passive infra-red detector is suitable for porches, patios and paths. The PIR sensor operates over a distance of 6m through an angle of 90°.

There is a choice of opal or smoked effect diffuser. Lamps up to 100W may be used.

Reader Service No. 167

Stage lighting control desk

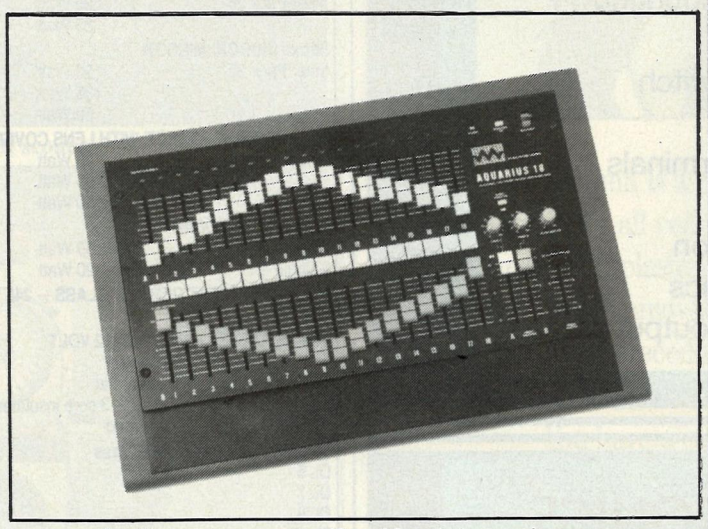
Multiform Lighting has extended its range of professional stage lighting control systems.

Aquarius is an 18-channel, two-preset, manual control desk with standard 0-10V d.c. outputs, designed for theatrical presentations.

The A and B presets are provided with separate masters and 0-5 minute timer controls allowing timed, dipless crossfades to be produced with ease. Both masters are fitted with green monitor LEDs and the direction of the B master can be reversed if desired.

Separately mastered flash buttons, a dead blackout button and a grand master complete the controls.

For ease of use in darkened situations, all channel outputs are monitored by red LEDs which can



be turned off to save power if necessary. The outputs also include series diodes allowing the Aquarius to be connected in parallel to dimmer channel inputs with a rock desk or disco controller, for use in multi-purpose venues.

The desk can be fitted with various connectors for compatability with existing equipment.

It is available as a console, price £400, or in rack mounting format, £335, and desks can be linked in master/slave arrangement using a single DIN cable. The power supply unit is priced at £35. All prices are plus VAT.

Reader Service No. 161

LIF LINE

Dumping debacle

Recent events in Brussels and Westminster have caused me to think of a tale which is often told as an after-dinner joke — the one about a small bird, a cow and a fox. I can't remember the intervening details but if you can, let me know. The moral of the story is that it is not always your supposed enemies who drop you in it, nor your supposed friends who pull you out of it.

Why am I struggling to recall how the story goes? Two years ago we were alarmed to find distributors of Japanese linear tungsten halogen lamps offering them at prices below the European costs of production. We decided to investigate and convey our alarm to our governments — in the UK through the channels of the DTI — and to the EEC commission. From the former we received sympathy and encouragement to pursue the matter further, from the latter we received an avalanche of forms to be completed, never-ending questions to be answered and impossible deadlines to be met.

In collaboration with our European colleagues we burnt the midnight oil, filled in the forms, answered all the questions and met all of the impossible deadlines. The EEC commission was still not satisfied and sent out their own investigators to double check and triple check all the way to Japan, as well as around Europe.

We anxiously awaited the result. No, things were not as we had stated — the extent of the dumping was much greater and the injury to the European lamp industry far more severe. In fact, this was one of the worst and clearest cases of dumping the EEC commission had uncovered and, as a result, duties of within the region of 85% were being recommended — the highest ever.

However, there were still some formalities which had to be observed. Recommendations had to go before the anti-dumping committee of the EEC, made up of representatives of each member state.

Thus, the committee met but an objection was raised. From where did this stem — the DTI! But what was their objection? According to the good Lord — in this case Lord Trefgarne, then DTI Minister -the objection was that the case was allegedly flawed on economic grounds. But in the opinion of the other representatives and the EEC commission the case was considered the most 'technically' perfect they had ever seen.

Then, what is the real basis of the DTI's objection?

You mean you don't know?

No, tell us.

Are you not aware that over 40% of Japanese inward investment into the EEC is made in the UK? Are you not aware that Nicholas Ridley was in Japan at a key stage in our deliberations?

Are you not aware it is just possible that during the visit a Japanese lamp manufacturer postulated the advantages of setting up a lamp factory in the UK? Were you not aware that the DTI man of the EEC dumping committee is known as the Japanese representative?

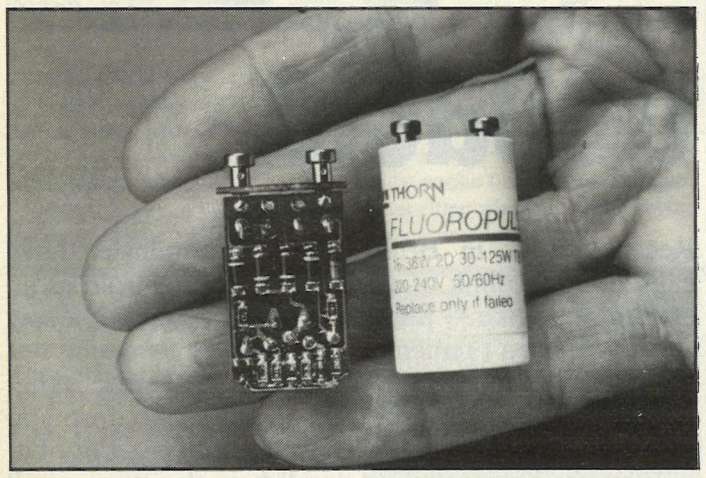
By 20 July duties of 85% were imposed on Japanese linear tungsten halogen lamps, Nicholas Ridley was on the back benches and Lord Trefgarne was back doing his normal lordly duties rather than his ministerial ones.

If you believe you see the moral of this story could you relay it to Peter Lilley MP, care of the House of Commons, London SW1. That is, if he is still Secretary of State for Industry!

NEW PRODUCTS

Convert standard lights to electronic start

Fluoropulse has been designed to enable users to instantly update existing standard-start fluorescent luminaires to electronic start. It has been launched by Thorn Lighting Ltd and is housed in a conventional starter canister.



Electronic starters provide a more reliable and instant starting facility, particularly for old or cold lamps, because they emit a multi-pulsed burst of current.

In addition, Fluoropulse is stated to improve the life of a lamp by automatically adjusting the cathode pre-heat time according to the wattage of the lamp and thereby finding the optimum starting condition for that lamp.

It has been designed to last as long as the fitting, thereby reducing maintenance.

It also incorporates an automatic cut-out and will not try to restart a failed lamp. This has benefits where access to fittings is restricted and where a flashing tube would cause annoyance.

The range of four Fluoropulse starters can operate virtually all linear and compact fluorescent lamps and fits directly into an existing two-pin starter socket.

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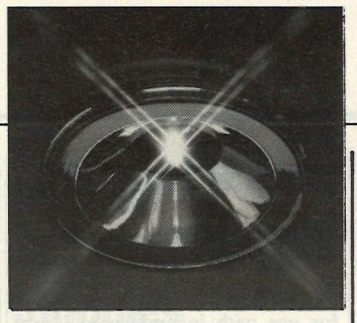


Miniature emergency downlight

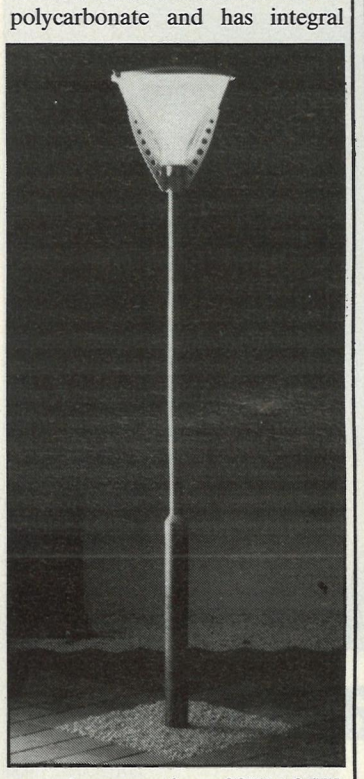
The increasing use of low voltage tungsten halogen downlights has spurred on JSB Electrical plc to produce a matching emergency light.

Halolux is a self-contained, non-maintained, recessed unit that fits into a ceiling void only 130mm deep.

It uses a 4W 5V tungsten halogen lamp and has an aluminium reflector which is finished in a choice of white, chromium plate or brass. **Reader Service No. 169**

Decorative amenity lighting

Maple is a modern exterior luminaire from LDMS for pedestrian areas. It is made of aluminium and polycarbonate and has integral



control gear for 80W-125W mercury lamps.

Versions are available for wall and column mounting.

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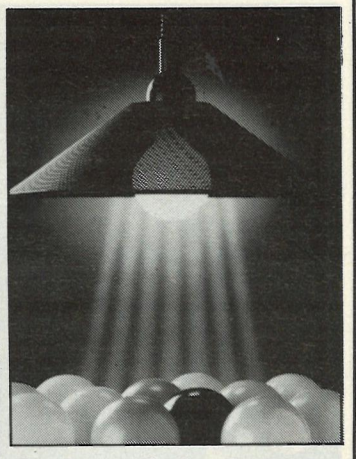

Colourful globe shaped lamps

A range of 95mm diameter lamps called Globe Lamps has been introduced by Crompton Lighting Ltd. The range is available in six colours for interior lighting applications such as homes, hotels and showrooms.

Globe Lamps are made in pastel shades of blue, green, peach, pink and yellow, and a vibrant red for applications where a stronger colour is required. Ratings of 60W and 100W are supplied with standard bayonet cap fitting.

Clear and opal Globe Lamps complete the range and are available in ratings of 25W, 60W and 100W. These lamps are supplied with either BC or ES caps.

Reader Service No. 171

Luminaires in copper

A family of exterior luminaires made of high quality copper which weathers to produce an attractive natural patina is available through Marlin Lighting.

The Lisbon collection is suitable for a variety of mountings: pole top, ceiling, pillar and wall, making it possible for the specifier to create a full exterior lighting scheme using one range. Wall luminaires can be fitted with a corner block for mounting on the corner of a building.

All the luminaires accept one GLS lamp (E27, maximum 100W) and use crystal glass.

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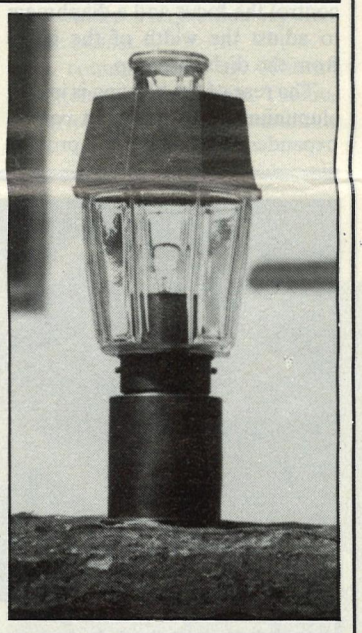


Fibre optics uplight historic setting

In a royal residence by the Thames, fibre optic lighting has been used to help to create the candlelit atmosphere of the seventeenth century.

