

LIGHTING

EQUIPMENT NEWS

22 APR 1989

APRIL 1989



The reception area, enclosed by a wall of glass screens, which gives access to the adjacent space.

Corporate style

Emess plc has unveiled its new corporate head office, located on the sixth floor of a Georgian building high above London's St James's Street.

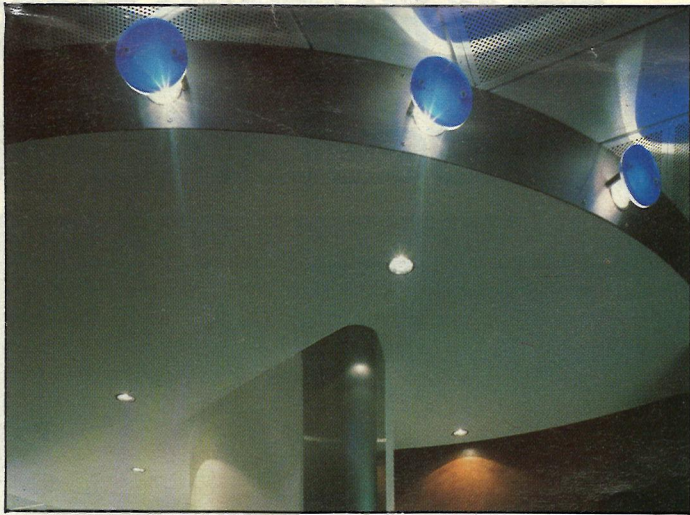
During the past three years the company has grown from a primarily UK-based concern into a multinational in the lighting and electrical fields.

"We wanted the new head office to reflect the design profile of the company's products", stressed chairman Michael Meyer, "as well as its multinational character and its confidence in the future".

So, in addition to providing an efficient working environment, the new office also had to present an impressive venue for meeting overseas clients.

The response of interior designers, David Davies Associates, to this brief has been to create a cool, white-walled interior to the 500 square metres of office space which provides a neutral foil for many eye-catching individual features.

The reception area sets the tone.



The entrance to the chairman's office showing the feature lighting.

Entered from a glass wallclimber lift that rises through the building's central atrium, the area is defined by a sweeping curved wall of pivoted glass screens. With these panels closed, lighting floods in through the stippled glass specially developed in conjunction with Pilkingtons. Open, they give access to the adjacent offices which took out over the St James's roofscape through Georgian windows.

Elliptical columns divide the screens and carry a curved metal canopy. The reception area can be further divided by means of a folding timber screen to give a small meeting room.

The flooring, of fumed oak, incorporate uplights from the Marlin range. Its starkness is here softened by a Helen Yardley rug. Ceiling lighting is provided by Marlin Matri 65 downlights concealed behind blue glass panels.

Blue glass is a consistent theme of the design: it occurs again on the reception desk design in the form of a writing tablet. The desk incorporates a bronzed finish. This rusty red, with the blue glass and white walls consistently echo the Emess

corporate colours through the offices.

The boardroom is, naturally, a major feature. Full-height curved doors with a bronzed finish again lead into a room dominated by an arrowhead-shaped table by Lauro Peto. This shape is echoed dramatically by a blue glass canopy suspended overhead.

The chairman's office is entered through a drum-shaped doorway, the two halves of which flank a white elliptical column and incorporate two curved doors with a bronzed finish. Custom-designed furniture for this room includes a console unit comprising three bronze cubes suspended from a metal frame.

The same unit is again featured in the client dining room, which has a metal-framed oak top table, Zanotta seating and another Helen Yardley rug. The atmosphere here is intentionally relaxing, the room being shut off from outside activity by sliding timber doors. The staff dining room shares many common features, but the dining table is topped with granite and the serv-very is finished in stainless steel.

Osram-Siemens agree joint deal

Osram-GEC has established a joint initiative with Siemens AG which enables Osram to market a wide range of advanced lighting systems in the UK, many for the first time.

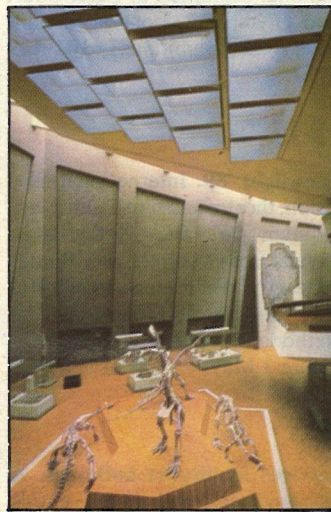
The products include ergonomically designed low brightness luminaires and a daylight system that makes use of natural light by means of prisms.

The new products are particularly suited to major office developments and public buildings. This move will, therefore, supplement the company's existing strengths in domestic, industrial and amenity lighting.

Osram-GEC is a company jointly owned by GEC and Osram of Munich, with an ownership of 51% and 49% respectively.

As such, Siemens Lighting was a sister company to Osram, but the two companies had no direct relationship in the past, partly due to the continental tradition of keeping lamp and luminaire companies strictly separate so that lamp companies were seen to be in a position to provide unbiased information to luminaire manufacturers.

Under the former Siemens arrangement, companies which did not have their own UK operation distributed their products through Siemens Ltd, with its small lighting section, which reported to Siemens UK. Under the terms of the new agreement, Osram is taking over all the Siemens Lighting business in the UK and Commonwealth countries. Siemens' own technical department



Daylighting system at the Natural History Museum, Stuttgart.

has already been closed down and staff moved to the Wembley site where the two teams are being combined.

One of the advantages to UK customers is that Siemens' technology will now be generally available in Britain. However, the technology is not readily transferrable and must be modified for the UK market. For instance, the new Module range of office lighting fittings had to be adapted to the different techniques of ceiling fixings and national lighting standards.

Similarly, products which have previously been available only at very high prices will, as a result of the expanded market and UK

manufacture, now be offered at a more modest cost.

British and German lighting markets are significantly larger than those of other EEC member states, with the German market slightly in advance of that of the UK. Talks are currently underway, but it seems likely that other European markets will probably be approached jointly. The aim is to use the domestic European market as a springboard from which to tackle the Japanese and American markets in the 1990s.

Osram-GEC, originally known for its GLS lamp, has recently been moving distinctly up-market towards the architect and specifier end of the scale. With this trend in view, the sales team has been totally restructured and the company has recently been running a series of seminars for these groups at various national centres. This move has proved to be very successful. Seminars have attracted an attendance of at least 100, with up to 200 people attending some of the London venues.

"We are now fully equipped to provide effective lighting solutions for customers in all the major lighting application areas" commented Osram-GEC Commercial director David Schofield.

"We are also in a position to develop individually tailored lighting solutions to meet specific requirements, using the combined technological and design facilities of Osram-GEC and Siemens".

In brief...

● **Ideal Concepts International** is now marketing the range of DIL products and a multi-circuit track system from MOOS in the UK.

● The first of a new series of **Health and Safety Executive** statistics has been published as a supplement in the *Employment Gazette*. The report covers the first year of the reporting of injuries, diseases and dangerous occurrences regulations.

● The Designer range of switches and socket outlets by **Volex Accessories** was featured in the Valhalla Home at the Ideal Home Exhibition.

● **British Distributing Company** has acquired the business of Lightning Electrical Distributors and of Lightning Electrical Distributors (Industrial). The combined turnover of the three companies will be £85 million.

● **Pharos AB**, Sweden, has acquired the international marine navigation aids company Automatic Power Inc, Houston, and its UK subsidiary in Maidstone. These companies are now merged with Pharos Marine, Brentford.

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DIARY

APRIL

5-12

Hanover Fair. World light show. Details from Arnold Rustemeyer 01-688 9541.

12

Lighting and well being at work. An evening talk by Peter Stone at the Royal Aeronautical Society, London, arranged jointly by the London and South East Region and the Lighting Division of CIBSE. Details from M Carter 01-348 5171.

16-18

National conference of the Chartered Institution of Building Services Engineers at Warwick University. Details from CIBSE member services department 01-675 5211.

19

Millar Award. Three finalists present their papers at an evening meeting arranged by the CIBSE Lighting Division and held at the Building Services Engineering Centre, London. Details from CIBSE member services department 01-675 5211.

20

Lighting for the theatre. A one-day symposium in London organised by the International Philips Centre for Lighting Education and Research, Bartlett School of Architecture and Planning. Details from Ann Nash 01-387 7050.

MAY

3

CIBSE Lighting Division lunch. Guest speaker: Dr Ian Twinn, joint chairman of the Parliamentary Lighting Group. Tickets from CIBSE member services department 01-675 5211.

10-12

Lighting World International, New York. Exhibition and conference of architectural lighting. Details from Jacqueline Illonardo, National Expositions Co Inc, 15 West 39th Street, New York NY 10018.

14-18

IDI '89 Interior Design International exhibition at Earls Court and Olympia 2, London. Details from AGB Exhibitions Ltd 01-429 1777.

15-17

Showlight '89. International television, theatre and film lighting colloquium in The Netherlands. Details from Maureen van Woudenberg, NOB PR Department, P O Box 10, 1200 JB Hilversum, The Netherlands. Reduced fee applies before 1 May.

17

Services in airport buildings. A discussion session held at Gatwick Airport. There will be three speakers from British Airports Authority. Details from CIBSE member services department 01-675 5211.

17-21

British Science and Technology Exhibition, Alexandra Palace, London. A display of practical opportunities, achievements, and developments in British science, engineering and technology. Details from British Science and Technology Trust 01-992 9011.

24

Human response to lighting. An all-day workshop at the Building Research Establishment. Organised jointly by BRE, AVA and CIBSE. Details from CIBSE Lighting Division 01-675 5211.

Light show in Japan

An international exhibition of light and lighting systems is to be held in Tokyo from 13-15 July this year.

The market for lighting in Japan is steadily expanding due to the increase in house construction and refurbishment projects, say the organisers, MESAGO Japan Corporation.

They add that due to their design, function and quality, products from Europe and the USA are highly appreciated in Japan.

As well as lamps and luminaires, there will be indicator lights, searchlights, components, materials and electrical accessories. Lighting design and consultancy services will also be represented at the show.

Further information is available from MESAGO Europe, Rotenbühlstr 83-85, D-7000 Stuttgart 1, West Germany.

More courses demanded

To meet the demand for places, the Lighting Industry Federation is doubling the number of lighting certificate courses in 1989.

Course director, David Pritchard, says that interest is very high. An assistant lecturer, Dr A R Bean, has been appointed. Dr Bean is an experienced lighting lecturer and past chairman of the CIBSE Lighting Division.

The next certificate course will be held in London from September to December. Two advanced courses will be held at Aston University, one on interior lighting (from May to July), and one on exterior lighting (from September to November).

There will be a post certificate course on emergency lighting, also at Aston University, in July.

The courses are for manufacturers, electrical contractors, wholesalers and designers. More details are available from the Federation on 01-675 5432.

To Russia — with light

Marlin Lighting displayed its low voltage and other low energy lighting on the British Trade Advisory Service stand at the Industry Exhibition in Moscow in March.

Many of the displays were devoted to the hotel industry which is booming in the USSR.

Lamp standards

BSI has published BS6982 *Safety and performance of single-capped fluorescent lamps*, dealing with certain types of compact fluorescent lamp.

BS5971 is also available now. Entitled *Safety of tungsten fila-*

ment lamps for domestic and similar general lighting purposes, it also specifies how manufacturers should indicate compliance with the standard.

For further details contact BSI sales department.

People in brief

● **Ian Loader** is the new managing director of Program Lighting. He was previously head of the lighting division at AEG (UK) Ltd.

● **Christopher Fitzpatrick**, managing director of Wylex, part of the Scholes Group, has been appointed to the main board.

● **Michael Morrison** has resigned from the board of Concord Rotaflex and formed Eclipse Lighting Ltd, which distributes commercial lighting.

● **Martyn Brunger** has been appointed managing director of Lampways Ltd. He moves there from GTE Sylvania. Geoff Eastman, the previous managing director, is now vice-chairman.

● **Bob Wilson** has been elected chairman of the Industry Committee for Emergency Lighting (ICEL). Among other appointments he is managing director of Bradley Lomas (Electrical) Ltd.

● **Tom Wilson-Dover**, as southern area sales manager at Udalite Ltd, has been given responsibility for specialist lighting services for prestigious office and store projects. He is based in Bournemouth.

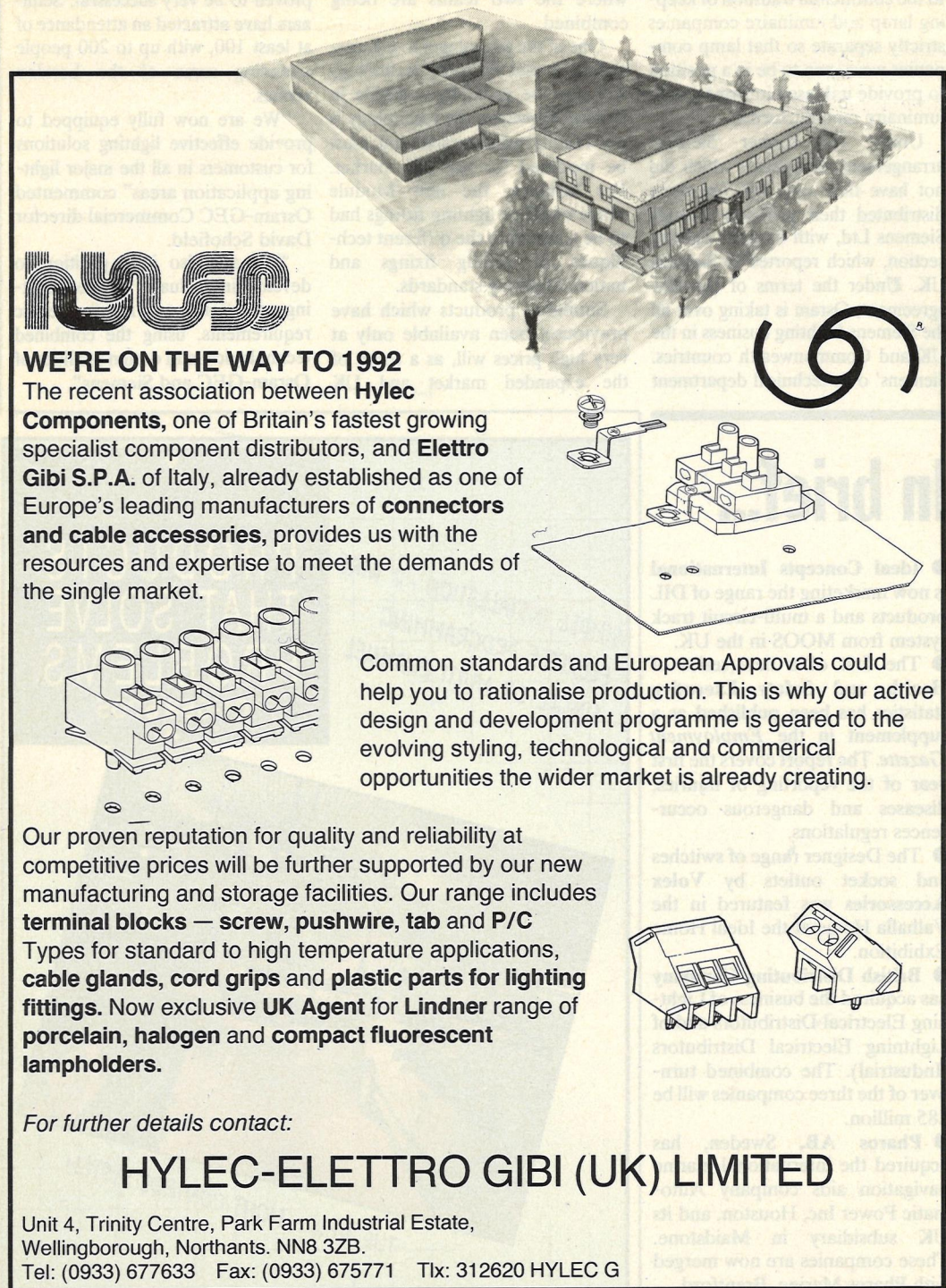
● **Michael Breeze** has been appointed head of business training and development at the Electrical Contractors' Association.

● **Robert Crow**, formerly a regional sales manager at Erco Lighting Ltd, has joined Into Lighting as one of the directors.

● **Keith Walker** has been appointed managing director of J Dyson Electrical and Shakeshaft Electrical Wholesale, two subsidiaries of the Hawthorn Leslie Group plc.