When Inigo Jones designed the Queen's House at Greenwich, London, he could not have imagined that over 300 years later fibre optic cables would be built into the candles!

Between 1984 and 1990 the Department of the Environment's Property Services Agency refurbished the house and restored it as near as possible to its appearance when the dowager Queen Henrietta Maria lived there in the 1660s. Only minimal concessions have been made to modern technology in areas such as heating and lighting.

All the luminaires use electronic flicker-flame candles from Sweden and many also have fibre optics built into them.

The main lighting contract was handled by Applied Lighting Technology, working to the design concept of Lighting Design Partnership, with Dernier and Hamlyn Ltd making the luminaires.

The Victoria and Albert Museum, the National Maritime Museum and Dernier and Hamlyn together researched the period and the resulting luminaires are copies of seventeenth century designs.

Moulds were made, followed by casting patterns, and the luminaires were then cast in brass and given the required finish. Allowing access holes for the fibre optics created problems because the size and proportions of the fittings had to be historically accurate.

Wall sconces are silver plated with elaborate wall plates that incorporate the monogram of Charles I. The light source for the fibre optics is a 50W low voltage, tungsten halogen capsule lamp housed in a wall box recessed behind the wall plate. This box also contains a tiny fan and motor.

Most of the fittings using fibre optics, except for the chandeliers, have three points of fibre optic light behind the base of the candles, incorporated in the metalwork immediately above the drip pans. This upward light provides general illumination.

Floor standing candlesticks finished in gilt have a similar treatment, with the box housing the light source hidden below the floor.

More elaborate, floor standing girandoles with Bohemian crystal drops have the metalwork either silver plated or finished in antique gilt. Low voltage 100W lamps provide the light source.

As the house already had some Flemish style chandeliers from an earlier refurbishment these were restored and six more made to match them. They are solid brass and have either six or 12 arms.

Chandeliers in most of the reception rooms on the ground floor have fibre optic spotlights built into the ceiling roses and directed to light the paintings. There are also fibre optic lights concealed above the door architraves in the Great Hall to light the painted ceiling.

These two forms of lighting use 150W metal halide lamps in light boxes concealed in the fireplaces of the rooms above.

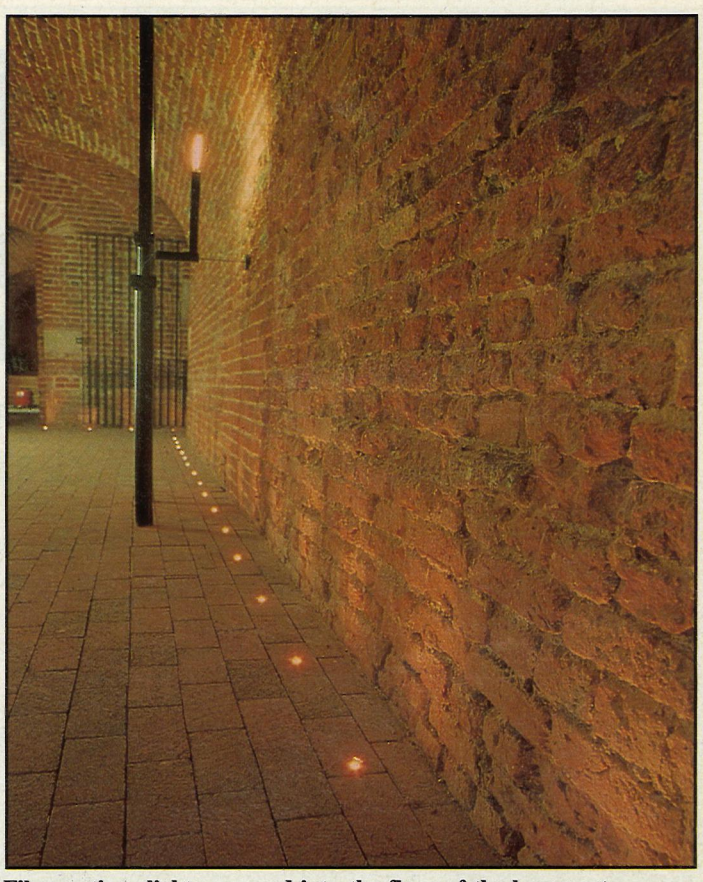
With fibre optic lighting, conservation problems due to ultraviolet radiation are avoided, so there is no risk to the paintings and textiles from the artificial lighting.

Further chandeliers are available for use when banquets are held in the Great Hall and a higher illuminance is required. They are plugged in and installed temporarily below the gallery.

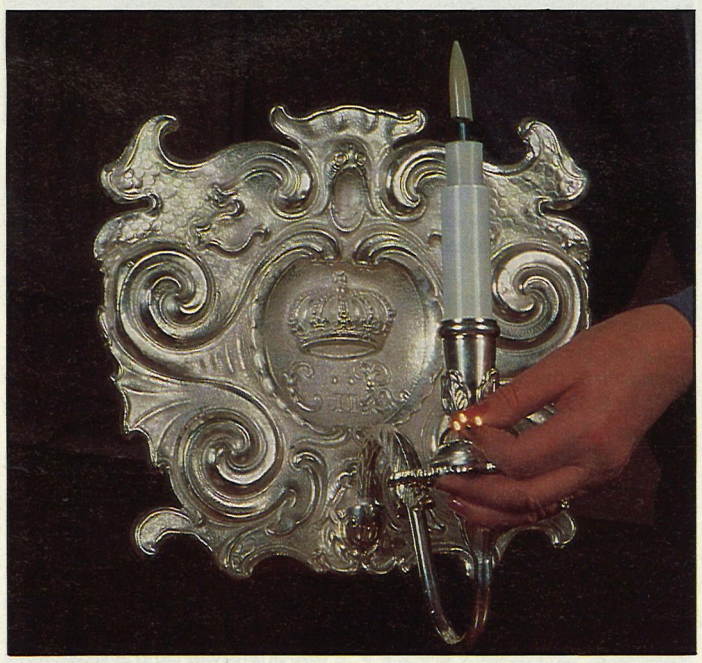
The basement has a series of brick-vaulted rooms, some of which house a display about the history of the house. This area was designed by John Ronayne who decided on fibre optic uplights recessed into the floor. They are spaced at regular intervals about 300mm away from the walls and are fed by 150W metal halide lamps concealed below the floor.

This light both enhances the colour of the seventeenth century brickwork and delineates the rooms.

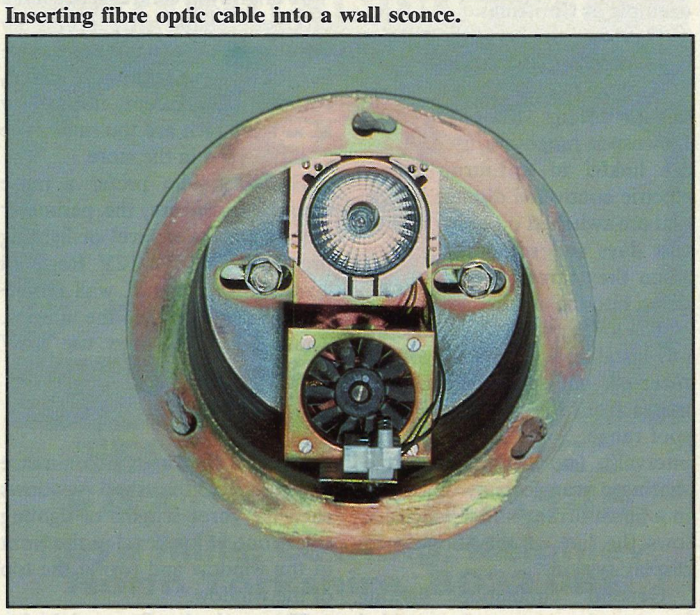
The total cost of the new lighting for the Queen's House was about £150 000. A number of the lighting systems were developed for this project and are seen for the first time.



Fibre optic uplights recessed into the floor of the basement.



Inserting fibre optic cable into a wall sconce.



Wall box (200mm dia) behind sconce holds lamp, fan and motor.

Modern store has fibre optic lighting

The first large scale use of fibre optic lighting in a department store is described in this article, which also looks at the advantages of such an installation.

Bentalls has just opened a new department store adjacent to its long established premises in Kingston upon Thames, Surrey. Built round a central atrium four storeys high, the store has a light, airy feeling with sparkle added by the unusual fibre optic lighting installation.

It is believed to be the first time fibre optic lighting has been used in a retail environment on this scale anywhere in the world.

Over 630 sub-miniature, specially designed luminaires are recessed below the edges of the balconies around the atrium. They are housed in one of the horizontal recesses of the balcony profile and angled to throw light onto the diagonal cut-back on the lower part of the profile. Each of these points of light has a lens over the end of the fibre optic cable to give a 40° beam angle.

The effect is of a fringe of light around the atrium at every floor level. Around the top of the atrium fibre optic downlights set into the top floor ceiling add a final sparkle to the atrium.

The ceiling plates of the luminaires are painted to match the ceiling, and being so small anyway, are very inconspicuous.

Light sources for the fibre optic harnesses are 132 metal halide projectors. They use 150W lamps by Wotan, with a correlated colour temperature of 3000K, which were chosen for their warm white light.

The light boxes are attached to the underside of the concrete floor above. Access for re-lamping, and also for maintenance of other building services, is via continuous lines of ceiling panels following the perimeter of the balconies.

This ease of access for maintenance, combined with the fact that only 132 lamps are needed for 632 lighting points, and the 6000 hour lamp life, offer a considerable advantage over an installation of a similar number of low voltage tungsten halogen luminaires.

Applied Lighting Technology, which was responsible for the fibre optic lighting, built a mock-up of the balcony profile and experimented with angle and length of light beam to obtain just the pattern of light required.

Total value of the fibre optic lighting contract is approximately £90 000.

Main store lighting

Metal halide Downspot luminaires by Reggiani provide the main lighting in the atrium and infill lighting on the lower ground sales floor. Concession sales areas have display lighting provided by the company concerned.

Fully recessed metal halide downlights with diffusers, also by Reggiani, are installed around the perimeter of the atrium.

Eight Eclipse lighting projectors by Erco Lighting are used for accent lighting. Two are focussed on a blue glass clock at the top of the atrium, the remainder highlight a stage at first floor level where a pianist creates a pleasant ambience for shoppers and where it is planned to hold fashion shows and stage special displays, for example at Christmas.

The basic theme of the lighting is to emphasise the atrium.

At third floor level, more metal hallide fittings from Reggiani's Downspot range are used. These are linked to a Lutron photoelectric controlled dimmer system and are switched on only on overcast days and winter afternoons, when they throw additional light down into the atrium.

The lower ground floor also has an installation of low voltage, recessed, miniature eyeball luminaires from the Reggiani Downspot range. Some are mounted at intervals, two to a ceiling tile, sharing a transformer, others are in a linear arrangement which follows the line of the shop fitting display system.

General circulation lighting between departments is provided by 600mm square, recessed luminaires with low brightness louvres by Moorlight Electrical. These PL500 fittings use twin, long PL 36W compact fluorescent lamps.

Background lighting over merchandise areas is provided by recessed downlights containing either two or three 18W PL compact fluorescent lamps and supplied by Centec Lighting

Staff restaurant

Lighting helps to create contrasting areas that add interest to the staff restaurant on the third floor.