● **Rudolph Inhelder**, technical sales manager at Wotan Lamps Ltd, now has the title of European engineer. This has been conferred on him by the European Federation of National Engineering Associations and he is believed to be one of the first engineers in Britain to receive the title.

● **Alan Mills** president of GEC Canada, will succeed Pat Sansom as managing director of Osram-GEC Ltd on 1 July. Mr Sansom, who reaches retirement age in June, will become vice chairman to assist during the hand-over period and hopes to maintain contact with Osram's customers.



WE'RE ON THE WAY TO 1992

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LETTERS

Claims for new floodlight system justified

The September issue of Lighting Equipment News carried an article on the new Philips Arena Vision floodlighting system. Mr Robin Aldworth of Thorn Lighting Ltd, in a letter published in your November issue, attempts to play down the advantages offered by the new system by seeking a comparison with his company's CSI unit. Come now, Mr Aldworth, let's face the facts — all the facts!

Lighting experts (Mr Aldworth included) agree that, theoretically at least, short-arc lamps in combination with a precision optical system are the ideal solution when lighting sports stadia for colour television. However, the CSI floodlight is not what these experts had in mind, especially with regard to suppression of stray light, accuracy of burner position relative to reflector, and the wider production tolerances inherent in the hot-glass manufacturing process.

By contrast, the Arena Vision floodlight, with an arc width of only 7.5mm precisely positioned, parallel with the internal screening skirt, results in a very effective reduction of stray light. Moreover, this stray light is redirected into the beam, which increases the efficiency of the system.

Indeed, system is the operative word. Arena Vision is an integrated sports lighting system, and any comparison of floodlights is really rather irrelevant. What counts is the overall result. The Arena Vision results in a high utilisation factor (calculated for horizontal illuminance) and high vertical illuminances and uniformities (see table 1).

As regards wind loading, what counts is not the size of an individual floodlight, but the size of the headframe needed to accommodate the number of units needed to provide a given lighting level, and this is about the same for CSI and Arena Vision. However, the fact that only half the number of units are required for a given lighting level means that the Arena Vision system is considerably more economical in terms of wiring and installation costs.

Quality criteria such as colour rendering and colour temperature are of paramount importance, as

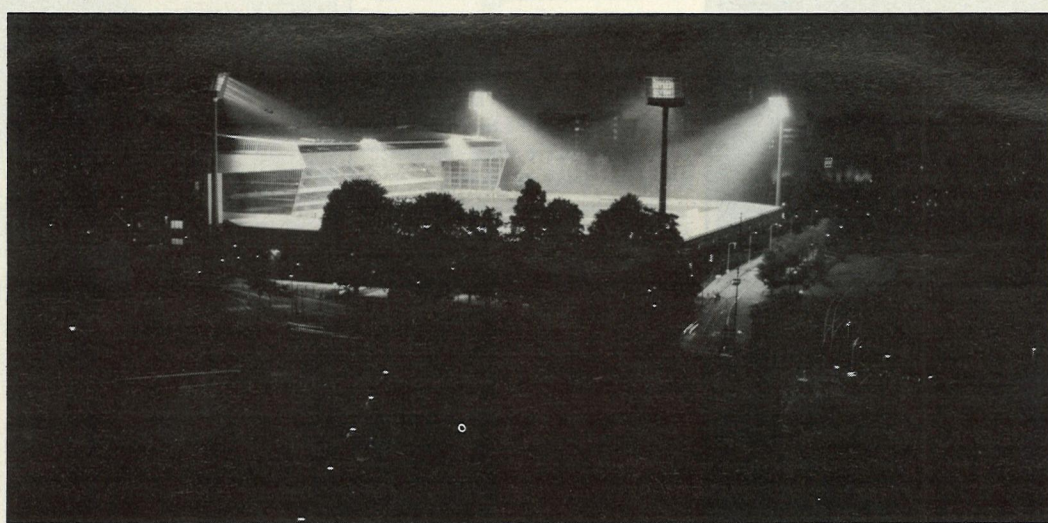


Table 1 Philips Stadium, Eindhoven

	Quantity	Installed
	220 pcs.	July 1988
Type and number of floodlights used:		
88 units type MVF 406- Cat 2		
114 units type MVF 406- Cat 3		
18 units type MVF 406- Cat 4		
Calculated results:		
E horizontal	1655 lux maintained	
U1 (min/max)	0.80	
U2 (min/av)	0.89	
Utilisation factor	39%	
E vertical (toward main camera)	1575 lux maintained	
U1 (min/max)	0.54	
U2 (min/av)	0.68	

Table 2 Comparison between lamps.

	CSI—1000W	CID—1000W	MHD—1800W
Tk	3800 ± 400K	5500 ± 400K	5600 ± 200K
RA	80	85	>90
Flux	90 klm	70 klm	150 klm
lm/W	90	70	84

are flux and luminous efficacy. As can be seen from the comparison set out in table 2, the MHD 1800W lamp is in fact the only one to combined a high lm/watt with a high Ra and Tk.

It is claimed that the CSI sealed-beam unit maintains 'efficiency throughout the life of the installation'. This simply refers, of course, to the efficiency of the reflector. The Thorn comprehensive catalogue 1989/90 page 367 shows curves for life survival and maintenance: 50% survival 3500 hrs, but maintenance only 55% which is unacceptable. Taking a

maximum allowable maintenance of 70%, it results in an economic lifetime of about 1500 hrs, compared with the 4000 hours (still maintenance > 70%) of the MHD 1800W lamp. Add to this the fact that the number of lamps to be replaced is almost doubled, and we see that a staggering five times more lamp replacements are needed during the life of the installation!

Switching arrangements were also mentioned. With Arena Vision, switching is not limited to four fixed steps, as with CSI, but can be designed into the installa-

tion to suit the, sometimes, many and varied needs of the client.

It was implied that slow-motion filming could be a problem with Arena Vision. In any large installation in which the floodlights are divided over the three phases of a three-phase supply, this is not so. Nor, in such a situation, is it a problem for higher wattage lamps of 2 kW or even 3.5 kW.

Finally, we come to the question of light spill outside the stadium. The table included with the original article compares the luminous intensity 450m from the mast and the vertical illuminance at a window as given by conventional floodlighting and Arena Vision. What we unfortunately omitted to mention, was that these are actual measured values and that whilst (as stated) the intensity was measured 450 m from the mast, the window chosen for the illuminance measurement was in fact a mere 250m from the stadium. Furthermore, the figure of 5 lux quoted for this window includes the not inconsiderable contribution made by the local street lighting. Mr Aldworth's calculated figure of 4 lux for the illuminance produced by the CSI floodlight for a window 450 metres from the stadium is, therefore, considerably higher than the value one would expect to arrive at using the Arena Vision unit.

Dr Ir S H A Begemann
Senior vice president, Philips Lighting BV, Eindhoven, The Netherlands.

tor in CTV Stadia Lighting. I suggest that this discussion should now continue in the market place.

Robin Aldworth,
Technical Executive, Lighting System Division, Thorn Lighting Ltd.

Final comment from Philips

Facts 3 and 4 are referring to a status quo situation. The German DIN standards already specify an Ra of > 90 for high quality colour-television broadcasting. Large stadia that are only used 100 hours per year in dark periods are rapidly becoming financial disasters.

Fact 6 would have been correct if the measuring points located at 250 and 450 metres were in the same direction, which was not the case.

I fully agree with Mr Aldworth's conclusion, the market place will discuss and decide:

Fact 1: Main stadium 1992 Olympics Barcelona: Philips Arena Vision.

Fact 2: 1990 World Championship Soccer, Italy several stadia: Philips Arena Vision.

S H A Begemann

Thorn Lighting replies

The stated purpose of my letter (LEN November) was not to 'play down the advantages' of any system, but to restate some important advantages of the Thorn CSI Colour Television Floodlighting system. I am asked to 'face the facts' which I am happy to do.

Fact 1: The CSI arc is 15 mm long and 8 mm wide. Compared with the 1800W arc (25mm x 7.5mm), 'compact' would seem to be an accurate description of both types of lamp and reflector combination which achieve excellent control of stray light. Since its introduction, the CSI system has achieved at least 5 to 1 reductions in spill light compared with conventional stadium floodlighting systems.

Fact 2: Dr. Begemann is correct when he says comparisons of complete systems are what matters. That is why I stated that 'CSI floodlights present 40% less windage area per lamp watt'. This is a valid comparison, especially as both systems achieve similar

utilance.

Fact 3: Colour quality is obviously important. Both lamps are in CIE Group I and there is no evidence to suggest that the difference between Ra 80 and 90 has any significant operational advantage as far as colour television picture quality is concerned. The lower colour temperature (Tk) of CSI has also proved ideal for blending with daylight quality around sunset; the most difficult time to maintain the colour balance of the TV cameras.

Fact 4: When discussing lighting to colour television standards for large stadia with grass pitches, lamp life is a bit of a red herring. The floodlight usage in such installations is seldom more than 100 hours per season. A 1500 hour life, therefore, represents about 15 years of operation. After this period, the sealed beam reflector, operating in an inert atmosphere, is as good as new. I doubt if the same can be claimed for an anodised aluminium reflector in a

'breathing' fitting after 15 years, let alone 40 years.

Fact 5: With CSI Lamps rated at 1000W, obviously more lamps are needed than for an installation of 1800W lamps. This carries cost penalties, but in return the client gets greater flexibility of switching, not less.

Fact 6: On spill lighting I can only comment on the information as published. A 1000:1 reduction in intensity must result in the same reduction in illuminance, not 5:1 as stated. Even if the street lighting provided 4 lux on the window (surely a 'not inconsiderable contribution') the change in floodlighting illuminance would only be 21:1. As we are dealing with the ratio of spill light reduction, the location of the window at 250 metres (82° DV) or 450 metres (80° DV) makes no significant difference. The inverse square law is definitely a fact!

Having responded to Dr. Begemann's main points, I accept that Thorn now face a worthy competi-

COMMENT

Make it safe - make it foolproof

The recent debate on domestic luminaire safety has underlined the fact that, unlike the contractor or specifier, the domestic user of electrical goods is in no position to assess whether the product he is purchasing is either safe or suited to the use for which it is intended. He is recommended to choose his retailer with care and leave the matter to trust.

The Decorative Lighting Association has, creditably, been quick to put its house in order as far as members operating its code of practice are concerned. The offending member will be warned once. If he does not then comply, he will be reported by the Association to the local trading standards officers.

But, surely, there is a case to be made for legislation to catch out the assembler of cheap, shoddy goods who would never dream of taking out membership of a trade association anyway? Products of this sort regularly find their way to the less scrupulous 'bargain' shop or market stall and are generally purchased by the poorer and more vulnerable members of society?

However, there is another side to the consumer coin, and that is that people are their own worst enemies. Human ingenuity seems to know no bounds when it comes to using a product for a purpose for which it was never designed. Neither the manufacturer nor the retailer has any control over the way in which the goods a customer purchases may be used.

The most obvious tack for the manufacturer to adopt is to consider the likely ways in which his product can be misused and to build in safety measures to cover each eventuality. This presupposes a certain level of over-provision of safety features and amounts to working on the belt, braces — and ubiquitous piece of string — principle. But increasing demands for consumer safety would seem to urge its adoption. A similar approach has long been adopted by the chemical process industry and was originally championed by Professor Trevor Kletz. The obvious difference here is that any failure can have such widespread and catastrophic results.

The alternative method is to design in features to prevent misuse. A simple example is that lamps which are designed to be burned in only one position can easily be wrongly used. One obvious solution is to notch the lampholder, or provide some similar locating device so that the lamp can only be inserted in the correct position.

Whatever the approach adopted, the message can only be — the manufacturer is not the only party to blame.

LIGHTING EQUIPMENT NEWS

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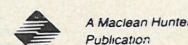
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NEW PRODUCTS

Emergency downlight

A small, unobtrusive, tungsten halogen downlight has been added to the emergency lighting range of Menvier (Electronic Engineers) Ltd. Known as the Halo-Pack, it is intended for non-maintained applications.

It consists of a battery housing and efficient reflector assembly with 6V 10W tungsten halogen lamp.

The reflector is designed for installation in suspended ceilings and is retained in the tile opening by two spring clips. The battery assembly is mounted remotely in the ceiling space. An indicator light in the reflector rim shows when the battery is being charged.

In the event of a mains failure, the Halo-Pack will give light for up to three hours. Alternatively, two units can be connected to a single charger to give a 1.5 hour emergency lighting duration.

Reader Service No. 151



Security luminaire

Sentinel is a security light in the form of an injection moulded polycarbonate bulkhead launched by Thorn Lighting Ltd. It incorporates a passive infra-red detector in the lower moulding.

The detector has a range of 10m across a 100° arc and is triggered when a person or car, for example, moves into the "field of view".

Once triggered, the lamp operates for as long as there is movement and then for a further five minutes.

A photocell is built into Sentinel to prevent operation during daylight hours. It uses a 60W GLS lamp, complies with BS4533 and is ingress protection rated IP23.

Reader Service No. 153



Winning range of table lamps

Clematis is a range of four blue and white table lamps with matching vases and planters which won second prize in the modern design competition at Lightshow this year.

They are designed by Jonathan Plant and made by Park Rose Pot-

tery, using the spongware technique. This manufacturing method has not been used for about a century and to re-introduce it Park Rose has had to train workers and set up a special department. The bases have a satin matt finish.

Reader Service No. 154

Luminaire resists vandals

Extral, a vandal resistant fluorescent luminaire from Rada Lighting Ltd, has been modified to give it increased strength and weather resistance.

It has a newly designed, extruded aluminium frame and even better moisture seals. A 5mm thick polycarbonate diffuser is also

available as an alternative to the standard 3mm type.

The Extral range includes models for recessed, surface or cornice mounting, manufactured to ingress protection classification IP55. Sizes are from 600mm to 1800mm.

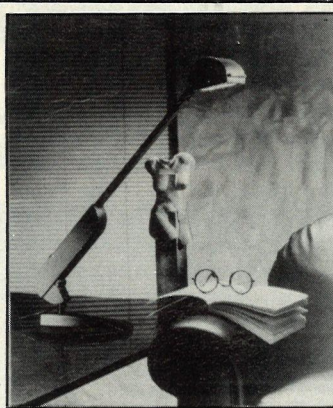
Reader Service No. 155

Desk and floor lights

Harvard desk and floor lights from Philips Lighting use 12V 50W tungsten halogen lamps. A glass cover protects the lamp, which is dimmer controlled.

There are two adjustments, at the lamphead and at the base of the arm. Black and white gloss finishes are available.

Reader Service No. 156



Bathroom wall light

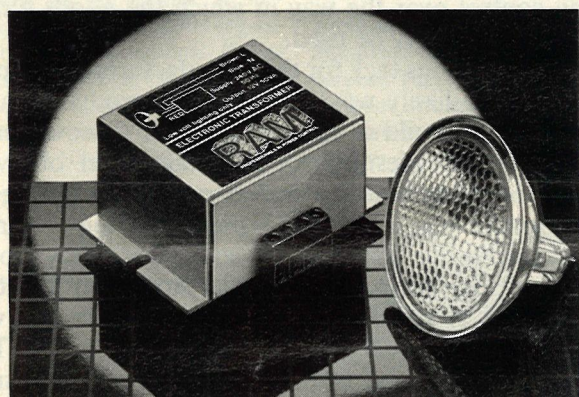
A bathroom wall light in a simple modern style from Philips Lighting is called SL Aqua.

It uses a spherical, opal coloured, 13W compact fluorescent lamp (without a shade) which is supported on a white cylindrical housing. The circular wall mounting plate is also white.

Reader Service No. 166

MIN

S I Z E



MAX

E F F I C I E N C Y

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Reader Service No. 152



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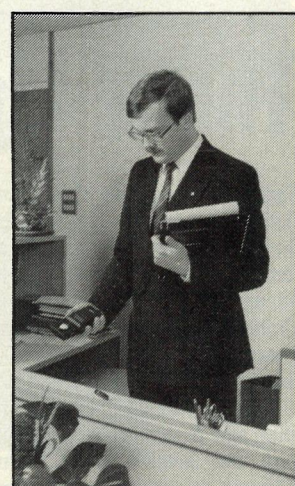
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MINOLTA

NEW PRODUCTS

Flexible lighting strip



Invizilite is a thin copper strip 13mm wide with miniature 7W tungsten halogen lamps attached at intervals to provide versatile low voltage display lighting.

The strip, which is available in lengths up to 6m, will bend around coves, niches and awkward shapes, inside corners and even up to 180°. It is available in the UK through

Alectralink Distributing Co, who also see applications inside curtain pelmets, below kitchen wall cupboards, inside glass display cases and for architectural feature lighting along the top of partitions. Being low voltage it is also useful in boats, and does not cause radio frequency interference that could affect navigation instruments.

The lamps are stated to be a special type of tungsten halogen, giving very little radiant heat and a bright white light.

The copper strip acts as a conductor and has a self-adhesive backing, though clips are available for locations where extra grip is required. Alectralink can also supply appropriate transformers for the system.

Optional accessories are reflectors and mounting channels with different profiles for locations such as inside display cases.

Reader Service No. 157

Versatile floodlight is portable

A series of portable tungsten halogen floodlights suitable for a variety of commercial and domestic uses has been introduced by Liteway Ltd.

Called the Carrylite range, they are available in three designs: tripod mounted, on a ground spike and freestanding. All are complete with 5m of cable.

The tripod mounted unit can be adjusted up to 2.1m high, but folds down into a convenient box with handles when not in use. Finished in chromium and black, it is well suited for floodlighting indoor or outdoor work areas and for use in photographic studios.

Available in either black or green, the ground spike version is suitable for use in garden centres, garage forecourts, boatyards and car sales areas, or to floodlight



buildings. In the domestic field, it is useful for garden lighting.

The freestanding unit, also in black or green, will either stand on bench tops or hang from beams for use in garages and lofts. This model is also suitable for exterior use, for example, by builders.

Reader Service No. 158

Garden lighting



Among the garden lighting from Alectralink Distributing Co is a 12V fitting on a spike with a shovel shaped reflector. A base plate accessory for fixing to concrete is also available. Standard finish is black.

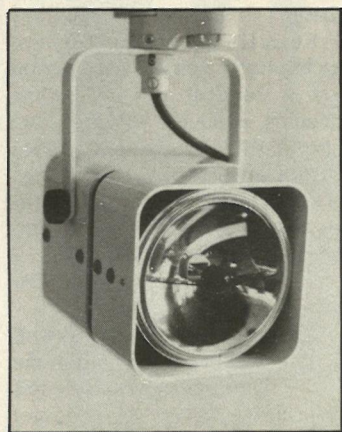
A 20W tungsten halogen lamp is used and up to five luminaires can be connected to one transformer. Reader Service No. 160

Low voltage spotlight

Superspot projector is a rectangular low voltage spotlight made by LDMS. It has an integral transformer and uses either 50W or 75W tungsten halogen lamps.

Both track and surface mounting versions are produced. LDMS says it can be sprayed to match customers' colour requirements at an economical price.

Reader Service No. 159



Double ended low wattage SON lamp

A double ended 70W high pressure sodium lamp has been introduced by Osram-GE Ltd. It offers advantages compared to a linear tungsten halogen equivalent, and provides a useful alternative to metal halide.

The new 70W SON-TS is designed for outdoor and general

ambient lighting. Applications include floodlighting, interior spotlighting where colour rendering is of secondary importance, wall-washing and contrast lighting for blended schemes.

The lamp is interchangeable with a 70W metal halide lamp and gives a warmer light together with a 40% improvement in luminous efficacy. Compared with a 300W linear tungsten halogen lamp, energy loads can be reduced by 72% while maintaining the same lighting level.

Reader Service No. 161

Electronic lighting control



JEL Energy Conservation Services Ltd has introduced the Micro Variable Illuminance Controller (VIC) which allows the light output from fluorescent lighting to be varied by an electronic ballast. These high frequency ballasts themselves reduce energy consumption by 10%.

The light output can be varied between 25% and 100%. High and low limits can be set to restrict

the control range. Photocells are used to monitor lighting levels.

Up to 50 twin fluorescent or 100 single-lamp luminaires can be controlled by one Micro VIC.

Separate local control panels allow pre-set limits to be overridden.

Micro VICs can be integrated into building management systems.

Reader Service No. 164

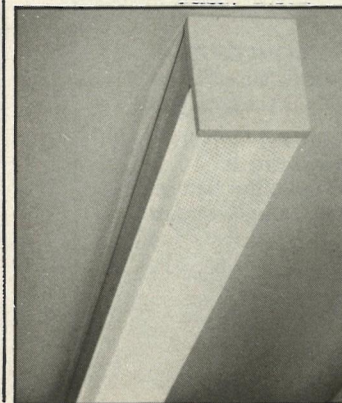
Emergency luminaire

Luna is a linear emergency lighting fitting introduced by Rada Lighting Ltd for integration into general lighting systems.

It is available for non-maintained or maintained operation in lengths from 1200mm to 1800mm. A matching mains-only luminaire is also available.

The housing is made of zinc-coated steel finished white and is supplied complete with spring-loaded end-caps. The styrene diffuser has a prismatic base and linear reeded sides.

Reader Service No. 163



Low voltage spherical spotlight

Cyrus is a miniature, spherical, low voltage spotlight by Light Years. The brass housing, which is only 64mm in diameter, sits in a diecast aluminium support ring.

A knuckle joint allows rotation through 350° horizontally and through 90° in the vertical plane.

Cyrus can be used with Teknolit



lighting track or adapted for other types of track system. There is also a surface mounting version with a circular plate that "floats" the fitting below the ceiling and has been designed to prevent brown heat marks on the ceiling.

The 50W tungsten halogen dichroic lamp is easily changed because the rim of the reflector sits outside the housing for instant access.

Three colour finishes are available: all black, white sphere with black ring, and brass sphere with black support ring.

Reader Service No. 162

Candlestick table lamps

A range of wooden candlestick type table lamp bases called Onslow is available from Chinoiserie Ltd.

The candlesticks are hand rubbed and have a hint of either dove grey, jade green or watermelon colour. There is also a natural wood version. They are 330mm high.

Toning lampshades are made from Onslow wallpaper by M E Short Ltd.

Reader Service No. 165

LIF LINE

Young Designers into ... Lighting?

A good piece of lighting engineering is all the better for being well designed. When competitors might be offering basically the same piece of engineering, might it not be that elusive component of design that makes the commercial difference?

How many lighting manufacturers have heard of, let alone used, the DTI's YDI scheme?

YDI — Young Designers into Industry — is a joint initiative of the Royal Society of Arts and the Department of Trade and Industry, matching the needs of British industry and the skills of our top young designers. YDI aims to persuade manufacturers that young designers can make an important contribution to a company's commercial success; it also introduces students to the opportunities presented by industry.

Graduate designers are selected by a panel of experts and 'matched' to host companies for a one-year period. Lighting manufacturers certainly qualify as suitable host companies.

The DTI has committed £800 000 to YDI over a five-year period. This covers the administration of the scheme by the RSA and also a 50% contribution towards each graduate's salary. Host companies have varied from small independents to some of the largest manufacturing companies in the country. An example from our industry is Marlin Lighting. Indeed, Marlin's Mike Jankowski is quoted in the DTI's YDI brochure:

"Design has a critical role to play in the process of product creation. So does engineering. So why is it that engineering trainees are so readily accepted into industry but not designers?"

It's no good industry saying you can't use young designers because they don't have a track record; neither do engineering graduates. They're all shapers and builders and can only prove their worth by shaping and building. Our own YDI designer has growth into the job and is a very valued member of my team."

Any other lighting manufacturers who would like to find out more about Young Designers into Industry should contact the RSA at 8 John Adam Street, London WC2N 6EZ, tel: 01-930 5115.

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Historic buildings are popular and fetch a premium on the property market. *Gersil Kay*, an American electrical contractor, talked to *LEN* about why rehabilitation was a viable alternative in commercial real estate and how to tackle such a project.

Conservation makes commercial sense. My firm has been an electrical contractor in Philadelphia for over 70 years, we are one of the oldest firms in the business, and also the largest. Because we have been in the industry for such a long time we have become involved in preservation techniques. Today we are restoring buildings we originally put up and, in the firm, we have the collective experience of three generations — grandfathers, fathers and sons.

There is a myth all over the world that you cannot do restoration work in connection with commercial projects — it costs too much. I have spent 25 years of my life in this field. Seventy-five per cent of our work is with old buildings, and it is very profitable if you know what you are doing. For a start, historic buildings are popular with everybody: the developer, the client, the tenant, and the general public who will use the facilities.

Restored commercial buildings are usually fully occupied and tenants tend to stay. Compare this with the typical new building. The affluent tenant who follows architectural fashion moves on to next year's building; the non-affluent cannot afford the annual rent rise.

Preserving profitability

The general public love older buildings — people feel an affinity towards them. Finally, this sort of work is popular with the craftsman, who wants to work with his hands and gets a challenge and satisfaction out of this type of work that new construction has taken away.

UK in the lead

When it comes to restoration the UK is light years ahead of the USA, except when it comes to building services. In the USA we need services such as air conditioning because the climate makes this necessary.

In 1988, 60% of the construction market in the USA was connected with older buildings. But

there is one major problem. Building codes are written only in terms of new construction work so you spend time and energy arguing for variances.

People think of restoration in terms of bricks and mortar — the gut and sand-blast approach — rather than in terms of interiors. But it is not enough to exhort people to restore, you have to show them how to do the work, and how to do it on time and to a budget. Whatever the age of the building you have to comply with costs and the tenants' requirements.

The whole secret of this is to know where the spaces between the walls, ceilings and floors are.

The USA is basically a nineteenth century country with Victor-



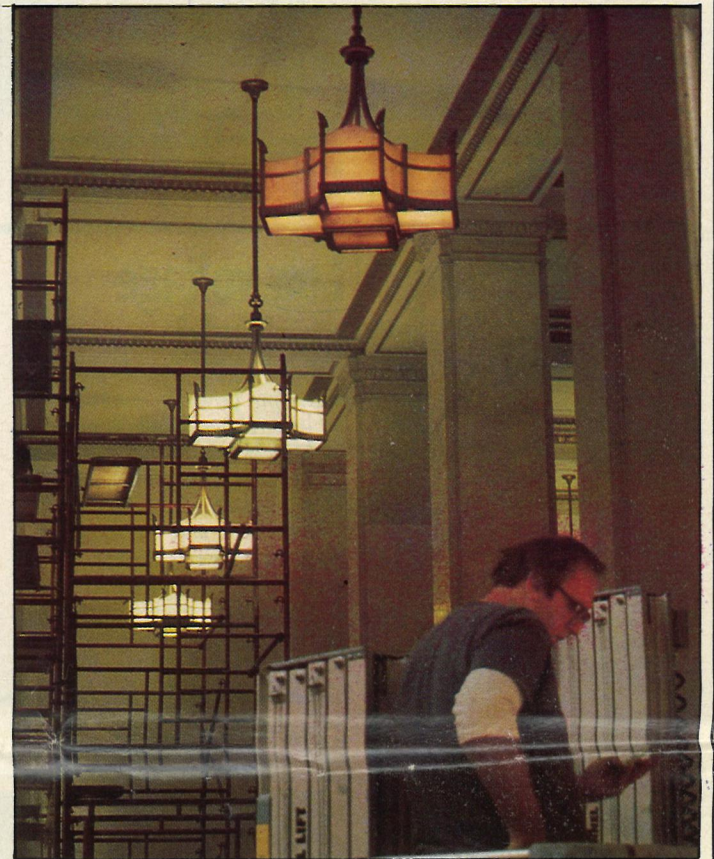
New York Public Library: as originally designed.

rian style architecture, (only the east coast has a few eighteenth century buildings) and early twentieth century buildings are also coming up for renovation. Both types of construction leave plenty of spaces between building elements, and building services can nearly always be inserted into these.

Every ten years or so the style of architecture changes. Each period has a different way of putting building elements together and also uses different materials. Properties of materials, by the way, are extremely important. In a concert hall, for instance, plaster cannot be replaced with fibreglass — the sound properties of the two materials are very different.

The major preoccupation is with getting the power supply from the source to the service system. In this respect it is cheaper if you do not have to make a hole in the structure. Filing in holes costs money and the more you can eliminate filling in, the cheaper the project becomes. Be careful to install services where you can get to them to maintain them. This is especially necessary for lighting where relamping is regularly required.

When putting in your lighting, first consider your wiring. Wiring spoils in 30 years and you must renew it. Then you must know how to get the wiring from the power source to the service system using the construction of the building to create spaces where it's not obvious. The number of holes should be kept to a minimum, and their



The colour of light sources matters.

location very carefully planned.

Locate the wiring so that it does not destroy the space it is supposed to be enhancing. Remember, it is very easy for a competent workman to chase in services.

One word of advice. Don't engage the lowest bidder when appointing a contractor for work of this kind. Go for the lowest *qualified* bidder, looking for him, say, among the three lowest tenders.

Historically, rushes or candles were the only sources of light. Large numbers of candles were only used for special occasions or if you were very rich. Rich, deep colours were selected with these low levels of lighting in mind, and these can look garish with today's higher powered sources. So, if you put in bright, modern lighting its colour and intensity are very important.

Fluorescent lighting should generally be avoided in historic buildings. Track lighting, I feel, is very

over-used. It is certainly not appropriate over an ornamental ceiling for instance. Usually you can do just as much with carefully positioned spotlights. Low voltage lighting, on the other hand, is usually acceptable. Wiring is easier to hide and fittings are small and unobtrusive. In addition, this form of lighting is better if you need to protect organic materials housed in the building. With lighting you also need to consider the correct shape of lamp.

We once required some 800 luminaires in a hotel project. Existing Victorian-type fittings in the USA were either very expensive and custom made or badly designed with reproduction gas cooks and similar unnecessary features. So, we finally managed to convince a supplier that there was a market for better fittings and got them produced. Now, the American 'Victorian' line is a \$2.5 million trade today.

Fast track and restoration are a



Service runs under reading tables.

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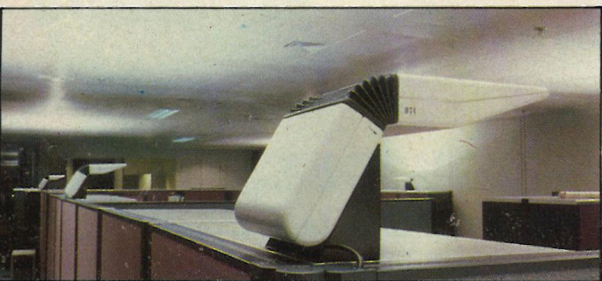


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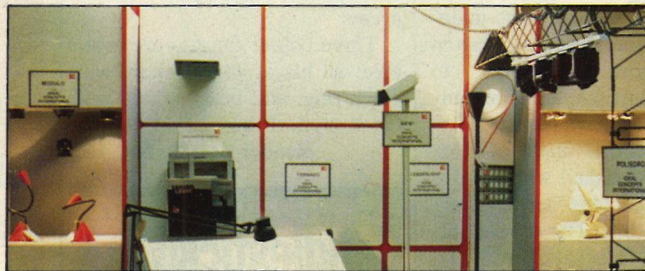
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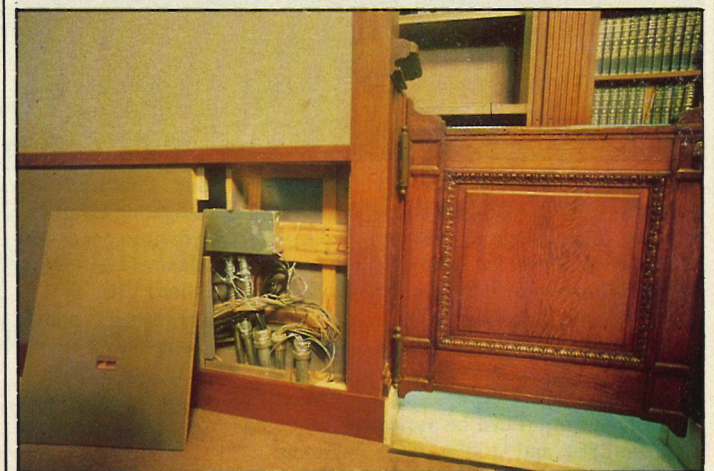
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To coincide with the launch of IDEAL CONCEPTS INTERNATIONAL, the company recently supplied a substantial quantity of High Intensity Discharge (HID) uplighters to RANK XEROX LTD.

This brand new three-storey office building is predominantly lit with "TORNADO" uplighter fixtures, accommodating the new OSRAM GEC single-ended HQI-T 150 watt metal halide lamp.