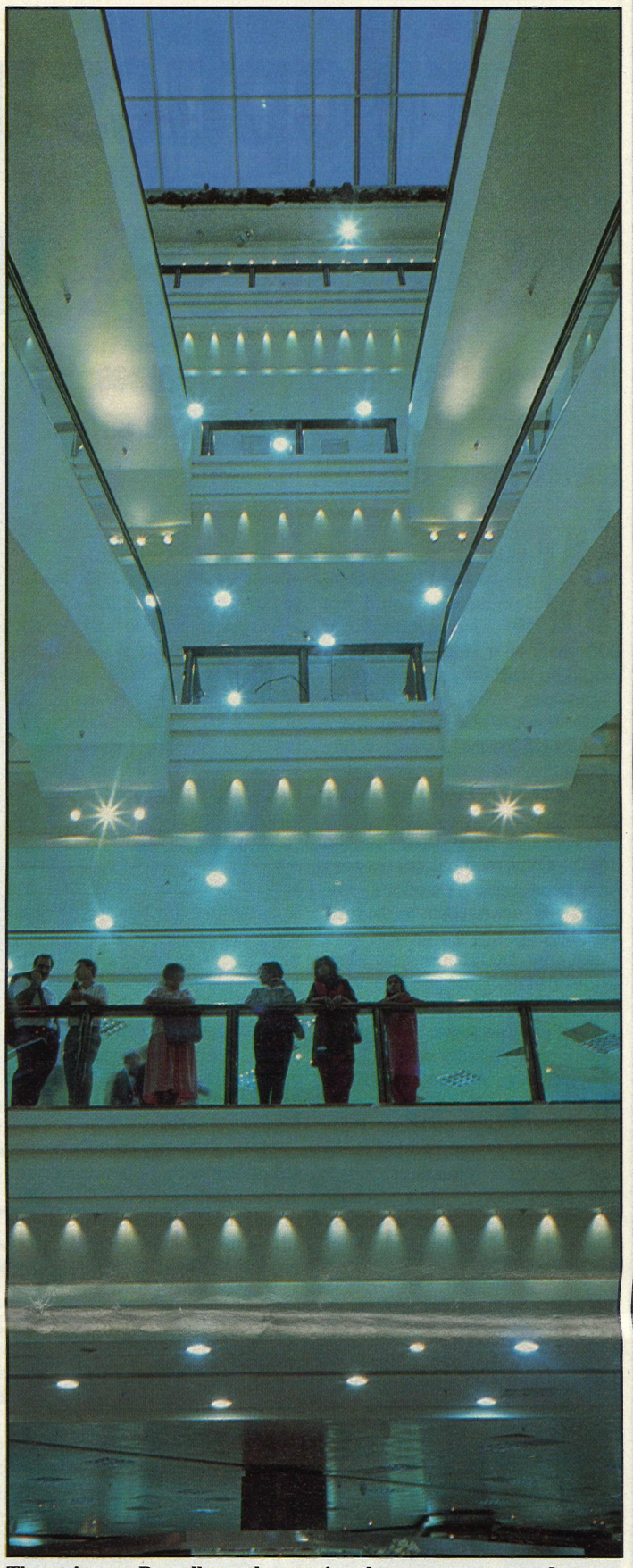
A brightly lit central space has a dropped cellular style ceiling by Formwood. Above this are a number of low brightness, louvred, compact fluorescent fittings by Moorlite which are the same type as those used in the store.

For staff who prefer a more restful atmosphere, the perimeter area has a lower level of lighting provided by 20W 12V Reggiani downlights. Ceramic, wall mounted uplights complete the interior. These Habitat fittings use 60W GLS lamps.

Shop windows

To meet the high illuminance required for the shop windows each has three lengths of lighting track, one at low level at the front of the window and two at the top of the window.

The tracks by Concord Light-



The atrium at Bentalls on the evening the new store opened.

A view across the store showing the fibre optic lighting, metal halide downlights and low brightness fluorescent fittings.

ing, carry unobtrusive, matt black, Torch 50, low voltage spotlights with integral transformers.

It was necessary to have mains voltage tracks and spotlights with individual transformers because Bentalls wanted very brightly lit windows comparable with those in London's West End, and low voltage track would not carry the electrical loading for that number of spotlights.

The lighting link

Lighting also provides a link with the old store. Some of the classic Art Deco stained glass from that building has been saved. Mounted in a metal framework and lit from above by Daylight fluorescent lamps it forms illuminated ceiling features in the entrance areas.

The overall lighting design for the new Bentalls is by mechanical and electrical services consultants Roberts and Partners, Electrical Installations Ltd handled the installation. The TP Bennett Partnership are Bentalls' consultant architects and interior designers, while Building Design Partnership were architects for the building shell.

Right: lower ground floor seen from entrance area.
(Photographs by Morley von Sternberg).

Part of the scenery

Although lighting is always with us, a trip to the theatre can bring home its impact in a particularly graphic way. *Martin Christidis,* of Philips Lighting, makes the performance more enjoyable by explaining how a stage set is lit.

Anybody involved in any sector of the lighting industry is, I am sure, continually aware of the lighting in their surroundings, wherever they happen to be.

But for all of us, I imagine, the theatre is the most fascinating situation since, nowadays, it employs even more luminaires than ever, no longer tucked away behind wings and boards but often mounted in full view of the audience.

To start to consider why there are so many lighting points, let us go back to first principles and think of their 'raison d'être'.

The first and foremost requirement of the lighting designer is that the audience should be able to see what he intends them to see. Usually this is an actor or actors, and those parts of the stage that are not so important can be less brightly lit or not lit at all.

Out of sight

If the actor who is speaking is not clearly visible then the audience's concentration wavers as they try to locate him. In a dynamic situation like a musical, the cues will ensure that the overall lighting follows the centre of attention. The most obvious method is to use follow spots to highlight the key actors during their entrances and important dialogue or songs.

It is generally accepted that the actor's face is best revealed by a beam of light at about 45° above and 45° one side of his head, which amounts to an approximation to sunlight in our lattitudes. However, to reduce the extreme contrast produced by lighting from one source only, a second source from the opposite side fills in the shadows.

These lights may be of different hue to provide contrast. Hence, if there is an obvious source of natural light visible on stage — like sunlight through a window — then the spotlights from that side could be a warmer colour than their opposite numbers. Light coming from the side opposite the window would be a mixture of reflected light and cool lights from the blue sky, hence the fill spotlights could use a cooler colour filter, such as a very pale blue.

It would be impossible to light a set with two sources only, so the acting area is often divided up into sections and each of these is primarily lit by two spotlights overlapping the adjacent areas. An average stage might divide up into six lighting areas, say three wide and two deep.

Within the format of a 'box set' — for example a room with various entrances — one approaches the task of lighting the actors by looking at the primary positions in the room from where they will speak. These may be from a sofa or armchair, from a fireplace or from a doorway, all obvious focuses of attention.

If these positions do not already comply with our basic areas than those units can be moved to suit the room by focusing/positioning the lanterns to suit. Or, if necessary, extra fittings can be rigged.

In addition, there will be the need to light areas off stage but visible through doorways or windows. For instance, a hallway will need a toplight to simulate a hall light or perhaps softer light at 45° to simulate a window. A window on stage will need to appear luminous for a daytime scene, and so will probably need several luminaires projecting through it to achieve a brighter scene outside. Or, if we can see through the window, then the back drop, say a garden wall, will need suitable 'daylight' lighting.

'Practical' sources of light within the set such as wall lights or table lights can add to the realism of the room and contribute some modelling, although their effect may need to be supplemented by additional lights above them.

With this arrangement of area lighting, together with peripheral and practical sources, one has a basic lighting rig.

So far I have not mentioned lighting the walls of the room, but usually they will be lit by reflected light from sources lighting the key acting areas, so additional lighting is not often needed.

In addition I have considered only the simplest of sets for a straight-forward play. These basics also apply to musicals. Here, however, many more techniques can be used to reveal form and texture and make the scene more interesting. For instance rim lighting may be used to highlight the actors more crisply, or colour to make a scene more vivid. And mottled and patterned effects can be projected onto the floor and walls.

Luminaires

Before looking any further at the effects that can be achieved we shall consider the light fittings currently in use and new developments in stage lighting luminaires and light sources.

The traditional luminaires fall into three main categories.

Profile spotlights

These are used mostly in 'front of house' positions and can have a throw of up to 30m, although 15-20m is more typical. They contain a lamp mounted in a deep elliptical reflector which reflects the light through a 'gate' into the focusing lenses.

An adjustable iris can be slotted into the gate and, by focusing the 'zoom' lenses usually now fitted, a beam of varying diameter with a choice of hard or soft edges is produced.

Alternatively, instead of a circular beam shutter blades in the gate can be adjusted to give rectangular or trapezoidal beams.

Profile spots are usually used for lighting individual acting areas at the front of the stage, and by shaping the beam they can be made to overlap the adjacent lighting smoothly.

To achieve special effects a gobo can be fitted into the gate to project a decorative shape. The gobo is a thin piece of stainless steel etched through with a pattern. Effects include dappled light through foliage, window frame effects, venetian blinds, and geometric effects.

An extra dimension can be achieved by then making the gobo rotate — adding even more variety. These effects are often seen projected onto the stage floor during dance routines, usually with coloured filters to further enhance the effect.

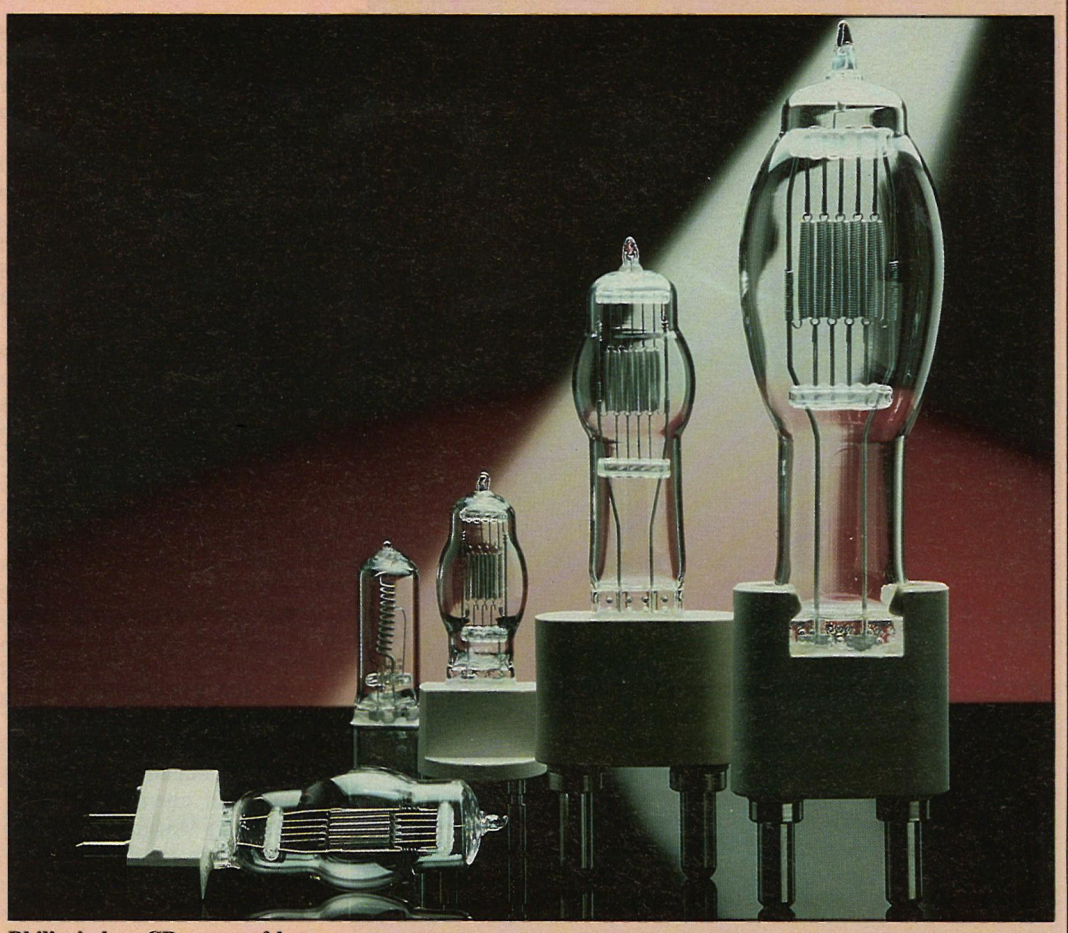
Fresnel lens spotlights

These produce a soft edge circular beam which may be focused down or opened out by a control which moves the lamp and reflector relative to the lens. Beams are shaped using barn doors.