Services concealed behind panelling.



New York Public Library: before renovation.



New York Public Library: after renovation.

suit the building.

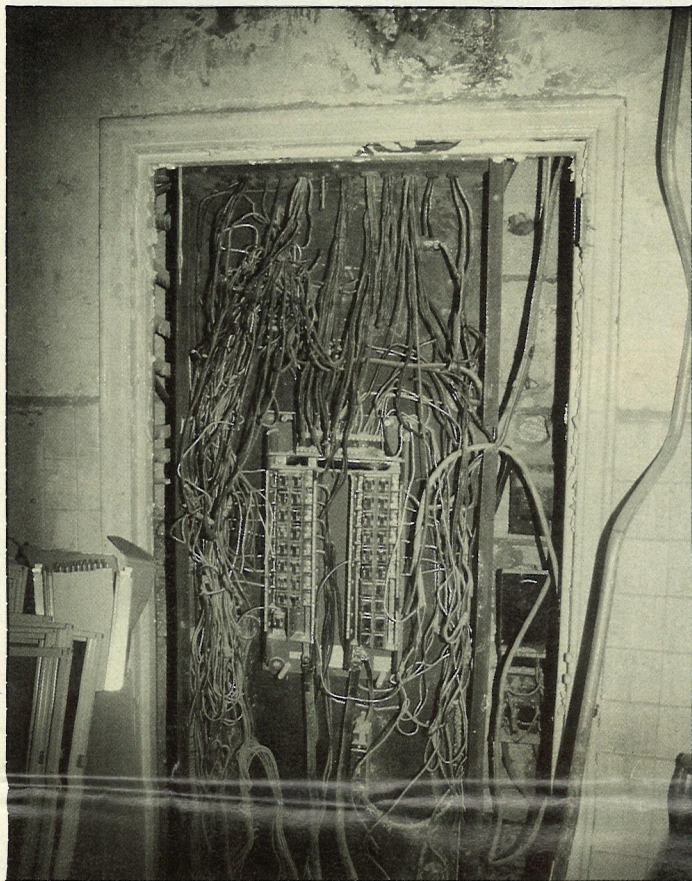
You do not want to change the building, you just want to insert modern services into it while keeping it as it is. Above all, every change you make to a historic building should be reversible.

Mrs Gersil Newmark Kay is chief executive officer of Morris Newmark and Bro. Inc., electrical engineers and contractors of Philadelphia. Using her many years' experience in the industry, she is currently writing a handbook on building services in conservation for Macmillan Inc. of New York.

She is also the founder of a non-profit making educational organisation, Preservation Techniques, which aims to teach the most effective ways of restoring commercial and institutional buildings erected prior to 1940, and to act as a bridge between the real estate and construction industries. In 1988,

Preservation Techniques won the President of the United States' Award for Historic Preservation for building conservation education.

Photographs of the New York Public Library are by the architects for the project, Lewis Davis and Associates; other photographs are by Mrs Kay.



Wiring probably needs replacing.

contradiction in terms. If, as a professional, you can spend a little time in research before you start the workmen on the site, enabling you to preplan and think ahead, you will save a great deal of money. In short, if you do not know the building like the back of your hand it is going to come up and bite you! Once you have

identified the nature of your problem you're well on the way to solving it.

To sum up, look for spaces in which to hide cable runs. This implies knowing the method of construction adopted in the building very well. Keep it simple but be inventive. Find out what the original designer did, because it will

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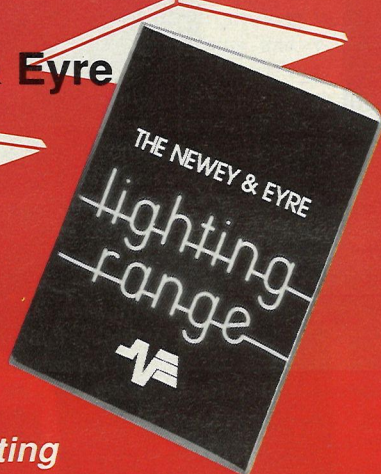
The Powerlite Metaflood range includes four fittings, from 70 watts to 400 watts. You can choose from CPW 70, CPW 100, CPW 250, CPW 400 and a range of accessories to suit all floodlighting applications.



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Adding a space-age touch to Longleat

Skilful, sympathetic floodlighting can increase our enjoyment of architecture. One lighting designer's approach to floodlighting a stately home is described in this article.

Floodlighting one of Britain's buildings of recognised architectural importance places more artistic and technical responsibility on the lighting designer than usual.

This was the task that faced Janet Turner, design director, and John Johnson, lighting projects manager, of Concord Lighting Ltd, when asked by the Marquess of Bath to floodlight Longleat House in Wiltshire.

The house was originally a priory built by Augustinian canons in the thirteenth century. Like so many other religious establishments, it suffered at the hands of Henry VIII when he dissolved the monasteries. The building passed to the Crown and in 1540 was sold for only £53 to Sir John Thynne. One is inclined to assume that with the surfeit of property at that time,

the price was probably rather low even for those days!

Sir John was responsible for much re-building and today, standing in a valley watered by a stream called the Long Leat, it is one of the finest examples of Italianate architecture from the reign of Elizabeth I.

Ever since Sir John's time, the house has been the home of the same family and Lord and Lady Bath took a great personal interest in the new floodlighting scheme. They were concerned that the statues and architectural detail should be revealed and were involved in the choice of light sources to give the best colour rendering of the Bath stone.

The original brief was to re-light only the front elevation of the house. There was an existing

scheme using twelve 1500W tungsten halogen floodlights sited about 30m from the front of the building. This had proved glaring to people descending the steps as they left the house at night and had also had the effect of visually "flattening" the architectural detail.

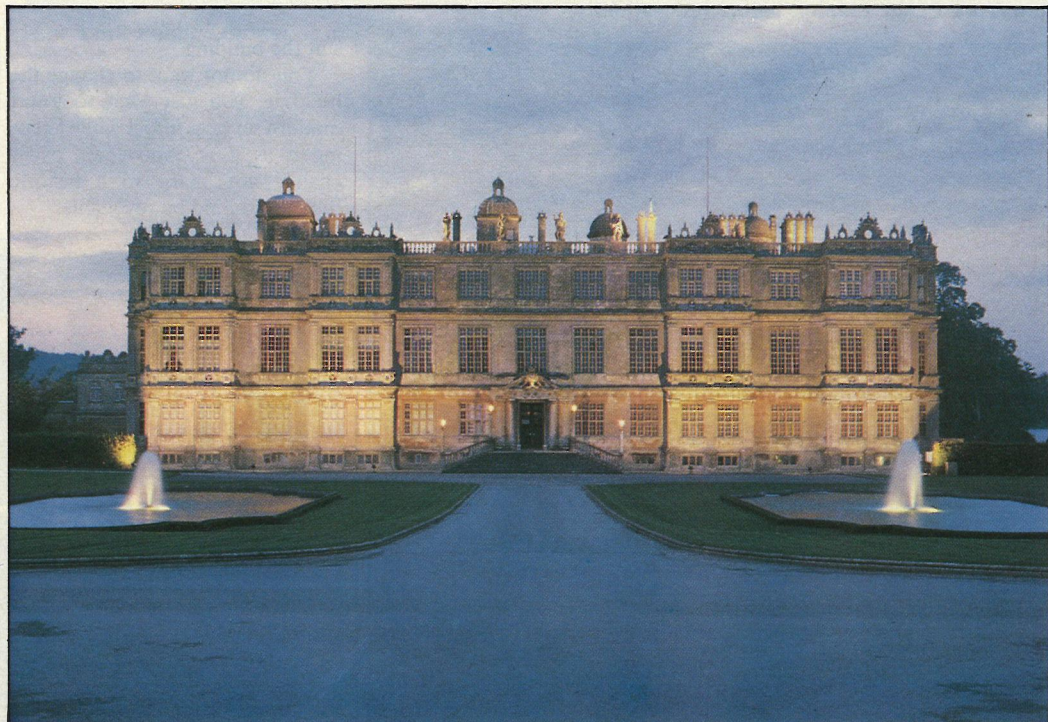
Janet Turner adopted a step by step approach as she set out to light the house as effectively and economically as possible.

She took along floodlights containing the latest light sources, including high pressure sodium and metal halide, to demonstrate the colour rendering of the stonework. After careful consideration, Lord and Lady Bath decided tungsten halogen was the most appropriate light source.

The 12 existing floodlights were reduced to six 1000W rectangular



A daytime view of Longleat House in Wiltshire.



Longleat at dusk with the new floodlighting.

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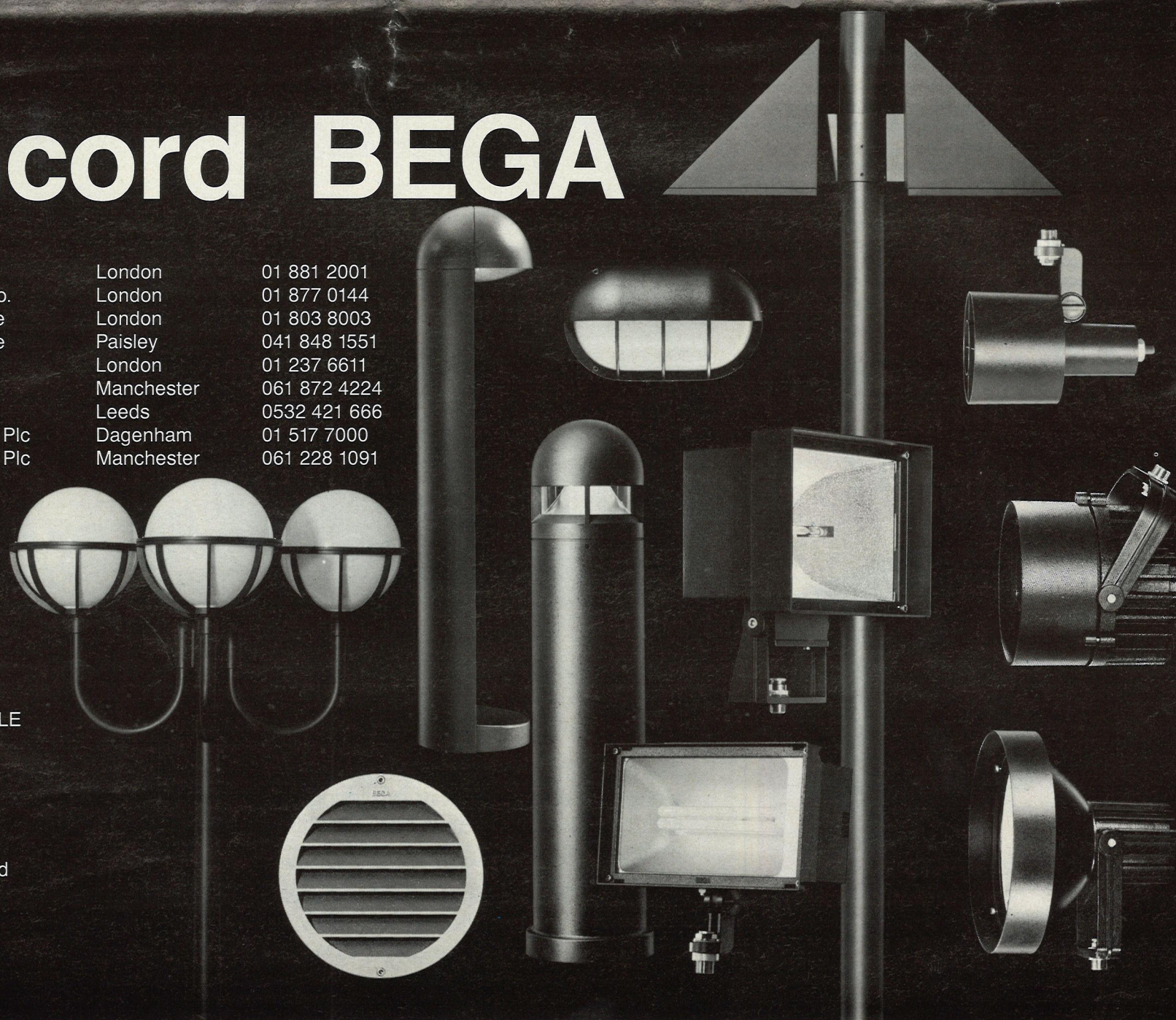
Griffin House

161 Hammersmith Road

London W6 8BS

Tel: 01 563 0486

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models in cast aluminium and stainless steel, with aluminium mirror reflectors and safety glasses. They were positioned some 5m from the house and louvres were also added to combat glare.

The luminaires were recessed into the ground in boxes which have a drainage system and are shortly to be screened by ornamental garden seating; cables were trenched.

To give the most interesting roof line it was decided to highlight only selected statues, cupolas, flag poles and the weather vane using mains voltage, 300W PAR56 cylindrical floodlights with glare cowls, some with a flood and others with a narrow beam light distribution.

Like all the other luminaires in the installation, they are made by

flow of light, this jet-proof, impact resistant luminaire with glass diffuser is now operating just as well mounted below the coat of arms and throwing light upwards.

The flight of steps at the main entrance is lit by the original clear glass lanterns mounted on posts on a ballustrade. These lanterns, two on each side of the steps, contained 100W GLS lamps, which have been replaced by 40W lamps to reduce glare.

When the front of the house was completed, Lord Bath decided to have the sides re-lit. This was done with the same type of 1000W tungsten halogen floodlights used for the front of the building, but placing only three at each side so that the luminance on the side elevations was slightly lower than that on the front, to bring out the



Lighting is used to emphasise the main entrance.



PAR56 spotlights positioned to enhance the roofline at night.

Bega, West Germany; GTE Sylvania lamps are used throughout.

When it came to determining the best positions for the fittings, experimentation was again felt to be the best method and floodlights on long leads were brought in.

This work, of course, could be done only in the dark and resulted in spending many long, cold, rainy winter evenings at Longleat, with Mrs Turner standing in the grounds at a distance from the house with a walkie-talkie radio while staff moved floodlights around — often on the roof.

In her search for the best possible visual effect, Janet Turner also climbed around the chimneys and cupolas of Longleat. When the desired effect was achieved, the position of the luminaire was marked with a cross in plastic tape.

A plan of the electrical and lighting layout was then drawn up for the electrical contractor, Graham Jenkins, who has carried out work on the estate for many years. Mrs Turner paid tribute to both Mr Jenkins and the maintenance staff at Longleat who were all exceptionally helpful and enthusiastic.

After all the luminaires had been installed, further night-time sessions were held with Lord and Lady Bath present to make final adjustments to beam angles and add the louvres and anti-glare shields. Incidentally, all fittings were re-lamped before handing over the installation to the client. Special emphasis was given to the main entrance by the addition of two 80W PAR38 spotlights, surface mounted behind the columns and shining downwards.

To accent the coat of arms above the door, a 10W Lynx compact fluorescent lamp (PLC type) was used in an amenity fitting. Although designed to be wall mounted and give a downward

three dimensional form and size of the building.

Water lighting

Two fountains in ornamental ponds in front of the house were lit using underwater stainless steel floodlights containing 120W PAR38 lamps.

After seeing the success of the floodlit fountains in front of the house, Lord Bath decided to add some decorative lighting to a waterfall in the grounds.

Statues of maidens on horseback in the waterfall have been lit by the same type of 300W PAR56 fittings used to illuminate the roof line at the front of the house. In this case, they are concealed in planting on the bank.

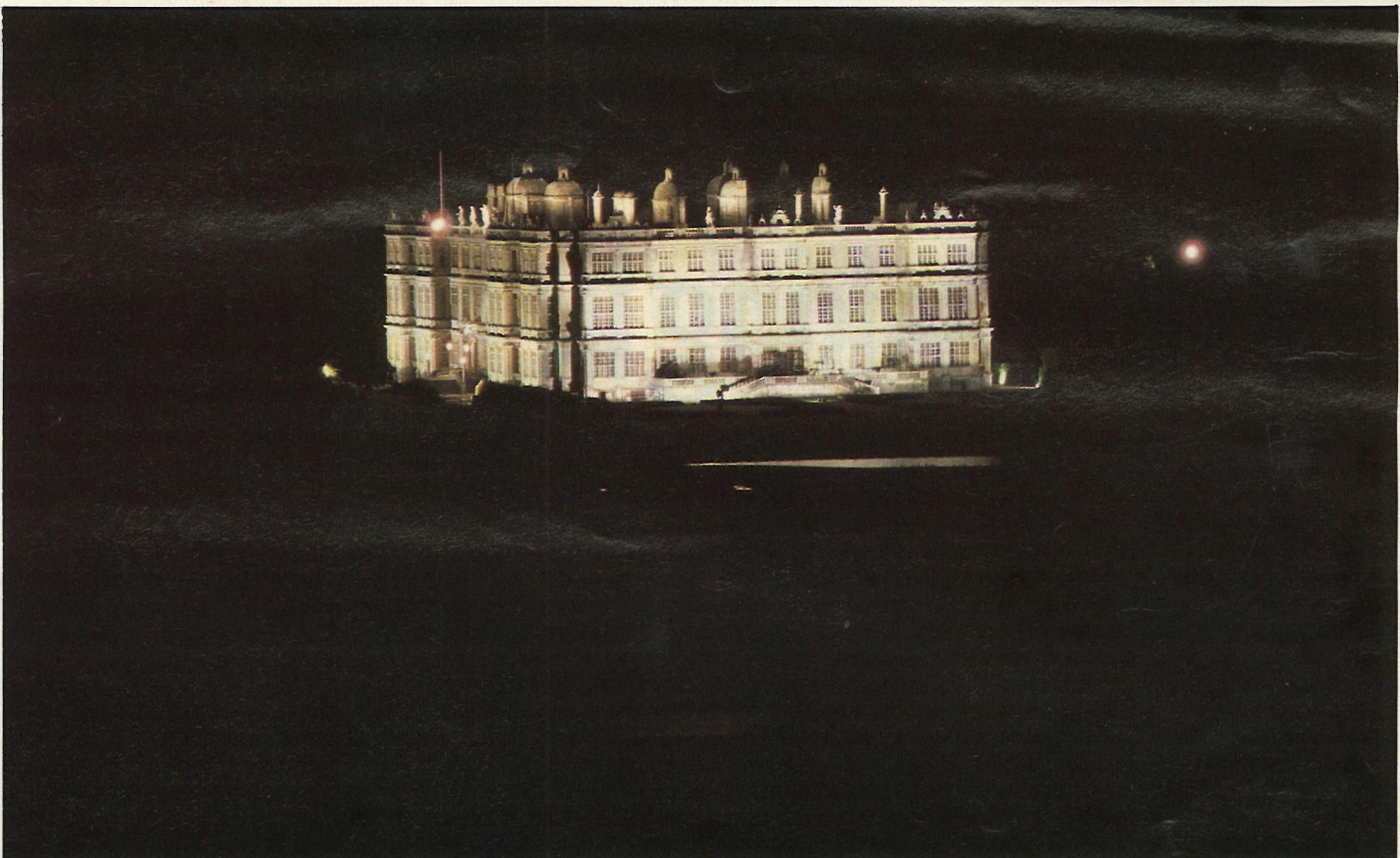
The new night-time lighting of Longleat uses only 35 luminaires: 12 lighting three sides of the building, 16 on the roof, three to highlight the front door and four lighting fountains and waterfall (plus the four post top globes incorporated in the ballustrade at the main entrance).

Running cost of the installation, which is on a special off-peak tariff, is 96p per hour.

The installation was completed in time for Christmas parties. Lord and Lady Bath are very pleased with the result and are now talking about Concord lighting the orangery.

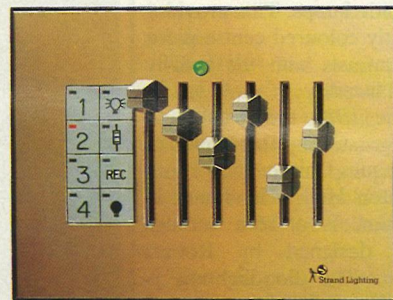
Janet Turner says her approach to floodlighting Longleat was "pure theatre"; she treated the house and grounds as if it were a stage set.

When seen from the far distance on a dark night, the effect is even more dramatic than from close up. The house, surmounted by statuary and domes, appears to be floating and has been described as an Elizabethan spaceship.

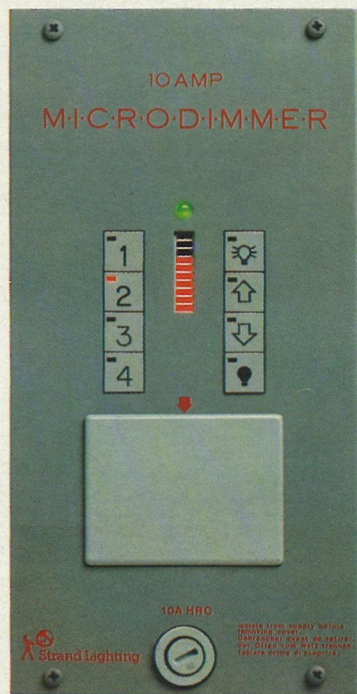


Longleat "floating" in the dark, as seen from Heaven's Gate, the main entrance to the estate.

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LEN/4/89 C

Light is the essence of architecture. Indeed, nothing can do more to enhance a historic building or improve the street scene. *LEN* reviews some recent instances where floodlighting has added to great buildings from the past.

It has been said that among the most satisfying of projects for a lighting designer to master is the illumination of churches, cathedrals and other great buildings of the past. Light has an important role to play inside and outside such buildings.

In a religious environment, for instance, it can lend either an air of calmness, or mystery, or create a striking impact in even the simplest of settings.

This article takes a look at some examples: two famous churches, and a 16th century mansion.

Les Halles, in the heart of Paris, has recently been renovated and is now a major attraction for both Parisians and tourists from around the world.

All one side of Les Halles is bounded by the Gothic church of St Eustache. Built between 1532 and 1640 the church has been important both architecturally and culturally since its dedication.

Options

In 1986 the City of Paris decided to floodlight this church and an independent lighting consultant, Light Cible, was brought in to advise. There were two basic options: either mimic the daytime appearance or illuminate the architecture in a completely different night-time style. The latter course was eventually chosen.

The main architectural elements are the flying buttresses, the magnificent stained-glass window and the centre of the south facade.

By day, the buttresses are seen against a background of heavy shadow, so it was decided that by night they should be lit from behind to space them away from the body of the church and give a more three-dimensional feel to the structure.

Thousands of photographs were taken and many negatives were solarised to give a quick impression of a night-time floodlit appearance.

It is comparatively easy to juggle with luminance distribution in a photographic darkroom compared

Making light of history

with organising night trials using floodlights. The photographs were also used to establish possible mounting positions for the floodlights and locations for cable runs. In addition, five night-time trials were conducted.

Floodlights by Thorn Lighting using 150W and 250W high pressure sodium lamps were chosen for the whole of the facade.

The stained glass window was lit from inside using high power CSI metal halide lamps. This provides a brilliantly coloured centre piece which contrasts with the heavily modelled facade.

In June 1988 the installation was inaugurated by the Mayor of Paris, Jacques Chirac.

Woolaton Hall, a landmark in Nottingham, is a 16th century mansion designed by Robert Smythson. The floodlighting is controlled by a digital time control which switches the lighting on at dusk and off at midnight each day.

The new scheme, designed by Philips Lighting, now illuminates the whole building. It was commissioned by the Nottingham County Council to mark the 400th anniversary of Woolaton Hall.

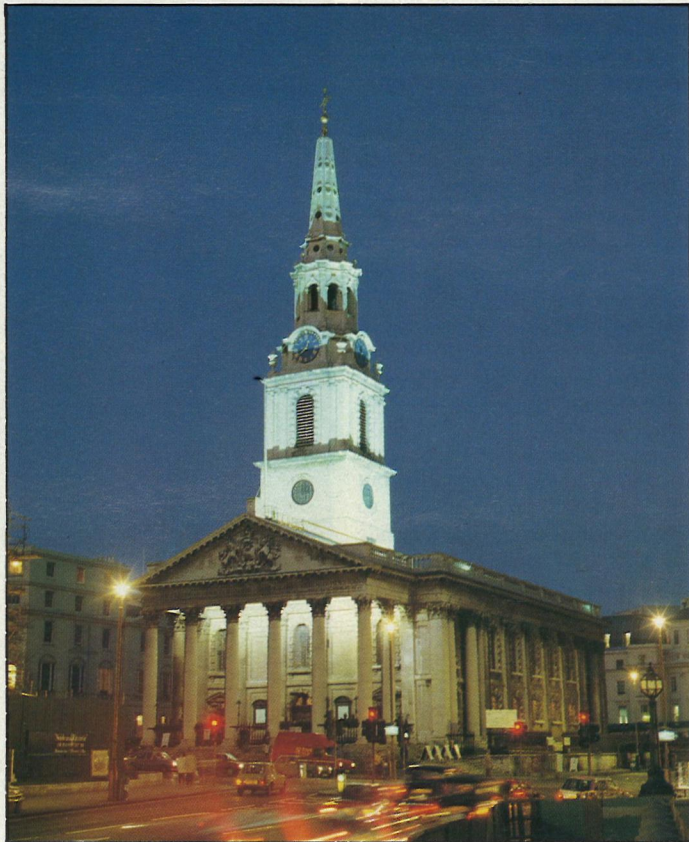
An earlier scheme floodlit the upper facade (the Prospect Room), using 14 projectors containing 250W tubular high pressure sodium lamps.

In 1988 a further 27 luminaires were added. These were also HNF003 projectors using tubular high pressure sodium lamps. A mixture of wide and narrow beam fittings were used, some with

250W and others with 400W lamps. Total installed load is 12kW.

One of London's best known churches, St Martin-in-the-Fields, Trafalgar Square, has a floodlighting scheme designed by Christy Lighting Ltd.

A detailed survey was first conducted, including discovering pos-



Metal halide lamps were chosen for St Martin.

sible mounting positions for floodlights on nearby buildings.

The vicar wanted an appearance of increasing brightness from ground level upwards to the cross on the top of the spire.

To reach a decision on the light source to be used, Christy staged a temporary test for two weeks, floodlighting the upper portion from roof level to the top of the spire with high pressure sodium on one side of the building and metal halide on the other.

The vicar and church council finally chose the metal halide scheme.

Equipment by Thorn Lighting Ltd was selected and the complete installation uses 21 luminaires containing either 250W, 1400W or 400W lamps.

After installation, the client was invited to view the effect and final adjustments were made to beam angles.

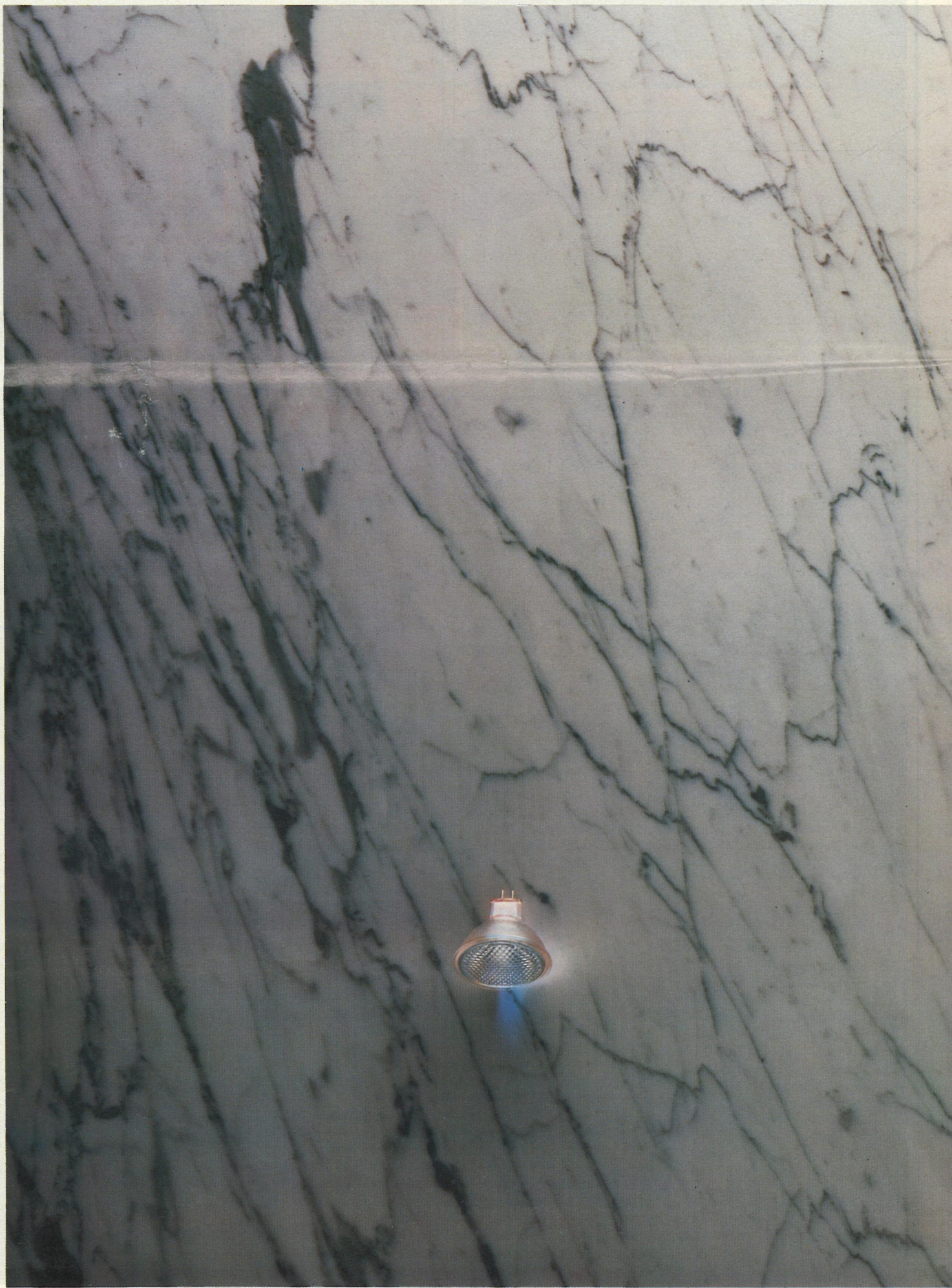
It was ensured that all floodlights could be reached easily and safely for re-lamping and maintenance. Christy guaranteed the lamps for three years and also promised a free, three-year maintenance contract.



Floodlighting the buttresses at St Eustache.



Improved floodlighting at Woolaton Hall.



Watchdog's research concentrated particularly on luminaires sold by large DIY stores, the so-called "sheds". The programme revealed that of a sample of 54 domestic fittings tested independently by a NAMAS accredited laboratory, 16 failed government safety regulations and their sale was, therefore, illegal; a further 14 had failed the more exhaustive British Standards test. Sample results are given below.

	Tested	Illegal	Failed BS only
British Home Stores	7	0	1
Homebase	5	1	1
Great Mills	6	2	1
Payless	4	2	2
B and Q	9	5	0
Knobs and Knockers	4	1	3

Four lamps were bought for testing by a consultant engineer, and Watchdog reported the findings shown in the box opposite.

What price safety?

How safe are domestic lighting fittings? In its programme of 6 March 1989 the BBC's consumer programme Watchdog broadcast the results of an investigation into domestic electric lighting. These proved highly disturbing.

Comments from many of the stores involved indicated surprise and a determination to ensure that all products, including current stocks bought in before the programme were guaranteed safe by their suppliers.

In the words of Graham Cummings, lighting buyer for Payless DIY, "We feel that we have carried out the necessary steps to ensure that all the products in the stores meet with British Standards and have asked our suppliers to confirm that everything they supply meets with British Standards and that everything that we stock that was supplied before the pro-

gramme also complies with British Standards."

Product tested

For Texas, a company spokesman stressed that the product was withdrawn from the shelves as soon as it failed the test. The company was now working with the manufacturer involved to solve the problems. Moreover, Texas not only tested lighting fittings itself but had them independently tested as well.

According to BhS, one fitting failed BS 4533 and the company would have welcomed a chance to look at the lamp themselves but were unable to do so. Safety stand-

ards were rigorously enforced, and, following the programme, company technologists had again looked at the model. But this was the first time there had been a complaint about that model and BhS was surprised because it was a very popular lamp.

A spokesman for Sainsbury's Homebase commented that the lighting fittings in question were supplied by a manufacturer who was a member of the DLA. Homebase insisted that fittings met the safety regulations and the British Standards; and that suppliers were DLA members who met the association's luminaire safety stand-

"An all white, suspended ceiling light with a leaf pattern was obtained from Sainsbury's Homebase (model number 0903/3, supplied by Searchlight, made in Italy). This lamp allowed access to basic insulation (wiring covered by only one layer of insulating material) without the use of tools. This was caused by a nut not being tightened up properly and so may not apply to every lamp on sale. The earth connection was loose, and had no means of being tightened, and it was possible to adjust it in such a way that the lamp was inadequately earthed.