These fittings are usually mounted on spot bars over the stage since they have a wider beam than the 'profiles', but are generally projecting over a shorter throw. They, too, are used for lighting individual acting areas and will, of course, accept coloured filters. They can also give dramatic cross lighting effects from the wings where the contours of dancers can be enhanced by a strong light from the sides.

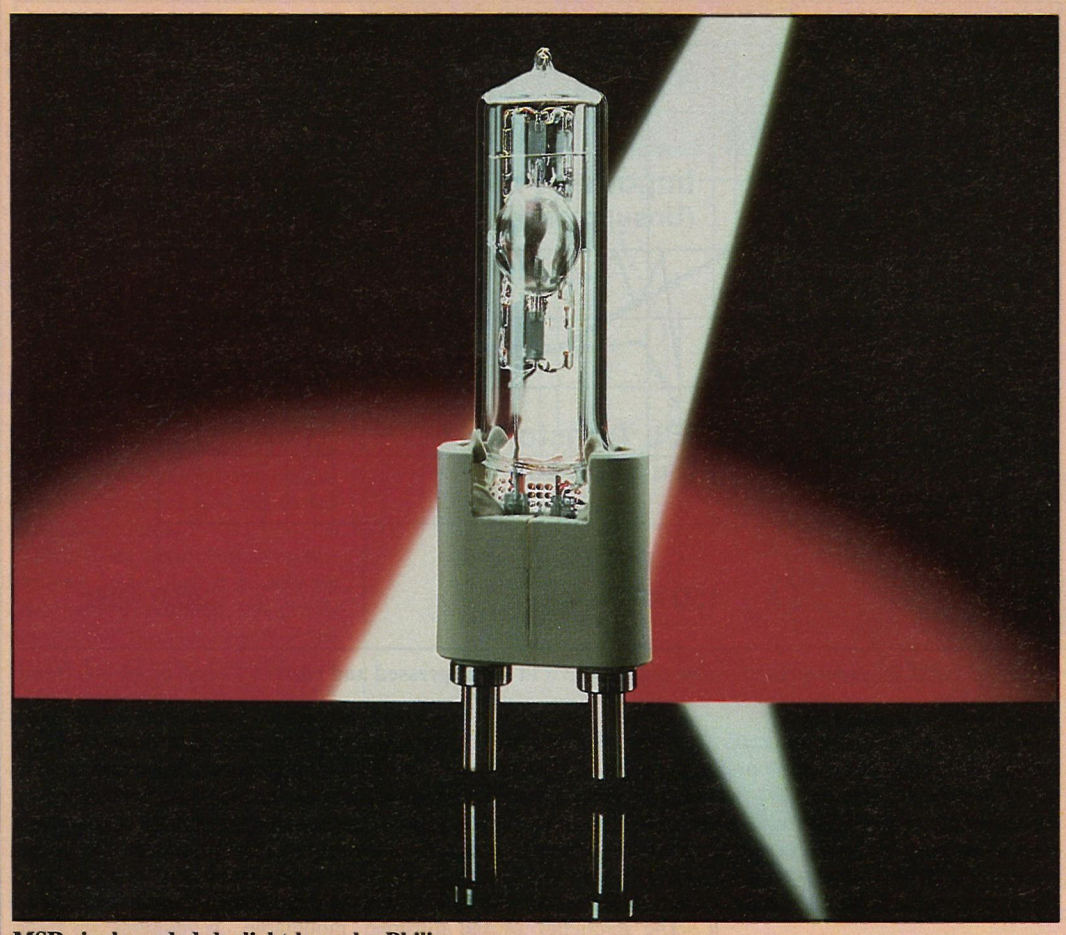
Floodlights

With their open faced reflectors, these used to be the primary sources of light over the stage but are now consigned mainly to lighting the cyclorama, a broad backcloth behind a stage. They may be mounted on the floor as a 'ground row' perhaps concealed behind low scenery or hung above the cyclorama, or both.

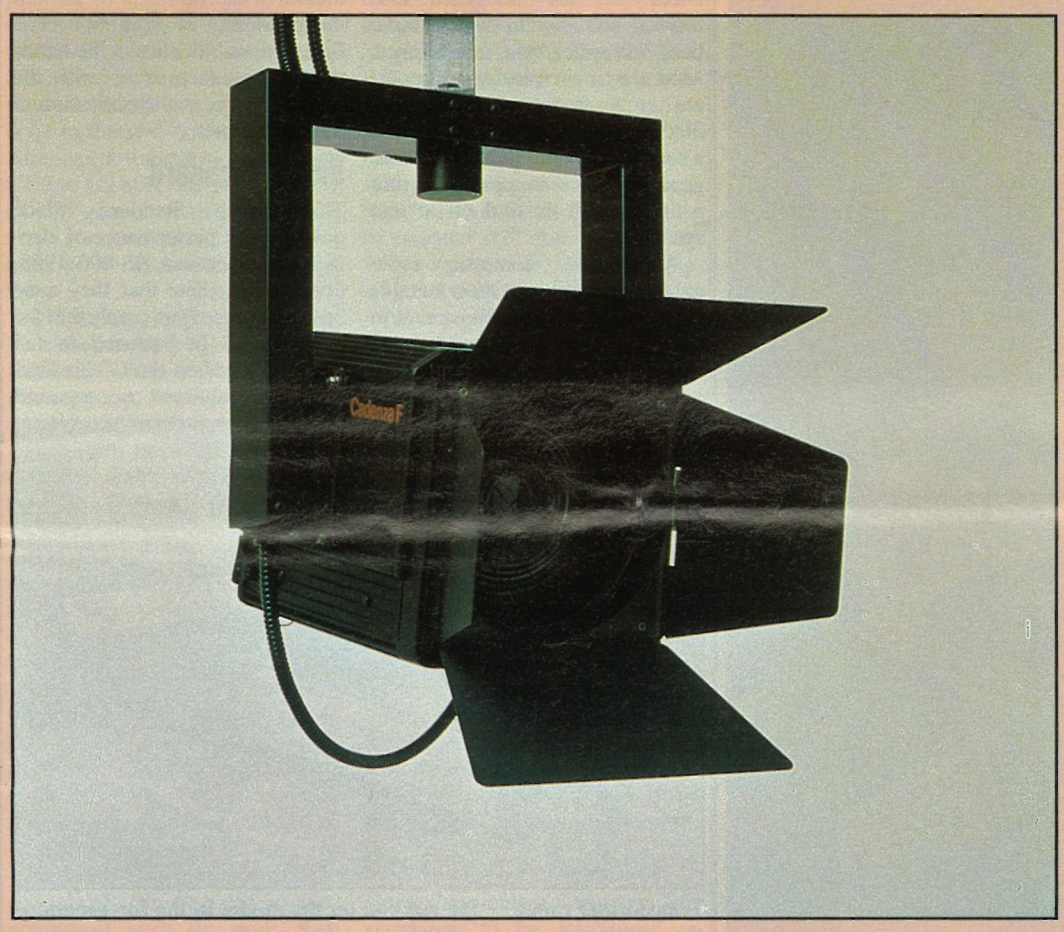


Philips' class CP range of lamps.

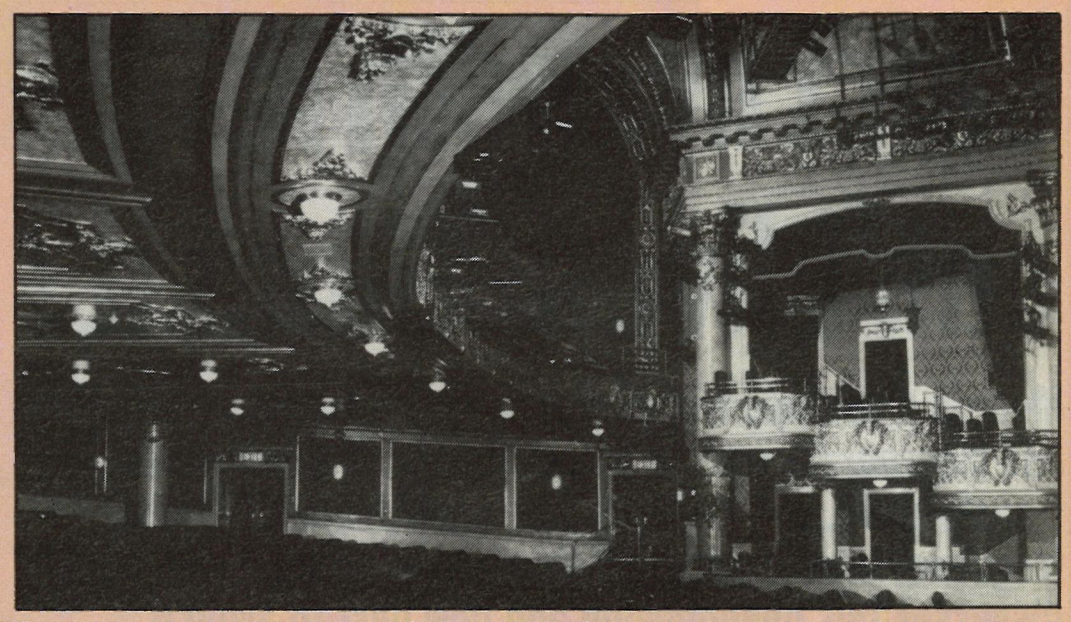
Cadenza Fresnel lens spotlight by Strand.



MSR single-ended daylight lamp by Philips.



Strand Lighting's precision automated lighting system.



The traditional image of the theatre — Toronto's Elgin Theatre after restoration, with lighting by Strand.

Usually they are fitted with filters in primary colours in groups of three so that individual colour washes may be projected or, by switching on all three colours, they combine to produce a warm white light.

Development of lamps

The lamps used in all of these luminaires have developed and changed dramatically over the last 15-20 years and now other types, not previously associated with the theatre, are finding uses too.

Conventional tungsten lamps were first employed, although with compact filament construction, but these steadily blacken with life as tungsten is deposited on the cooler glass wall. This obviously diminishes their light output and reduces their useful life. An early technique to combat this on larger wattages of lamp was to include tungsten granules inside the bulbs. Periodically, an apprentice would swirl the lamp around and the granules would clean off the black deposit, thus restoring the light output.

When tungsten halogen lamps were first developed, theatre lighting versions soon evolved. The halogen cycle depends on the lamp envelope being too hot to allow the evaporated tungsten to condense on the wall. Instead the vapour combines with the halide molecules and is then deposited back ontop the white-hot tungsten filament. This minimises the blackening effect on the bulb and increases filament life.

The first generation of halogen lamps used hard glass envelopes with a reduction in size of the lamp 'bulb'. However, with the introduction of quartz envelopes which can withstand much higher temperatures closer to the filament, lamps become smaller still.

New bi-pin lamp bases were incorporated, to replace Edison screw and pre-focus caps and the resultant luminaires have progressively become smaller and lighter.

The next development to improve the optical efficacy of luminaires was the bi-plane filament. A conventional filament is made up of a row of parallel spirals in series and is, in fact, one tungsten wire coiled and formed all in one plane.

Bi-plane lamps are now the norm for new designs of theatre lantern and most new optical systems are designed around this smaller source.

The next step in the development of tungsten lamps to increase the luminaire light output was simply to increase the wattage!

Redesign

A 2.5kW dimmer running two 1000W lamps isn't being fully utilised. However, two 1200W lamps make better use of available power, and the redesign of the lamp enabled other design improvements to be incorporated. By extending the light centre length by just 12mm, the 'pinch' of the lamp through which the lead in wires pass is further away from the filament and thus runs cooler. This helps the lamp to last longer.

Similarly the 2kW lamp concept has also been revised, and there now exists a 2.5kW rating with lanterns designed to utilise this extra output to the full.

Lighting designers, ever on the look-out for new concepts, have used two similar lamp types for dramatic effects, these being pressed glass reflector lamps. The PAR 64 was borrowed from the rock and roll industry and the PAR 46 and smaller sizes was borrowed from aircraft landing lights technology.

PAR 64 8" diameter 1000W lamps in various beam widths have an excellent light output ratio. This means that most of the light produced by the quartz halogen lamp within the sealed reflector, actually comes out of the fitting — as much as 80%. A profile or fresnel fitting, may have a LOR of as low as 8%. The saving grace of those fittings, however, is their flexibility and beam control.

Because of their high efficiency PAR 64s are excellent for producing a very strong wash of intense colour. Hence, even with deep colour filters, two or three of these lamps on either side of the stage will produce excellent colour saturation, which can be most spectacular for cross-lighting effects.

The PAR 46 aircraft landing lamps differ not only in size — at 5.75" diameter they are smaller — but also have very narrow beams, with a black cap over the front of the filament to eliminate stray forward light. Thus, when mounted together in rows of ten or more, they make an excellent light curtain. This wall of light, particularly when combined with a little smoke or just the dust in the atmosphere of the theatre, makes a very dramatic backdrop or barrier.

By the motorising of the row of lamps to rotate the curtain, yet another dimension is achieved.

For the time being it looks as if theatre tungsten lamp development may have reached a plateau. However, the new Philips MSR single-ended gas discharge lamp, primarily aimed at film and television, is now finding applications in some areas of theatre.

This lamp is unique in that is can be dimmed to 40% of its output while maintaining its colour temperature of about 5600K. Now, while this is vastly more flexible than existing discharge sources, it still does not give as wide a dimming range as tungsten lamps which, of course, dim to extinction.

Nevertheless, its dimming facility and compact size, have allowed it to be incorporated into follow spots and disco-effects projectors. Its single-ended construction also enables theatre luminaire manufacturers to incorporate it into conventional housings designed for similar wattage tungsten lamps. The greater efficacy of discharge over tungsten — about 4 times — means that these compact, very bright fittings may well find a use in daylight effects on stage, where space is at a premium. They could for instance be used in projecting through the window of the simple room set which we first considered.

Looking to the future

As in all areas of lighting there will always be opportunity for improvement and development, and with theatre lighting this isn't just going to be confined to the development of the light source.

The most time-consuming aspect of lighting a stage is the lining up and focusing of the luminaire with the fitting of a coloured filter where appropriate.

Colour filter scrollers which can be remote controlled to change the colour of the beam are now becoming common. And, just coming over the horizon are remote controlled luminaires.

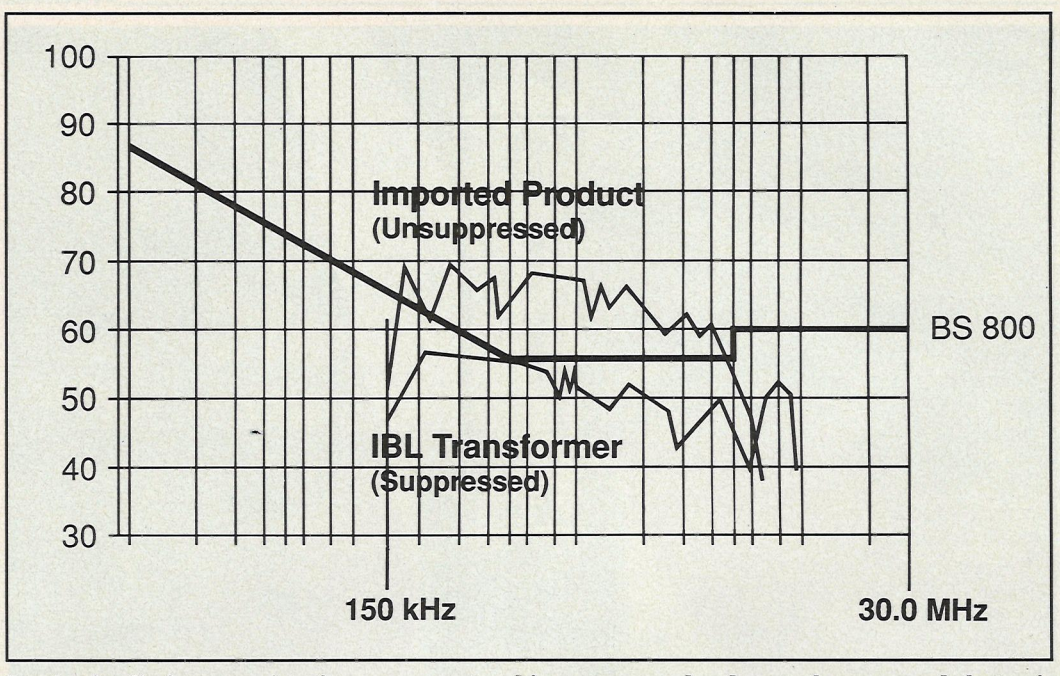
The pan, tilt, focus and iris positions may all be remotely controlled so, for a repertory company doing several different shows, once the lanterns have been programmed, a PC controller can reposition the light source within seconds.

As in so many disciplines, technology is borrowed from one application and used on another — and the theatre is certainly no exception. Simple theatrical productions may soon be the domain of only amateur theatre as West End shows become more complex.

Nevertheless, the basic principles of lighting the actor must, I'm sure, survive whatever luminaire is used and whatever the light source illuminating him. But I could just be wrong!

Can't live with it, can't live without it?

Modern electronic transformers are lighter, more efficient and incorporate more features than traditional wound transformers. But they can cause problems with radio frequency interference. *Ed Henderson*, of Intram Barwell, discusses this phenomenon and how best to avoid it.



Levels of radio frequency interference encountered in unsuppressed and correctly suppressed electronic transformers.

Since their introduction into the lighting industry nearly a decade ago, electronic step-down transformers have rapidly become the established alternative to their traditional wound counterparets for use in SELV installations. They are smaller, lighter and more efficient than their predecessors and, with industry return rates at just 1%, there is no question but that their future as a reliable and cost-effective product is assured.

Yet there is one aspect of their use which does cause confusion: radio frequency interference (RFI). RFI is part and parcel of twentieth century living, not helped by our growing reliance on electrical equipment in every environment. Drills, washing machines and lighting dimmer switches amongst others all create RFI.

Knowing why it is produced, how it behaves and, most importantly, how it can be avoided, is fundamental to the successful use of modern electronic transformers — and architectural specifiers, installers and wholesalers all play a part in this success.

Radio frequency interference occurs when a piece of electrical equipment, by virtue of its mode of operation, generates an electromagnetic disturbance.

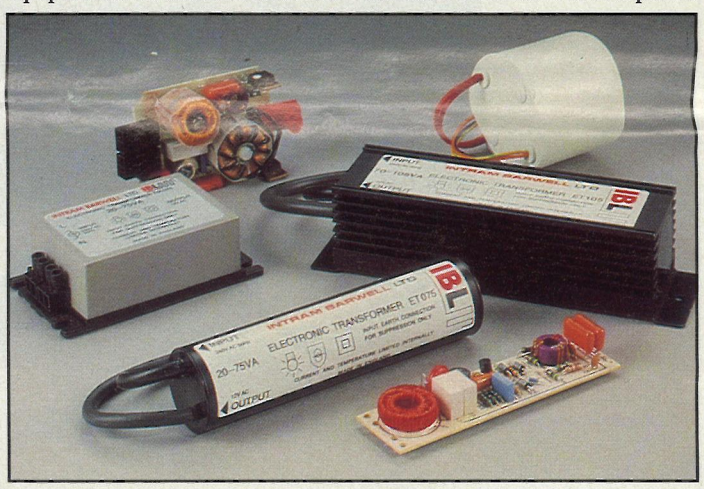
The frequency of the disturbances and the associated harmonics will dictate which radio band will suffer from interference. Most electronic transformers operate at a frequency of around 30kHz, ie they switch 30 000 times a second. Imagine the interference generated if it were possible to turn a light switch on and off at that speed!

A simple domestic radio receiver will act as a most suitable detector. Distorted radio sound in the form of crackling and buzzing will persist until the offending equipment is switched off. But is is not just radio transmissions that can be affected. Any equipment designed around that frequency for coding or synchronisation, such as computers and store detection devices can be affected too.

But the problem is not insurmountable. A number of basic measures can be taken to prevent the possibility of disruption. The first responsibility lies in the hands of the manufacturer — with the correct design and specification of the transformer.

British Standard

The British Standard which governs RFI performance of electronic transformers, BS 800:1988, does not stipulate that they must be interference free — only that the level should be reduced to fall below a specified limit. This limit has been established over a period



Transformer range — the red coil on the model in the foreground is the suppressor.

of time, and interference levels below it will, more or less certainly, fail to cause nuisance interference.

To comply with BS 800 the electronic transformer will need to include a suppression stage. Usually this is placed at the input and helps to attenuate much of the interference caused by the switching nature of the circuit. To avoid the possibility of having a suppression stage larger than the transformer circuit itself, consideration needs to be given to the reduction of RFI at source through careful design. Although suppression to BS 800 is now mandatory in the United Kingdom, some manufacturers' products still fail to fall within these limits.

Thankfully, many British manufacturers know that it is only by investment in research and development that their customers — the end users — can be protected. This is not to say that cost is ignored for the sake of performance safety. Intram Barwell, for instance, has just completed a product enhancement review and will introduce a new transformer onto the market later this year which is superior to its predecessor, conforms with all European standards and remains just as cost-effective.

Specifier and installer

If 80% of potential RFI problems can be controlled through good product design, the remaining 20% is up to the specifier and installer. Although a transformer may conform to BS 800, the small amount of RFI generated may still affect very sensitive equipment. This must be borne in mind from the start.