"A brass swan-necked table lamp was bought from Texas Homecare (there were no other identifying markings). Both the base and the bulb holder could be easily rotated without the use of tools. This could lead to short circuits or the lamp becoming live.

"Twin ceiling mounted spotlights were bought from Great Mills (model number RC2, supplied by Shirley Hayes). These lamps contained two design faults. One failed to stop the lights from rotating through more than 360 degrees — this could damage the wiring and lead to fire or electric shock in some circumstances. The other fault meant that it was impossible to provide a tight earth connection because the earth was attached to the same mounting as the swivel on the lamp. In certain circumstances this could make the lamp unsafe.

"A Moonlight Wall Uplight was obtained from B and Q (model number M92, supplied by Ring Lighting and made in the UK). The lampholder could twist very easily, especially when trying to remove the bulb. This could lead to a short circuit which, in extreme circumstances, could be lethal."

ards. Following the notification of the programme Homebase had immediately withdrawn stocks of the fittings indicated and like products and also quarantined all warehouse stock. However, extensive re-tests made by the suppliers had revealed no further faulty products.

The DLA had received a copy of the Watchdog report and had accepted its overall findings, although there were some points they would wish to question and in some cases, they would have liked to have seen the full laboratory reports.

Since the programme, all member companies have been contacted and the legal dangers of producing faulty fittings stressed.

"A complex law suit resulting from an accident with a faulty fitting could simply put a company out of business", stated John Tengwall, and went on to urge suppliers to distribute only fittings which had passed the DLA Code of Practice Safety of Luminaires tests or which met the new DLA/BSI test requirements. Both standards are voluntary.

The DLA will carry out checks on suppliers operating its Code of Practice to ensure that quality control tests are made thoroughly and accurately. Firms not complying will receive a warning; if they ignore this, the DLA will refer the case to local trading standards officers.

Following Watchdog, many retailers are reviewing quality control systems and tightening up on suppliers. The DLA urges all retailers to obtain written assurances from suppliers that fittings meeting the Code of Practice requirements based on BS 4533.

To help retailers it intends to put a free fault-finding seminar and demonstration showing them how

to check stock on delivery for basic assembly quality. A date for this will be announced later.

A visual inspection of each fitting should take in:

- tightness of lampholder;
- lampholder shroud;
- presence of wattage and wiring labels;
- tightness of plates where they cover electrical parts;
- installation instructions to electrical supply;
- presence of both supplier's identification and model either by name or number *not* by bar code.

Carrying out such simple checks, suggested Mr Tengwall, would save a great deal of trouble. More detailed advice was given in the Association's Code of Practice booklet.

"Retailers who don't check", he continued "are liable to face massive liability actions in the event of a mishap". Importers and those who assembled fittings themselves could be in even worse trouble should they fail to carry out full electrical test procedures. In short, the DLA was happy to give free advice over the 'phone to any retailer who was in doubt about a fitting.

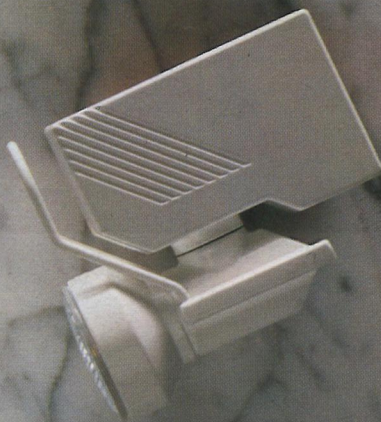
"We were extremely alarmed at the high percentage of failures found by Watchdog, particularly in view of the sustained campaigning we have done to encourage suppliers to enforce DLA or BSI safety and quality standards", concluded John Tengwall.

"The DLA has warned often enough that, unless the industry lives up to its safety and quality responsibilities voluntarily, it will be faced with statutory legislation, which will be much more expensive and difficult to implement. It is time that both suppliers and retailers got their acts together."

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NEWS IN BRIEF

● **Simplex Lighting Ltd** has established a specialist local authority sales team because of the influence and importance of the public sector in lighting specification.

● **Firstlight Products Ltd** has moved to larger premises at 22 Erica Road, Stacey Bushes, Milton Keynes, Bucks MK12 6HS (telephone 0908 310221).

● **Interlux** has just opened a West Midlands regional office and warehouse at Unit 42, Kelvin Way Trading Estate, West Bromwich, West Midlands B70 7TP.

● **Satellite Lighting Ltd** is now handling the entire product range of Marlin Lighting in Northern Ireland. Satellite has recently opened a lighting studio at 174 Castle-

reagh Road, Belfast.

● **DEM Controls Ltd** has opened a London regional sales office at Wickham House, Cleveland Way, London E1 (telephone 01-765 8040).

● **The Menvier-Swain Group plc** increased profit on ordinary activities before taxation by 30% in the six months to 31 October 1988.

● **Ring Electronics Ltd** has opened a new lighting design centre at the Design Innovation Centre, the Calls, Leeds, LS2 7EY (telephone 0532 428440).

● **Wotan Lamps Ltd** was one of the sponsors of the Friends of the Earth stand at the Ideal Home Exhibition.

Benefits of the electronic lighting revolution

There is a growing demand for the lit environment to be more flexible and capable of adapting to individual needs and changing applications. In this paper, first presented as the Philips Lecture, Professor S H A Begemann of Philips Lighting considers how electronics increasingly satisfies this demand.

In a continuously changing world the difference between evolutions and revolutions may seem arbitrary and subjective. According to the Oxford English dictionary, a revolution is an instant of great change while an evolution is a gradual development. The title of this paper "The Benefits of the Electronic Lighting Revolution", therefore, implies that with the introduction of electronics in lighting we are at an instant of great

change that will bring many new benefits. The key words are, therefore, change, electronics and benefits.

Forces for change

Three factors are major driving forces for changes in lighting:

1. Changing application environments and requirements. This has everything to do with the properties of the human visual system.
2. Changing cost-benefit relation-

ships. These are strongly related to the perceived economic benefits of lighting.

3. Technological developments that provide for new or improved application possibilities.

Changing applications, environments and requirements

To understand the implications of changing application environ-

ments it is necessary first to understand the human visual system. Human activities rely heavily on the information received via the visual system.

The interaction of a person with his environment is, to a large degree, dependent on the quality of the visual information that the brain receives. This information allows us to perform tasks (such as reading, writing, driving and playing tennis) or to experience the atmosphere, beauty, drama or

cosiness of a visual environment. These two aspects are often referred to as visual performance and visual satisfaction.

Decades of extensive research have given us a better insight into the important parameters that influence visual performance for different tasks such as reading, writing and detection of obstacles. The extreme complexity of the visual environment, the human visual system and human performance made it necessary to greatly simplify experiments and theoretical models.

A lot of research has been done on those visual tasks, such as reading, writing, VDU-work and conferencing, most frequently performed in indoor environments.

What are the results of this research telling us? Firstly, that both the quantity and quality of the lighting are important, or, expressed in lighting engineering terms, the illuminance/luminance, the uniformity, the directionality, glare and colour characteristics.

Secondly, that different tasks often require different values and combinations of lighting parameters for optimum task performance.

Thirdly, that there are big differences between the eyes of individuals. Old eyes, for example, need much more light than do young ones. A sixty-year-old adult needs tens times more light than does a sixteen-year-old child.

Fourthly, that there are big differences in personal preference/assessment of a luminous environment and/or lighting parameters.

Single task experiments not only give an insight into the differences between people but are also very illustrative of the nature and magnitude of variations that can be expected when application conditions are changing.

This can be illustrated with a very common example, namely a reading task at a desk.

In CIE publication no. 19/2, *An analytic model for describing the influence of lighting parameters upon visual performance*, the relation between visual performance and task illuminance has been established as a function of visual task difficulty, task demand level and age group.

1000 lux. (see Figure 2)².

The following conclusions can be drawn. When maximum visual performance is the main criterion and tasks are easy, which is the case for modern printing, task illuminance levels between 100 lux for young people and 3000 lux for old people are required.

When visual satisfaction is the main criterion, there is not so much an age effect but rather differences in personal preference varying between 300 and 1500 lux.

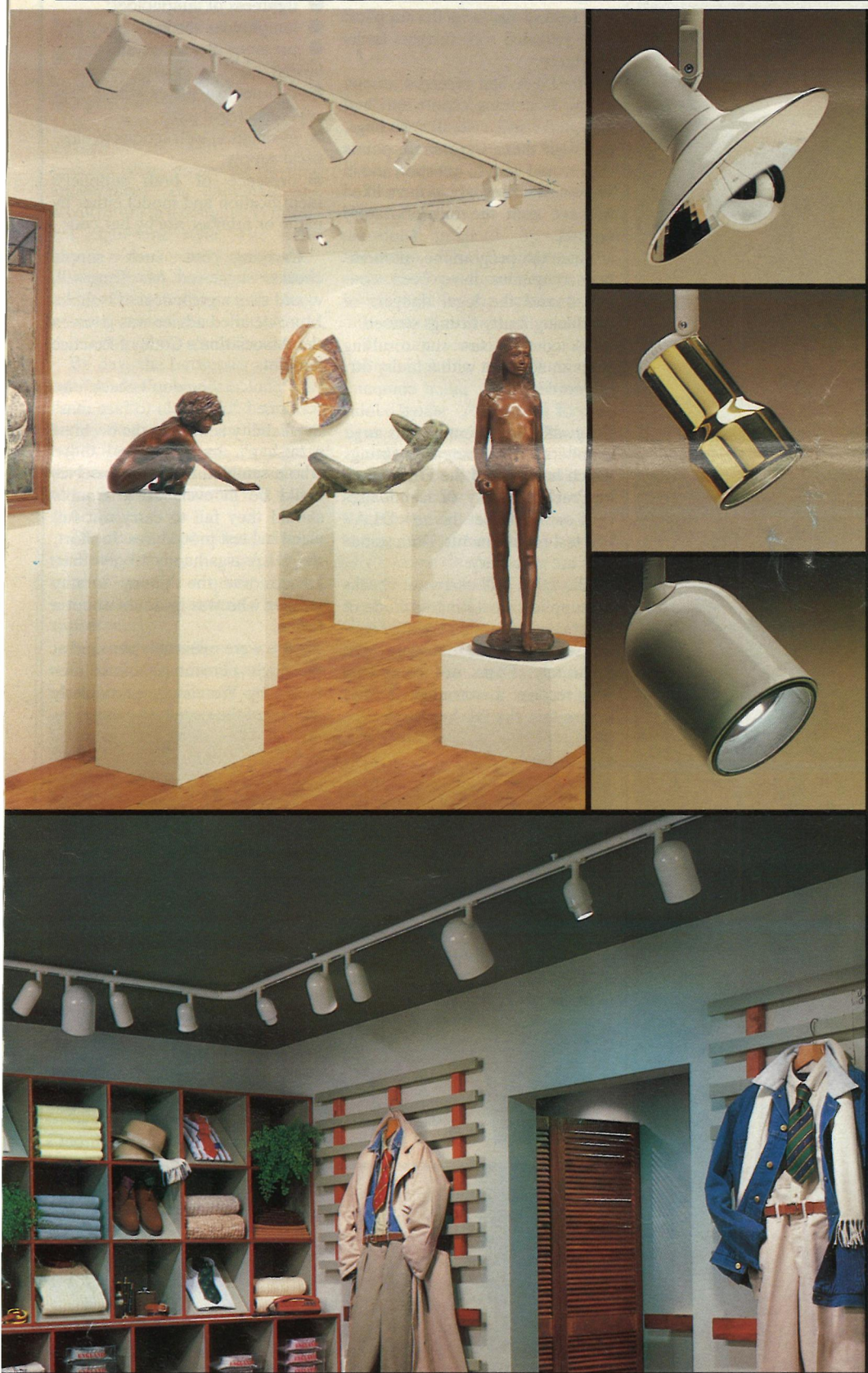
Since the relation between visual performance, visual satisfaction and overall worker performance is difficult to quantify, lighting standards were set at an average fixed compromise level. This also had its consequences for illuminating engineering practice.

Today the majority of lighting installations are based on the fixed horizontal illuminance compromise principle. This has served well in the last 40 years, and has greatly contributed to a general improvement of lighting, bringing mankind from lighting environments that were too dark in the 1940s to adequately-lit compromise environments in the 1980s.

However, as has been shown above, the human visual system actually requires a tailor-made, personalised and flexible luminous environment. The need for this flexibility increases strongly if the visual tasks to be performed in a particular application environment become very diverse. It is, therefore, necessary to analyse changes in some major application fields.

Offices

The office is changing rapidly from a paperwork office to an electronic office. This means a basic change in the nature of the activities performed... and the corresponding visual requirements. In the paperwork office the emphasis was on reading and writing dark characters on a white background in a horizontal plane (desk top), viewed from above at an angle from the vertical. In the electronic office the emphasis is more on communication with equipment, in particular VDUs and key-



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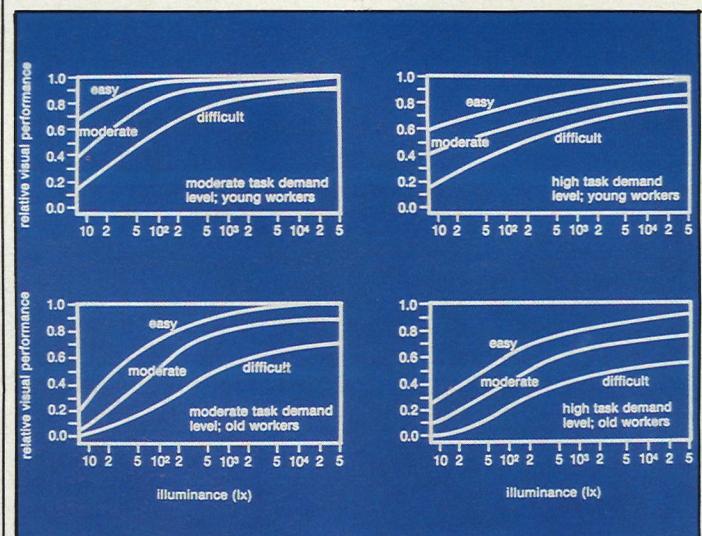


Figure 1. Relation between relative visual performance and task illuminance for various degrees of visual task difficulty, different task demand levels and age groups.

An example is given in Figure 1¹. It shows that for young workers and easy tasks 100 lux is sufficient to achieve maximum visual performance, while for old workers more than 3000 lux is required. If tasks become more difficult and demanding, even young workers do not reach maximum visual performance at 10 000 lux.

The situation becomes even more complicated if visual satisfaction for similar situations is investigated.

In experiments where people were asked to adjust the task illuminance (on the desk surface) for reading to a level that was not too dark, not too bright but satisfactory, a bell-shaped distribution was found with a maximum at

boards, and communication between people. The eye looks more at vertical planes and communicates less with paper. So there is a greater variety in visual performance requirements (reading, writing, VDU work, overhead projection, video), and visual satisfaction becomes more important because the eye looks more into the office environment. In lighting terms, this means that there is a need for flexibility and the possibility to create personalised and/or task-oriented lighting conditions.

Shops

The sale of consumer goods is also subject to change.

Until the late seventies, the

Lumiance

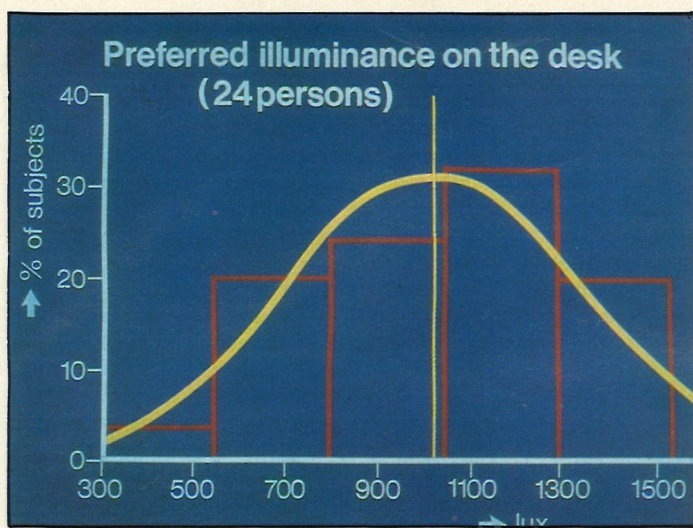


Figure 2. Statistical distribution of preferred illuminance on the desk for a reading task based on the criterion 'not too dark', 'not too bright' but 'satisfactory'.

emphasis was on mass-merchandising, that is to say the display of as many articles as possible in an efficiency environment, mainly to create the impression that prices were lower. This was the time of supermarkets, hypermarkets and so on.