RFI is transmitted in two ways: by radiation and by conduction. Radiated RFI is a relatively local phenomenon. Its sources are the transformer itself and the output cable which links the transformer to the luminaire. With this in mind, lighting displays incorporating electronic transformers, whether in the roof void or wall panels, should be positioned far enough away from other potentially sensitive equipment to avoid problems at a later date.

Conducted RFI is, however, potentially more disruptive. Even after filtering to BS 800 the residual level conducted via the primary cable — the mains lead — can travel throughout the building and may affect very sensitive pieces of equipment. To avoid this, a separate circuit can be used to feed equipment such as store theft detection systems which are prone to false triggering. Most reputable suppliers offer guidelines for installations in these special cases. Follow these and the installation should be problem free.

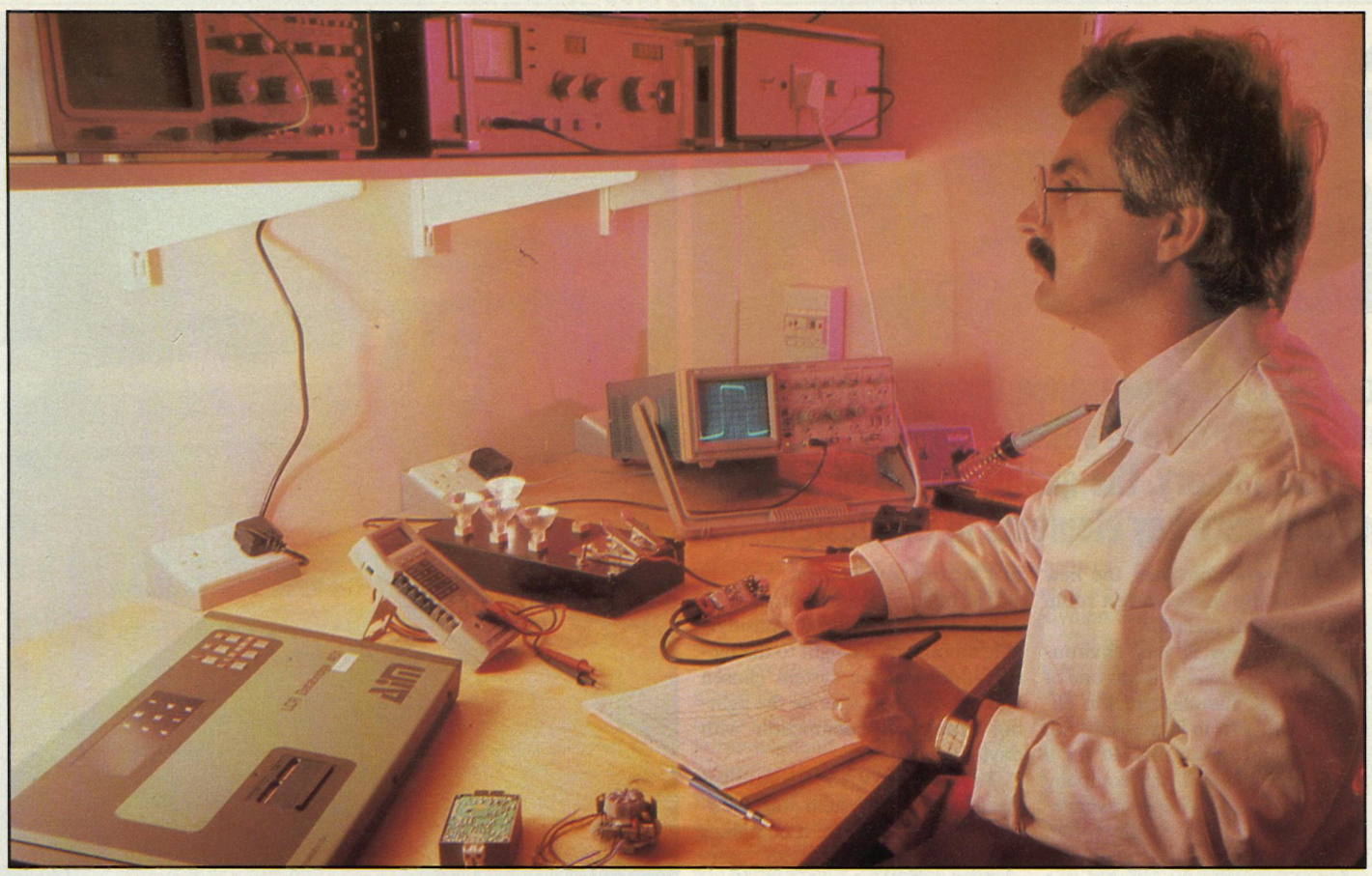
Design stage

Many electronic transformer installations suffer from high levels of radiated RFI from excessively long output cables. In practice the length of the lead should be kept as short as possible, not only for minimum RFI but for minimum voltage drop. If length is needed — for instance if the transformer has to be distant from the light fitting — then this requirement should be specified into the product with the manufacturer's guidance, at the design stage.

Clearly the best protection that any users can have against RFI from electronic products is a legal one. Many British electronic transformer manufacturers still seem unaware that is is a legal requirement under the Wireless and Telegraphy Act 1946 to comply with BS 800 and continue to offer unsurpressed versions of their product for sale to the consumer.

New European standards

Newly harmonised European EC standards, to be introduced in 1992, will also be legally enforceable. These will stipulate tests for both vulnerability to and emission of electromagnetic interference and any product failing these specifications will be withdrawn from the market.



In-house test facilities will give companies flexibility.

In-house testing

Suppliers with the appropriate in-house test facilities will be in a strong position to adapt to this change and some companies, including Intram Barwell, are already manufacturing to these standards in anticipation of the new mandate. Because independent test facilities are unlikely to be able to handle the volume of demands, manufacturers will have no choice but to become self-regulating.

It is unlikely that the use of high frequency electronic products will ever decrease. With electronic transformers there is only one solution — use fully tested, high quality products from a reputable source, specified and fitted by the well-informed.

Not just a pretty face

What could be more conscious of appearance than a company that manufactures health and beauty care products? So, when l'Oreal Golden extended their Welsh factory, the quality of the space and concern for the environment were key elements in the design.

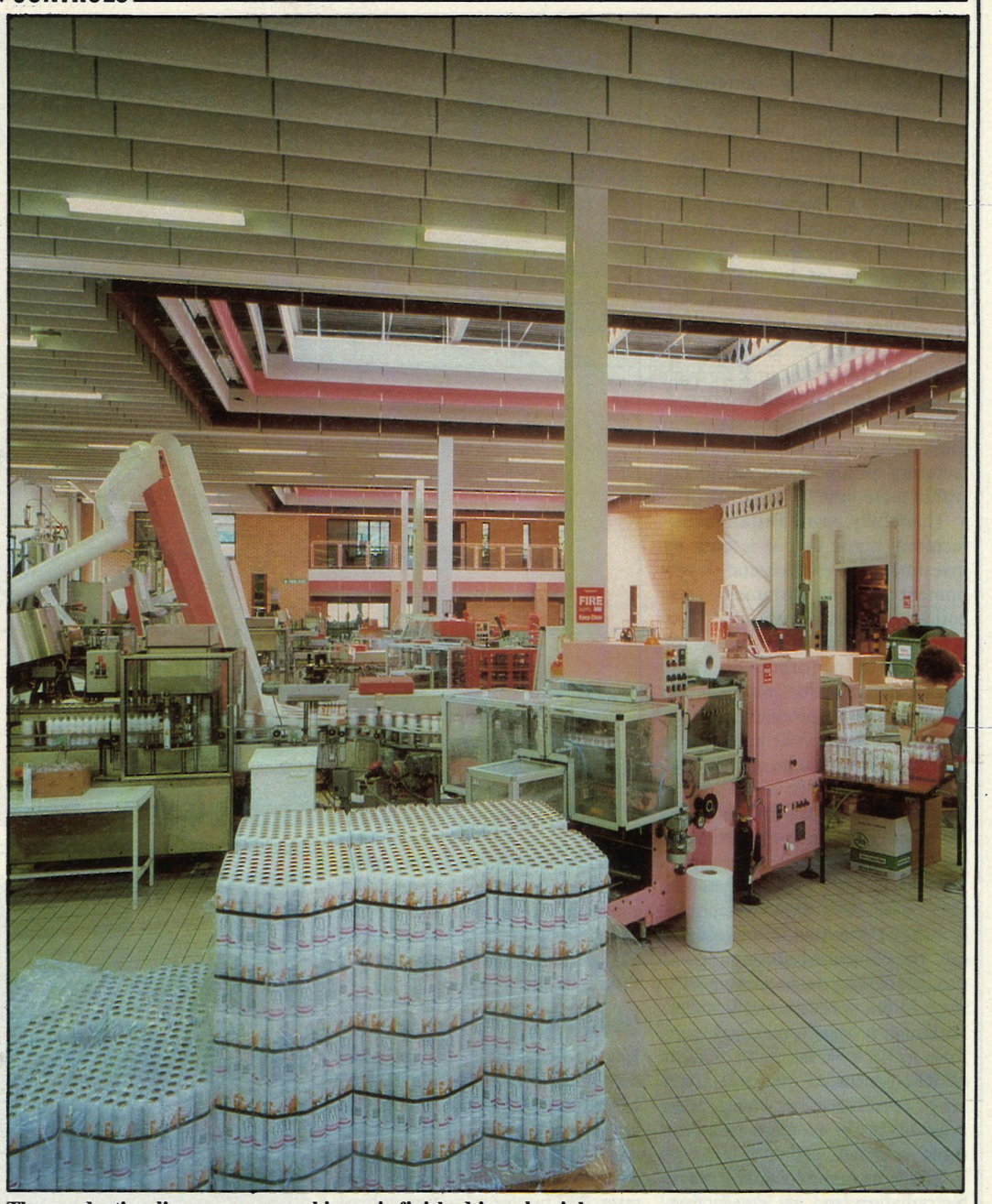
When beauty and healthcare product manufacturer l'Oreal Golden expanded its factory at Llantrisant in South Wales, appearance and staff comfort were key requirements in planning the new block. A pastel colour scheme was adopted throughout — for building elements, machinery and even in highlighting the specially designed and sound-reducing roof. In addition to production lines, the new extension also houses a rest room and other staff facilities.

The company is very environmentally conscious — it was one of the first UK manufacturers to eliminate CFCs from its aerosols. So, the brief not only provided for a lighting installation, the company also specified an energy management system — a facility often required in office and retail premises, but, until now, rarely used in a factory environment.

The building features large rooflights which provide a considerable amount of daylight to the factory floor, so the system chosen had to be able to operate the lighting system in conjunction with daylight.

Thorn's C-VAS (controlled visual amenity) system was eventually chosen because it combines energy management with user-control and was found to be flexible enough to cope with the three different lighting needs identified within the unit.

The brief called for 400 lux on the working plane, but the scheme was designed to 500 lux nominal to allow for losses due to obstructions after installation of the production line machinery. Measured illuminance in open space and areas where machinery is now fully installed has subsequently confirmed this assessment.



The production line — even machinery is finished in pale pink.

High quality

Polylux 3500 tubes were utilised for efficient light output and lumen maintenance. Colour rendering was also important to maintain the high quality appearance in the factory, and good colour-judgement is necessary in the operator's work.