In the early eighties a change became evident. The buyer became more critical, more quality conscious, and we saw the appearance of visual merchandising. Individual articles had to be shown in their appropriate applications, which required the creation of a special ambience in which the articles were promoted on the basis of visual impression, ie visual merchandising. Mass-merchandising requires an atmosphere that emphasises efficiency and creates the impression of value for money. A uniform, high-level fluorescent lighting 'blanket' met this requirement. Visual merchandising requires the creation of special effects to draw the attention to special displays. In other words, accent lighting, sometimes even employing theatrical effects. This requires lower general lighting levels and localised, high brightnesses on special objects or areas.

Manufacturing

Less labour intensive, more automated manufacturing is also causing major changes. With labour-intensive manufacturing the most important visual tasks were those performed by workers taking parts, assembling components, and checking final products.

In the automated factory the visual tasks are significantly different, ranging from observation and inspection to maintenance and repair. These tasks require widely different lighting conditions.

From such analysis of major application areas it becomes clear

that activities are changing, with the result that visual tasks requirements are also changing.

New lighting requirements result from this:

- greater flexibility in place and time;
- greater flexibility in lighting levels, with less need for uniformity and more emphasis on localised, personalised lighting;
- wider variety in special lighting effects.

Changing cost-benefit relationships

In general it can be stated that the operational costs for lighting (energy + lamp replacement/maintenance) account for 70 to 80 per cent of the total lighting costs for the typical conventional, inflexible lighting installation. Energy-saving campaigns, following the energy crisis of the seventies, have resulted in a downward pressure on lighting levels, the switching off of lights and the introduction and promotion of more efficient lighting systems. These were all measures to keep lighting costs down.

Now that energy-saving campaigns are a thing of the past, many people are beginning to realise that lighting costs can only really be considered in relation to the economic benefits, both direct and indirect, that lighting provides.

This is especially true for those situations where the user of the lighting is also the owner of the lighting and, therefore, the one footing the bill. The greater the distance between user and owner, the more difficult it becomes to agree on the cost-benefit ratios of lighting. Why is this so difficult?

While it is easy to produce accurate data on costs, it is difficult to measure and, therefore, quan-

tify the benefits. How do we measure the performance and consequent productivity of an office worker in the first place?

Single task experiments have been tried but the extrapolation of the results to cover the reality of office work is doubtful. A well-known example is the experiment with clerical workers in the United States (Figure 3).

Experiments like this give indications of benefit-cost ratios in the order of 1000. Is this totally unrealistic?

Let us assume that the lighting in an office is upgraded from an average 500 lux horizontal illuminance to 1000 lux. This roughly doubles the operating costs. Suppose that, per office worker, the annual lighting costs increase by 50 Dutch guilders. The annual costs for an average office worker (salary, expenses, accommodation, overheads, etc.) amount to 100 000 Dutch guilders. If the productivity were to increase by a mere 1% as a result of the upgraded lighting, the economic benefit would be 1000 Dutch guilders, giving a benefit-cost ratio of 20.

Or, to put it in another way, upgrading the lighting from 500 to 1000 lux is not economically justified if the corresponding productivity increase is, in this case, less than 0.05 per cent.

The benefits are often in fact far greater than anticipated. This being the case, there is a potentially strong driving force for new lighting technology that allows people to see and experience for themselves that lighting can have a positive influence on their ability to perform tasks when working in a pleasant and stimulating office environment, or that lets a shop-owner discover that with flexible and dynamic lighting he will attract

neering, in which lamps, ballasts and luminaires are the essential hardware ingredients. With these ingredients luminous environments can be created for an average, static situation that satisfy a fixed compromise lighting standard.

The technical characteristics of such a conventional, non-flexible lighting installation are:

- fixed lumen packages;
- limited control possibilities, mainly switching;
- mainly centralised and non-personalised control.

In other words, the lack of flexibility often results in the wrong light, in the wrong place, at the wrong time. But human visual requirements call for the right light, at the right place, at the right time. And this demands a high degree of flexibility and the ability to exercise control over the luminous environment.

To achieve this flexibility we need variable lumen-packages and light distributions and the possibility to communicate with the lighting installation down to very localised system levels. Electronics is going to make all this possible.

Electronic lighting installations really started to appear some five years ago with the introduction of high-frequency ballasts for fluorescent lamps and computerised lighting control systems with remote control capabilities. There is now a wealth of experience with lighting installations all over the world to draw upon. We now know that electronic lighting installations can be reliable and that the benefits for the user indeed constitute something of a revolution.

What kind of lighting electronics is available today? What will become available in the near future? And what may we expect

to the specific lighting requirement. Three categories can be distinguished:

- manual switching and regulation;
- individual remote switching and regulation;
- lighting management systems offering both manual and computer-controlled programmable switching and regulation of the lighting, together with registration and monitoring facilities.

All three categories can be expected to become more sophisticated, highly flexible and very user-friendly.

Lighting electronics tomorrow

The use of electronics in lamp circuits will continue to provide for further improvements in lamp performance. This will include improvements in lamp life, lumen depreciation and colour characteristics.

Where HID lamps are concerned, it can be expected that there will be significant improvements in the ignition, start-up and reignition characteristics of these when run on electronic gear. This will remove some of the barriers that have so far prevented a wider use of these lamps in indoor applications.

The electronic lamp circuitry will be connected to control interfaces, and luminaires will be equipped with remote control facilities ranging from stand-alone control to centralised control with localised override. These developments will be influenced by technology in the field of intelligent buildings and intelligent homes.

Looking to the year 2000

Electronic lamp circuitry will become available that will permit a lamp to operate on any supply voltage or frequency, including DC — the universal ballast. These ballasts will be suitable for virtually any lamp wattage. Most of these electronic ballasts will permit dimming, and quite a few will have a control interface integrated with the lamp driving circuit. Personalised remote control of lighting in the home and at work will be very popular.

And, last but not least, totally new discharge lamps free from most of the shortcomings of today's lamps, will be introduced.

Conclusions

There is a strong desire for lighting

that is flexible, comfortable and adaptable to personal needs and preferences. Electronic lighting can satisfy most of these needs.

With the introduction of electronics in lighting we are just beginning to discover undreamed of benefits that may help to greatly stimulate future growth. Two such benefits have been discovered already. First, there is a potential 'health' benefit that may arise when fluorescent lamps are operated at high frequencies (25-30 kHz) to eliminate troublesome mains frequency flicker. High frequency fluorescent lighting may become HiFi-lighting. Secondly, an important economic benefit associated with centrally controlled lighting incorporating local remote control is the elimination of vertical wiring for switching and the possibility of reprogramming the lighting to accommodate changes in the layout and use of the space without physically changing the lighting installation. As a consequence of the use of electronics in lighting:

- lighting designers, system engineers and consultants will have to be educated to design on the basis of flexibility instead of inflexibility;
- lighting installations will have to be interfaced with building or home control systems;
- installers and contractors will have to become electronic installation engineers;
- specifiers, decision makers and end-users will have to be educated to understand the wide variety of possibilities and to make the right choice for the actual user.

Lighting will become an application-driven systems world in which the combination of electronic hardware and software will constitute a dominant factor. For everybody involved in lighting, including the end-user, this will prove to be the revolution that makes lighting comfortable, flexible and personalised.

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PRODUCTIVITY OF CLERICAL WORKERS					
COST ANALYSIS BASED ON TEST RESULTS OF TIME REQUIRED TO PERFORM CLERICAL WORK					
FC	RELATIVE TIME FOR SAME WORK	LABOUR COST PER HOUR (\$5.00/HR)	TOTAL COST OF LIGHT (\$5.00/HR)	TOTAL COST (\$5.00/HR)	NET ANNUAL DOLLAR SAVINGS (100 HOURS)
50	1.0000	\$91.00	\$ 0.40	\$ 91.40	\$ 0.00
100	0.9500	\$86.45	\$ 0.80	\$ 87.25	\$415.00
150	0.8987	\$81.80	\$ 1.20	\$ 83.00	\$840.00

Figure 3. Productivity of clerical workers measured at 500 lux (50 FC), 1000 lux (100 FC) and 1500 lux (150 FC).

more customers and stimulate sales.

One can even expect that new lighting technology, evolved to suit a working or shopping environment mainly because of the clear economic benefits it brings with it, may penetrate into other application areas because of non-economic features such as convenience, special effects, comfort or fashion. What kind of new technological developments can be expected?

Technological developments

Electric lighting was first introduced a century ago with the incandescent lamp — a true revolution.

It rapidly replaced the candle, oil and gas-lamps. However, because of its relatively small lumen package, the applications remained fairly limited. Then, with the introduction of discharge lamps in the twenties and thirties new application fields were opened up and existing lighting levels could be increased significantly.

Discharge lamps provided for much higher lumen packages but required special circuitry, light distribution control and shielding. This was the start of a new technology and engineering science, known today as illuminating engi-

Lighting electronics today

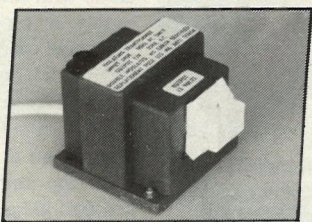
Electronic components are found in the lamp circuits of fluorescent, compact fluorescent, low-wattage HID and low-voltage halogen lamps. In each case the aim is to carefully control the lamp parameters and reduce (or eliminate where possible) those undesirable characteristics associated with lamps operating on conventional gear at mains frequencies.

Available today is a wide range of high-frequency fluorescent lamp ballasts, both in standard and dimmable versions, for use with the common types of fluorescent lamps and large, compact fluorescent lamps. Non-dimmable lightweight integrated electronic compact fluorescent lamps are available as direct replacements for incandescent lamps. New low-wattage HID lamps, such as the white SON, incorporating an electronic control circuit to keep lamp characteristics within specification over the economic life of the lamp, have also been introduced.

Today, there are incandescent, halogen and fluorescent lumen packages available that can be dimmed and, therefore, provide for a great deal of flexibility.

Control technology exists in many different forms; the only problem is that it has to be adapted

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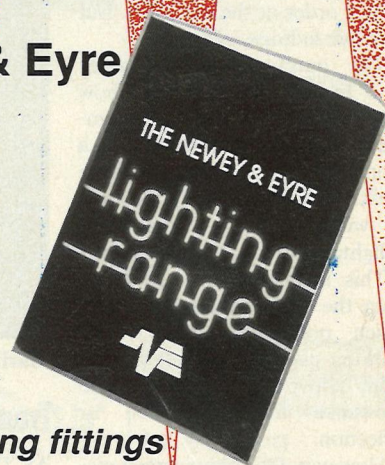
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All computers have one thing in common — GIGO. Garbage In, Garbage Out. The super-powerful mini-computers that will display a complete lit interior conform to this rule. The clever developments in the past five or so years for computers in lighting design have been aimed at improving the other end of the spectrum — SISO: Sense In, Sense Out.

Originally the computers would do no more than ease the labour of calculating illuminances. Today, you should expect the illuminances, cost and, to some extent, the 'feel' of the scheme to be available at what amounts to a touch of a button.

There are two main camps in computerised lighting design: one for designing the luminaires, one for designing the lighting scheme. Computer-aided luminaire design is not new, and has become extremely advanced, to the stage where photometric performance can accurately be predicted before manufacture. This is particularly useful when designing specials, which are then to be used in a computer-aided lighting scheme design.

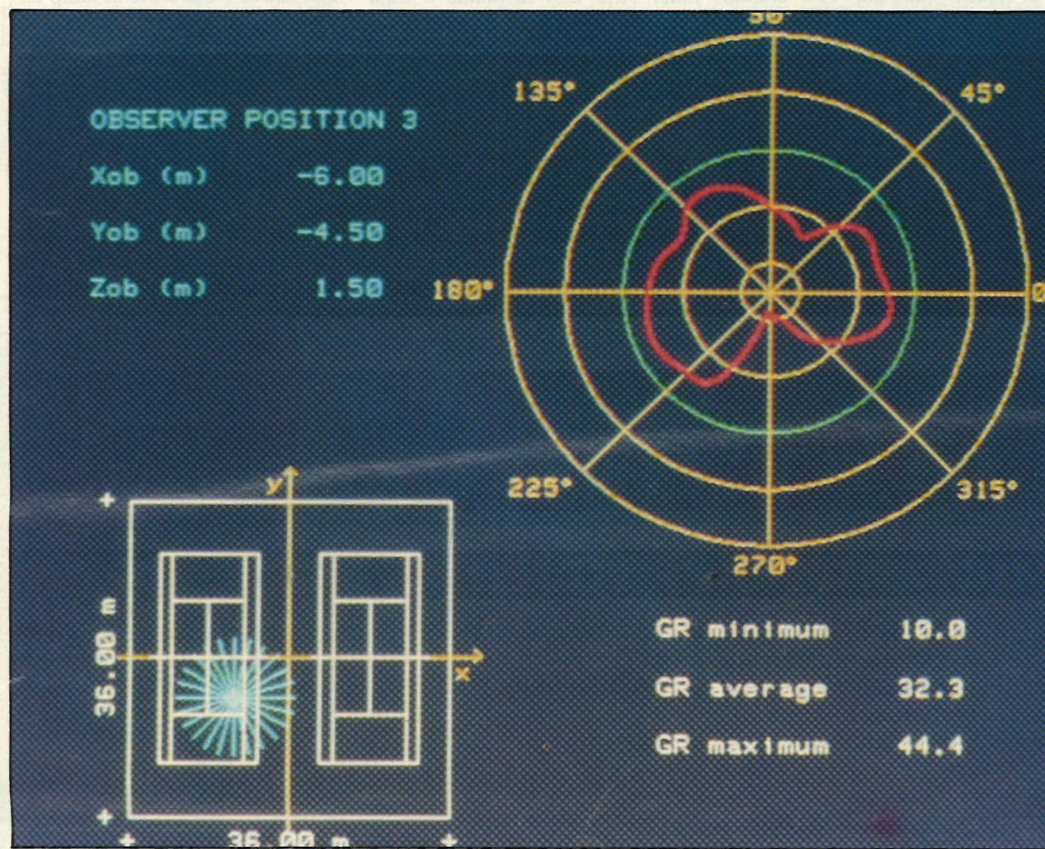
It is important to note that manufacturers will provide free computerised lighting design advice, since the computers will automatically select that manufacturer's own luminaires. In some cases the manufacturer might not have a luminaire of the type specified, in which case (typically) the nearest Thorn or Philips, say, equivalent will be chosen. It is worth asking beforehand what policies will be followed should the situation arise.

Independent lighting consultants are unlikely to provide free lighting design help, let alone tie up their computers without charging, but will always choose the most appropriate luminaire since they have no sales axe to grind.

Some manufacturers will provide computer-based lighting

When it comes to the number-crunch

Computers in lighting design have been around for some time; like pocket calculators, it has taken a while for their use to become second nature. *Toby Dawe* asks, what can a number-cruncher do for you?



Marlin: evaluation and representation of glare index for tennis court scheme.

lighting design to show how the various options affect the space. There are practical problems to be overcome, but the intention is clear: bring scheme design to the same stage that luminaire design has reached at present, so that the design predictions will come true.

Several computer systems allow data to be entered on a portable computer on-site, and then uploaded to the minicomputer when the raw information is complete.

Originally, only rectangular rooms could be considered, but the introduction of software that takes full account of the shading effects of furniture and tilted planes (such as a drawing table) has led to polygonal room shapes being a possibility. For retail space lighting design this is particularly useful, and corridors need no longer be considered as long, uniform rectangular tubes.

As the programs become more sophisticated, the computing power is being forced upwards. For example, having defined the shape, colour and reflectivity of, say, a chair (four shiny legs, a solid seat, and a back rest with a gap in it) the temptation is to shuffle it around the room to see how the light falls on it and how the shadow it casts changes.

You can see now why Thorn is keen on pursuing the transputer technology, since the mounds of calculations needed for each new position would tie up a powerful computer for some time.