The luminaires selected were simply batten luminaires with metal reflector attachments, and the proposed layout planned rows of luminaires to run between the vertical ceiling slats. Twin 5′0″ 58W units were used so as to give a common fitting size throughout the area irrespective of method of control. Fittings blend well into the sound reducing ceiling.

Within the factory area the total space was split into three distinct zones, and each was lit by fittings with different controls. The main access route along one side of the production line is on manual switching only. Lighting, provided by high frequency ballast reflector luminaires, must be on throughout working hours.

The luminaires located within the rooflights (8 fittings per rooflight) are naturally in the area with highest daylight levels. Here, standard luminaires are used on high frequency ballasts switched by photocells operating via a contactor. These give an on or off control only, but have to sense some 1500 lux locally before the luminaires are turned off.

The remainder of the floorspace, which covers the majority of the production area, is lit by dimmable, high frequency fittings. A variable illuminance controller operates the main lighting from photocells set within the slatted ceiling, viewing typical mid-point workplace illuminance levels and adjusting the light output between 25% and 100%, and following the daylight variation instantaneously.

The system is designed so that the fittings do not turn off under high daylight levels, as this would distract the work force. Luminaires are equipped with relays so that they can be turned off manually, from a push button override.

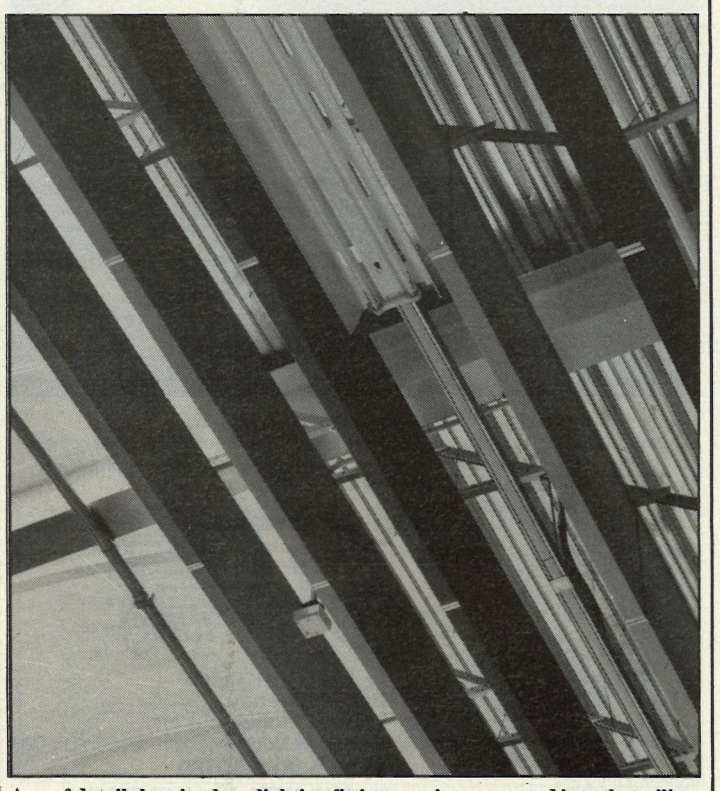
Photocells

Throughout the installation specially designed photocells have been used to cope with the 5m mounting height. On commissioning the C-VAS system was shown to be working, varying lamp output with daylight while maintaining task illuminance levels.

Controls were explained to the customer, who can simply adjust the C-VAS system to dim more quickly or slowly from a single special wall mounted trimming device. The system is working well from the user's point of view and registering good energy savings.

This fully satisfied the requirement of the brief in terms of lighting control and maximised the opportunity to save power by having the lighting controlled automatically when daylight conditions allowed. As the area is constantly manned and operating, energy savings have been maximised as the company is able to utilise natural light via the windows and rooflights as per the brief. Eventually, the new lighting installation will be coupled to the existing energy management system at present in use, controlling the whole factory.

Lighting levels as designed have been achieved and so have the energy savings. Workforce comments have all been complimentary and the flexibility of the new lighting system will allow the lighting to be re-programmed should the use of the area be changed in the future.



A roof detail showing how lighting fittings are incorporated into the ceiling.

Lighting matters – in Cambridge

The healthy state of lighting design in the UK was demonstrated by the wide variety of papers presented at this year's National Lighting Conference. Part 2 of this report features a mixed bag — including outdoor lighting, developing a display system, and computer graphics.

The final day of the conference stressed the sheer variety of research and development in the lighting field. Given the amount of material presented, the initial session, given over to daylighting, will not be reported here.

Outdoor lighting has been given a healthy boost, with the recent publicity on lighting and crime encouraging the individual to demand a higher standard of lighting with increased safety on the urban streets. But what about areas such as shopping centres where lighting may well have been provided to a lower standard for pedestrians than for the road user, or where standards may not have kept up with increasing expectations?

The qualities of amenity lighting to create a visually appealing and secure night-time environment are being studied by **David Loe** and **Ted Rowlands** of the Bartlett School of Architecture and **Bob Hargreaves** and **Ron Simons** of Thorn Lighting, and they presented a paper on their findings to date.

The researchers set out to study lighting that was typical of pedestrian shopping areas, so initially a number of existing developments was investigated. Lighting conditions on each site were measured and subjective assessments made. The latter covered the adequacy of the lighting, its perceived security, comfort, uniformity, the nature of bright and shadow areas, and an overall impression of the scheme.

Results indicated the general run of lighting provided in such shopping centres and provided a number of useful pointers as to user requirements for lighting. These included the desirability of having two forms of lighting: one illuminating the scene clearly and the other enabling the passer by to see the other people in it. A need was also indicated to provide lighting on vertical surfaces, and more particularly to delimit the edge of the shopping centre.

Model

A model was then constructed of lighting situations typical of those found in the shopping precincts and additional lighting included to represent the effects that were considered necessary. The model was made in such a way that an observer was able to view the scene from normal standing height, looking through a slot. A permutation of thirteen installations was, thus, provided and these were assessed by a team of seven observers using a series of bi-polar scales.

In general, the preferred installations were those that had a combination of lighting types which provided an even wash of light over the area, including the vertical surfaces, and also had accent lighting. They were also the installations where the shop windows were lit as was the area in front of the shops.

The installations which were least preferred were those that had dark areas, for instance, a poor illuminance uniformity and excessively bright luminaires.

Four newly completed shopping centres were then studied in the light of the experimental findings to enable the team to clarify its ideas.

This study indicated that in many cases the lighting currently provided for pedestrian areas was not of a very high standard.

Provisional design recommendations had been developed as a result of the study. These had, not as yet, been fully tested at full-scale, but could well provide a useful framework to enable the designer to produce a better, more attractive night-time environment for pedestrian shopping areas.

Contrast

Accent lighting relied on brightness contrast for its effect. The installation had to provide for the desired degree of contrast between the object and its surroundings. Sparkle was also attractive but the customer should not be blinded. Running costs had to be taken into account. Finally, the system chosen should also allow for the necessary degree of flexibility in the choice of lighting colour, type of light beam and aiming positions for the system.

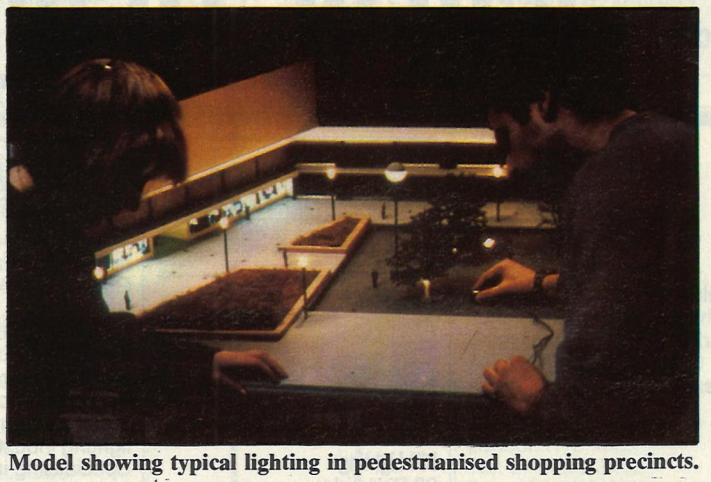
HID sources with their long life, compact burners, high efficiency and good colour rendering were, logical successors to incandescent lamps in display fittings. **Johan van Kemenade and others** from Philips' Central Development Laboratories at Eindhoven described how Philips had chosen two single ended lamps — a high pressure sodium and a neutral white metal halide lamp and gone on to develop a display lighting system using a systems approach.

The HPS lamps produced little UV radiation so no special measures were necessary to limit radiation. They did, however, employ a special construction with extended end plugs which enabled the lamps to operate at a higher sodium vapour pressure than normal lamps of this type, broadening the spectrum of the sodium emission and increasing the colour temperature to 2500K. In the case of the metal halide lamps, Phillips solved the problems of ultra violet emission and possible explosive failure in the lamps by modifying their design. This enabled them to be used in an open fixture, eliminating protective front glasses.

This systems approach was also carried over into the design of the optics. To avoid unwanted reflections no diffusing elements were used — only smooth, specular surfaces. A technique was developed to design the reflector using cylindrically curved segments. This permitted the design of a whole set of reflectors belonging to one modular family, with the same global dimensions. Only the number and curve of segments were changed.

The integral development of a HID spotlighting system offered the users more intense lighting beams permitting better modelling, and better shielding of the burner to increase visual comfort. Replacement costs due to relamping were low since the lamps employed had a life of over 5000 hours.

Other benefits of the system were freedom of choice between light colours; low running cost due to the efficiency of HID sources and simple, open fixtures which are easy to relamp. Finally, the system offered a wide choice of beam angle and the freedom to light the display from any direction as the system had a universal operating position.



Model showing typical lighting in pedestrianised shopping precincts.

Conventional computer programs for lighting design could not convey an image of a lighting installation to clients or those who were not trained as lighting engineers. A perspective view in colour, on the other hand was very convincing. The difficulty lay in combining the two requirements. **Ariadne Tenner and Paul Tan** of Philips' Lighting Design and Engineering Centre in Eindhoven described the development of the company's computer simulation programm DIM (dynamic illumination model).

The boundary of the space to be lit and the objects in it were entered as a collection of planar polygons. Surface radiosity, ie the distribution of reflected light, was expressed on a finite element grid and transformed to give a list of rays which could possibly emerge from inter-reflections between the surfaces.

In this way all calculations concerning the geometry were performed before all the lighting calculations, and for any room configuration and layout only needed be performed once. Only then were details of the luminaires entered by giving type number, position and aiming directions. The direct illuminance from each light source was calculated on all surface elements, giving a database showng for each surface the illuminance and luminance distribution corresponding to each processed vector and each monochromatic waveband. The output was then used to generate a perspective.

Luminaires could be switched on or off, or substituted by other types, without having to recalculate the basic geometrical model. Moreover, the model followed the design process in the sense that faster and less accurate calculations could be performed to give a quick first impression followed by more accurate calculations to establish a detailed design. There was one temptation, however. As the image became more realistic there was a tendency to increase the level of detail in the geometry. This could lead to a disproportionate increase in computation time.

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We offer a competitive salary plus commission, company car, 5 weeks annual holiday and contributory pension scheme, together with continuous training and excellent prospects for future promotion.

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Please write with CV to:

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Tenders are invited for the supply of street lighting equipment ie lanterns bowls ignitors ballasts capacitors and photocells for a two year period commencing 1 November 1990.

Further details and tender documents may be obtained from

Purchasing Director, Central Purchasing Unit, Buckinghamshire County Council, County Hall, Aylesbury, Bucks HP20 1YG. Tel: 0296 383467

Completed tenders are to be returned to the County Secretary and Solicitors Department Buckinghamshire County Council Hall, Aylesbury, Bucks HP20 1UA no later than 10.00am Monday 17th September 1990.

Mr I Crookall, County Secretary and Solicitor

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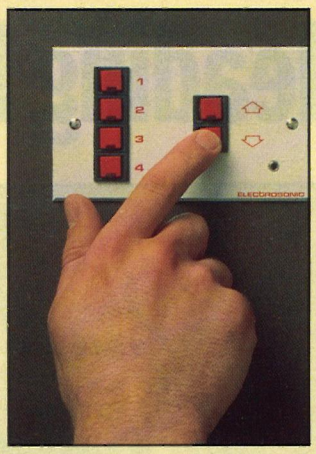
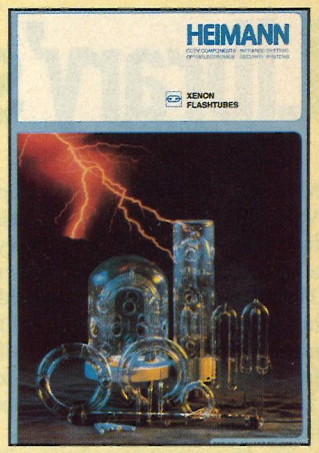
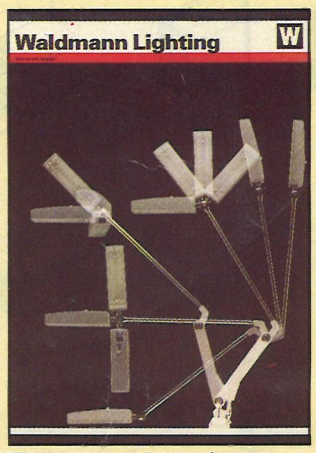


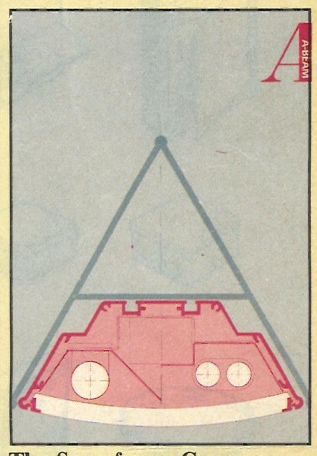
Sophisticated lighting control for the smaller user. Now Electrosonic have brought the benefit of scene-setting into the smaller retail and leisure installation with their new System 12, to provide 128-scene memory control on 12 dimmer channels. All these features are packaged in a compact wall-mounted unit. circle 90



Electrovalue Ltd, the sole distributor for Heimann Xenon Flash Tubes offers a shortform catalogue detailing various styles suitable for applications which include photography, photocopiers, warning beacons, stroboscopes, laser simulation, medical applications and runway lighting systems. circle 91



The new catalogue from Waldman Lighting is available through UK distributors Midland Machinery Services. It shows a comprehensive range of functional task lighting, workshop machinery lighting and specialist magnifier lamps: circle 92



The Spaceframe Company offers new design scope to architect and user with: — 3D structures with independent integrated lighting systems. — Triangular and square structures with common features and components. — Columns and beams start at 800 mm modules to a maximum of 3,200 mm. circle 93

Minolta is one of the worlds' leading manufacturers of light and colour meters. We have instruments that will measure the Luminance, Illuminance or colour of luminaires, back-lit legends and panels, fibre optics and most types of environmental lighting. We can also check the U.V. output of specific lamps. circle 94

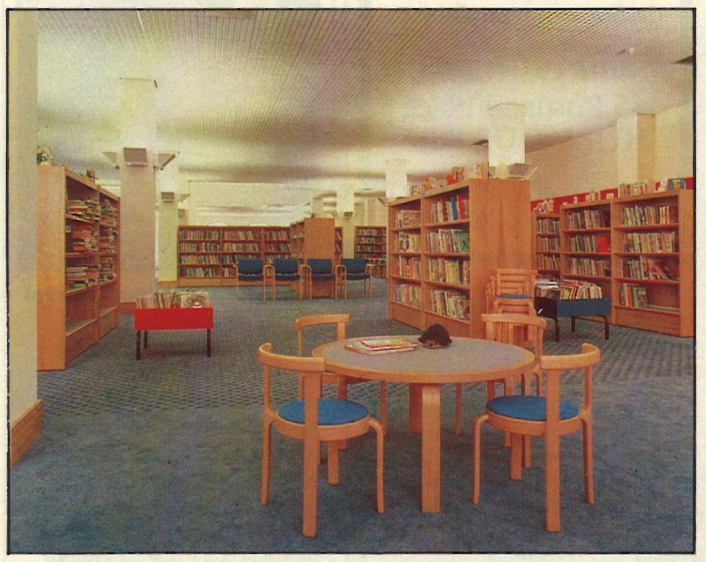
New from Crescent Lighting. Nexso is an integrated system of uplights and direct luminaires for retail and office environments. Each module can be wall or ceiling mounted and the system allows the designer great flexibility. Lamp options include 70W or 150W HQITS, 36W or 58WT8 and 36W PLC Lamps: circle 95

TO ADVERTISE IN THE CATALOGUE DIRECTORY TELEPHONE ALASTAIR MOYES ON 081-975 9759

Library's leading lights

Metal halide HQI-TS lamps, from Wotan, were specified as the main light source for the Jersey Library, a new public library in St Helier. The Department of Public Building and Works designed the lighting scheme and specified three different types of lamps: metal halide, compact fluorescent and tungsten halogen.

The library has three floors with a pyramidal atrium through the upper floors, allowing natural light to penetrate the centre of the building. White Venetian blinds positioned below the rooflight are activated by a sensing device on the ground floor which keeps the interior at around a 500 lux natural light level.

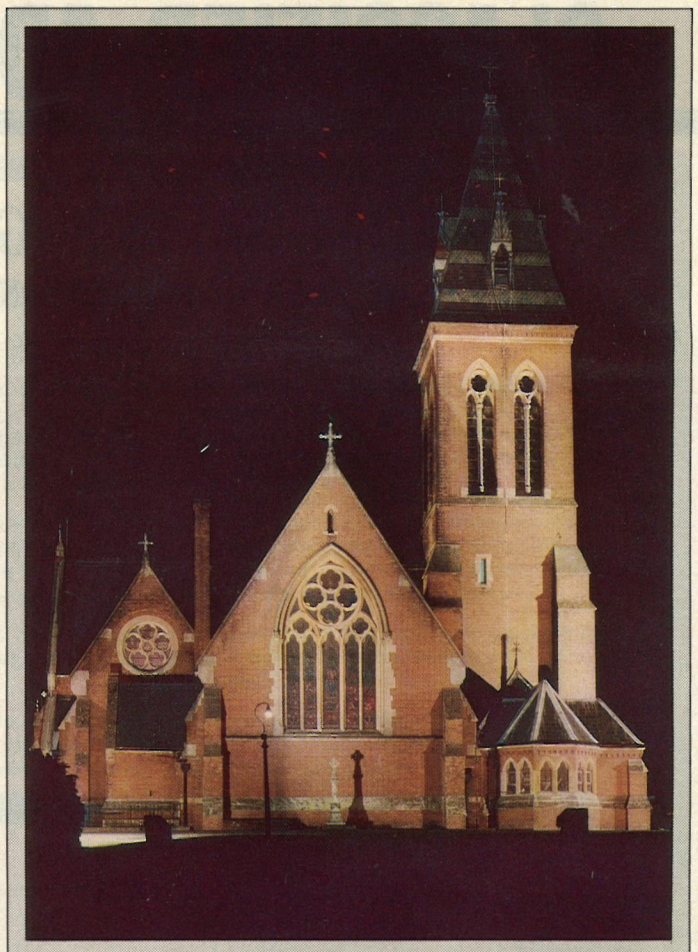


Indirect ambient lighting is provided by the HQI-TS lamps in Concord MIL uplighters on columns and walls. The luminaires have integral control gear and throw glare-free light off the white ceiling, providing an illuminance of 300 lux rising to 700 lux in the adult reading areas.

With a high luminous efficacy of 73 lm/W, energy consumption and electricity costs have been reduced and heat loads cut.

Selected uplighters which incorporate an auxiliary tungsten halogen lamp to provide instant light during the HQI-TS warm-up period are placed strategically throughout the library.

A cluster of white spherical globes, each housing two 11W Wotan Dulux EL compact fluorescent lamps, swirl down the centre of the stairwell. The service life of 8 000 hours means the lamp replacement costs are reduced by 86 per cent compared with the incandescent with its 1 000 hour life.



The Royal Garrison Church of All Saints has been floodlit, using Philips' equipment, as part of Hampshire County Council's urban regeneration programme. High pressure sodium lamps were chosen to enhance the appearance of the stone and brickwork. For the tower, 1kW floodlights are used, while the remainder of the church is lit by 400W fittings.

CIBSE/BRE joint conference

A one day conference on the environmental impact of buildings is to be held at the Building Research Establishment on 9 October.

Organised by BRE and CIBSE Engineers, the conference will examine climatic changes; the balance between aesthetics and environmental considerations; energy efficiency; CO_2 emissions, CFCs and deleterious building materials.

After the opening address, to be given by Dr David Fisk, the DOE's Chief Scientist, the programme includes presentations on the BRE Environmental Assessment Method (BREAM). BREAM assesses a building on a number of key environmental issues which can be classified according to their effect either at global, neighbourhood or internal level.

Tom Smith, Senior Vice-President of CIBSE, will chair the conference and Neil Milbank, Director of Environment and Energy and BRE will give the keynote address.

The registration fee is £150 + VAT to include synopses of the papers and a complimentary guide to BREAM. Further information from the CIBSE's Member Services Department on 081-675 5211.

British Telecom lightens expenses

Automation of the lighting controls at a new telephone exchange on London's Isle of Dogs has resulted in considerable energy savings.

The independent lighting management system was designed jointly by British Telecom and Telemecanique, whose components have been used throughout the project.

To cut installation time, Telemecanique's Canalls power distribution trunking system, which incorporates simple plug-in connections, was chosen in preference to traditional cable.

Substantial cost savings were achieved as a result and this money was used to automate the system by means of a TSX17 micro-modular programmable controller.

Modular contactors operate the light switching, row by row. Lights can be switched on manually by means of a single switch — then the lighting is switched automatically to half power at the end of a preset period. After a further time gap the lights switch off completely.

British Telecom is reported to be considering incorporating similar systems in other new exchanges.

Maintenance guide

CIBSE has published its latest technical memoranda — **TM17: Building Services Maintenance Management.**

The publication provides guidance for those involved in the design, installation, operation and maintenance of engineering services within a building. It looks at maintenance as a means of minimising risks to health and safety, avoiding environmental damage and reducing energy use.

TM17 costs £10 for members and £20 for non-members, and is available from the CIBSE Bookshop, 222 Balham High Road, London SW12 9BS, tel. 081-675 5211

IN YOUR NEXT ISSUE

Following highly publicised studies in the past couple of years, lighting in public areas has become an expansion area in an otherwise tightening market. So, with the prospect of dark winter nights ahead, *LEN* has been investigating developments in street and amenity lighting.

Looking back on a couple of wonderful summers we survey the increasing use of floodlighting.