At the bottom of manufacturers' desire to provide free computer lighting design is the desire to see more people consider their products. As a marketing tool, therefore, the costs of providing fancy colour prints of a lighting scheme are simply written off as a marketing expense.

Typical results from a sophisti-

cated computer system include a room description, including a specified working plane and ceiling, wall and floor reflectances, with luminaire details, including the installed load, scheme cost and coefficient of utilisation.

Since a particular chosen lighting level (say 500 lux) will invariably result in an impossible number of luminaires, for example twelve and two-thirds, it is important to fiddle with the parameters until a practical nearest-number is achieved.

It is all too easy to round the

Early programs considered only horizontal illuminance, but with the growth of lighting design as an art, something the computers have fostered by freeing designers from the slide rule, has come vertical and cylindrical illuminance. Just as in external lighting design, particularly road lighting, vertical and cylindrical illuminances are being



Thorn: illuminance shading for a horizontal surface.

reconsidered, to see how important a part they should play in calculations, so these measures are being increasingly used.

These developments have led to the introduction of full shadowing effects, and considerably more realistic interpretation of how the space will look once lit.

Glare

An important consideration in lighting design has always been the elimination of glare, because of the problems it can cause with irritating reflections. With increasing VDU use, it has become second nature to consider the effects a regular array of luminaires might have when seen reflected in a display screen. In part, the VDU technology drove the progress of low-brightness luminaires, to the extent that ultra-low brightness luminaires are claimed to create a 'block hole' or 'cave' effect.

With software that is able to handle inclined planes at any orientation, it became a software writer's ambition to use computers to show directly the effects of glare on a VDU screen.

The normal viewpoint for a computerised display of a lighting scheme is at the midpoint of the 'end' wall of a rectangular room. Any wall can be specified as 'end'. By changing the observer's viewpoint, the software allows users to place themselves in front of a VDU screen and examine the reflections.

Although it is common to consider only the lit space in terms of the effects of the artificial light, systems now frequently include an elementary consideration of day-

important element, for example in the Nucleus hospitals building project, but for office work it is not usual practice to go further than accounting for the window's effect on the artificial light.

Contractor led

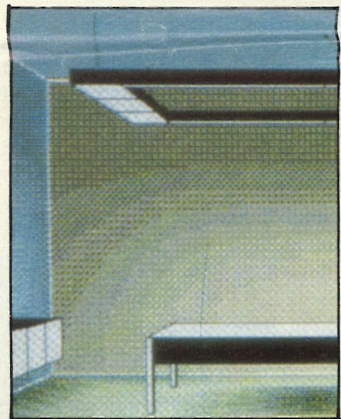
In the UK, however, rather than the architects of hospitals and their lighting designers, it seems to be the electrical contractors, wholesalers and consultants who are currently the big users of the systems.

This may be partly due to the early stages of computerised lighting design, which concentrated essentially on removing the drudgery from design. The independent lighting designers have so far stayed away from buying any manufacturer's lighting programs, since it might tie them too closely to a manufacturer's luminaires.

From the manufacturer's point of view, Grant Daniels at Zumtobel Lighting sums up what a sophisticated design system like his CPHOS program means: "Would I say it gives - us advantage? Unequivocally yes: emphatically so."

The Zumtobel system is at the sharp end of such computerised aids, and can handle shading, angled planes, 3-D effects and indirect and indirect components. The programs themselves are available on disk for PCs, so customers can study comparative designs in their own offices, though the indirect lighting calculation still must be carried out by Zumtobel. Daniels says a specialist 'indirect program', which he describes as a bolt-on package, will be available soon.

By using a computerised lighting design package, customers are also to design complete projects, room by room, cost them, and prepare project costs — with alternatives for the client to inspect. A



Cophos used in office design.

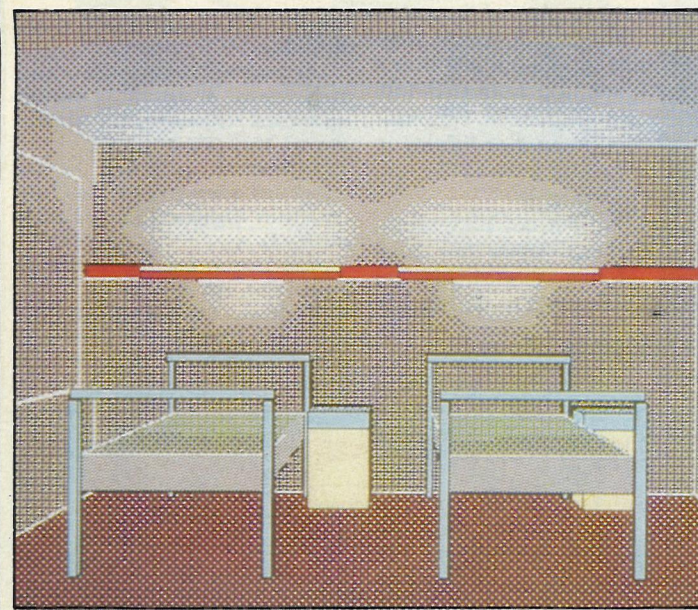
trasting standard ballasts with high-frequency gear.

Daniels again: "Take a project, use CPHOS for every area, from loos to boardroom, and then conclude with a most comparison for outlay, or for year one, or for the life cycle. With this you can firm up on the design, it gives you a back-up for your decision, and can print out the bills of quantities."

Such an approach is a far cry from the ambitious Thorn walk-through ideas, but for consultants faced with project changes, with clients overseas — Daniels cites the Middle East as an example — where changes are frequent, the updates can be keyed in and the results scrutinised very quickly.

In the end, though, it won't be the speed of the computer or the prettiness of the screen graphics, but the efficiency and effectiveness of the process.

When the data on every luminaire from every manufacturer is available in a format that every consultant can use (the video tape market, by way of comparison, took about five years to decide, and even now VHS — low quality — is not used by professionals), then computer lighting design will become a commonplace. In the meantime, you pay your money and takes your choice.



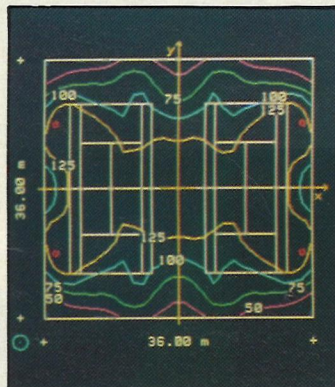
Zumtobel's Cophos used in hospital lighting design.

design advice and charge for it, to make clear that they do not expect a sales order at the end of it. But they live in hope, of course.

The output most commonly used by manufacturers to show that they have a wonderful computer is a colour picture showing a room interior, with furniture (desks, office partitions), a couple of windows, and perhaps an uplighter tucked into the corner.

This is a giant leap forwards from the early computer output, which principally consisted of working plane isolux diagrams at 0.7m above the floor, with no allowance for obstruction or reflection.

However, the colour screen picture is of limited use, since the brightness is false, and in some cases the colour is, too. The crucial part is the accurate data entry, and the ability to spot variations from the effect that you originally desired.



Marlin: ISO-lux diagram.

Transputers

At Thorn Lighting, attempts are being made to remedy the limitations of both data entry and the reality of the screen display by examining the use of transputers. The aim is to produce a system that 'walks the architect through' the future building, and changes the



The Thorn system in operation.

number of luminaires upwards, without thinking about whether this is either necessary or desirable.

Further standard results include the electrical running cost of the scheme, the maintenance cost and, perhaps, a cost per unit lux. This latter makes cost comparisons particularly easy, especially when comparing competitors' schemes lit to the same standards.

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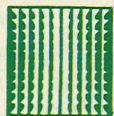
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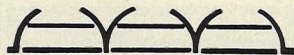
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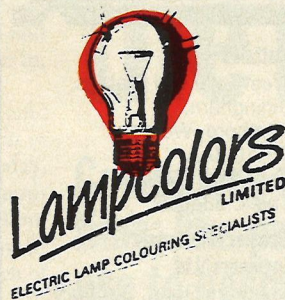
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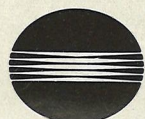
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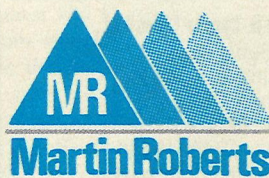
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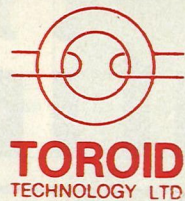


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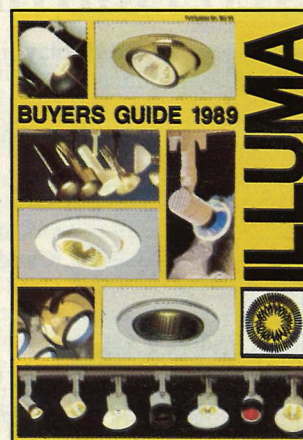
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Telex: 629135
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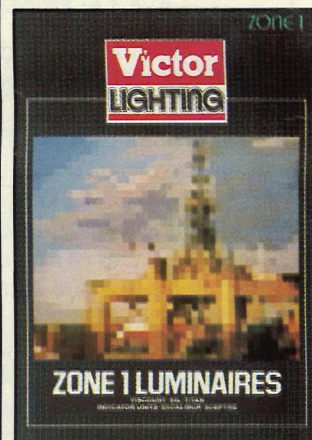
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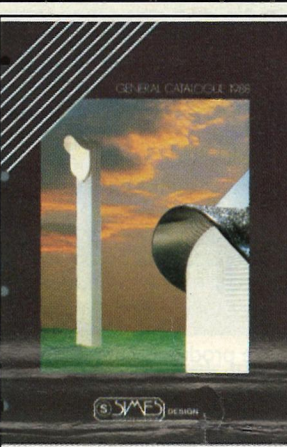
Inter-connecting insulated poles with trigger-operated three-fingered grabs for changing any lamps up to 30 feet high. Saving time and cost. Avoiding expense and disruption of scaffolding/platforms: circle 90



This concise publication lists all Illuma Lighting products in numerical order. Each product is illustrated and described with dimensions, lamp wattage and finish applicable. This new Guide includes all the latest Marktrack additions and the new 240v Topspot: circle 91



The NEI/Victor Zone 1 catalogue offers an extensive range of flameproof luminaires to BS5501. NEI/Victor luminaires are made to the same high standard for onshore or offshore applications: circle 92



Crescent Lighting has introduced the Simes range of exterior lighting. All the fittings are manufactured from cast aluminium and this extensive range includes IP65 rated bulkheads, HQ1 uplights and a wide selection of bollards and spheres: circle 93



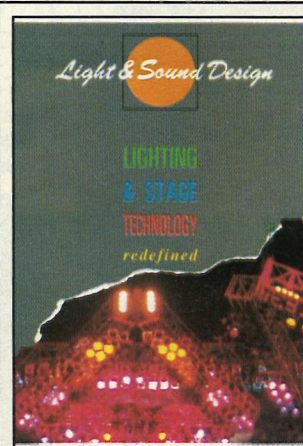
Rada Electronic Products Ltd: New Rada Discharge Lamp Gear Tester screws in to locate ballast and ignitor faults in seconds. Robust, compact, suitable for all lamps up to 400W. Saves time, money, trouble on all kinds of lighting. Send for further details and order form: circle 94



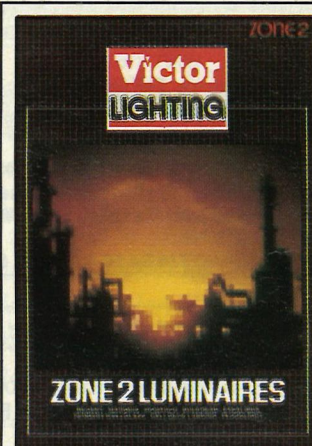
Channel Safety Systems Ltd: The LASER PACK Low Voltage Conversion Kit presents the opportunity to convert selected luminaires in a low-voltage tungsten halogen installation to emergency operation, whilst retaining their primary role as an integral part of the overall designed lighting scheme: circle 95



The UDT 70 Dimming Transformer from Light Source operates T12 and T8 linear lamps, and compact fluorescent lamps, in ratings from 18 to 75W. Lamps may be dimmed from 100% down to 5%, with instant restrike at any point across the range: circle 96



Light and Sound Design have many years experience in designing Lights, Trussing, Electronics and stage sets for some of the most spectacular rock shows. Their product range is now being distributed by Presentation Consultants Limited: circle 97



NEI Victor produce a range of Zone 2 luminaires featuring floodlight, pendant bulkhead and tubular fluorescent designs, as well as general purpose variants offering the same quality manufacturing materials: circle 98

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Edison Halo Lighting is a leading manufacturer in the display lighting market, widely recognised for its technical expertise and quality products.

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Based in Milton Keynes, this is an exciting opportunity to work on a variety of lighting design schemes, as part of a team, within a busy environment. Candidates must have solid background in lighting and a high degree of self motivation.

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Dynamic sales professional to work as part of the London team. Candidates must have proven sales track record, preferably within the lighting or electrical industry, experience of dealing with distribution and specifiers and possess a high level of self motivation and enthusiasm.

Interested? For further details telephone Maggie Clements on 0908 617617 or send full c.v. to:

EDISON HALO LIGHTING
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Michigan Drive, Tongwell, Milton Keynes MK15 8HS

Futimis

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Anna Coulling 01 502 0134
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Do you have experience in selling to electrical wholesalers, if so, are you capable of working on your own initiative? Are you prepared to win on your own efforts? If so we will support the right people to develop their own success.

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Based in London/Home Counties you would be expected to call on consultants, architects and other major specifiers as part of a specialist team of engineers.

We are looking for someone over 25 years and who will already be established in the Lighting or Fire Detection market and is now looking for a challenging position to develop their full potential.

Salary, dependant on experience, will be competitive with a profit related bonus, pension scheme, car and health protection plan.

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You should already have an electrical qualification (ONC minimum preferred) and now be looking to further develop your career with a progressive and expanding company. Experience in lighting and/or fire detection would be an advantage but is not essential.

There will be an attractive salary with a profit related bonus, pension scheme and normal large company benefits.

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The department is mainly engaged in the preparation of lighting schemes for commercial situations.

Excellent opportunity to join a small but progressive Company.

Salary negotiable. Car ownership scheme.

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Applicants must be qualified and fully conversant with all forms of lighting and its application.

Experience in selling would be an advantage.

Salary negotiable. Company car provided.

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The job function is to call on existing accounts as well as developing new business within the Southern half of the country and the position offers an excellent salary and benefits package including a Company car.

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Forge Works
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This is an extremely attractive and exciting opportunity for an ambitious sales person seeking career advancement. We offer one of the widest packages of competitive and quality lighting in the market including *structura* which is a brand leader. A motivated income package is available to the right candidate.

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A course in Lighting Design for people with a basic knowledge. This would include those concerned with consultancy, installation, or manufacture of equipment. Mondays and Thursdays 2.30pm-8pm, 8th-25th May 1989 (Equivalent 3 Days). Course fee £175 including refreshments.

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NEWS

Big theatre lighting sell-out

The Lee Group of theatre lighting companies has been purchased by Warburg Pincus Capital Co and a holding company, Lee Panavision International Inc, has been formed as the worldwide parent.

William C Scott is now chief executive officer of Lee Panavision International Inc, based in New York.

James H Pollard has been appointed managing director of Lee Panavision Ltd with responsibility for manufacturing, equipment rental and film studio operations throughout the UK and

Europe. He also remains managing director of Lee Colortran International.

As part of the overall restructuring at Lee Colortran, the Northern Sales Office moves on April 3 from Manchester to the company's main site at Kearsley, near Bolton, where its manufacturing and other operations are already based.

Lee Environmental Lighting, the architectural lighting subsidiary of Lee Colortran, continues to be headed by Martin Duff.

Automated lighting advances

More fully automated stage lighting is going to be seen in Europe. Vari-Lite Europe Ltd, part of the Samuelson group, is expanding. Its first two sub-distributors have been appointed in France and Spain.

The company is UK and European distributor of the Vari-Lite stage lighting system made in the USA that gives full remote control of movement, colour, intensity and beam width of luminaires.

It has supplied stage lighting for concert tours by Michael Jackson and Brothers, as well as for the launches of the new Ford Fiesta and the Vauxhall Cavalier and is also expanding into the television market with programmes such as the *Royal Variety Show*, *Live at the Palladium* and *Top of the Pops*.

Daryl Vaughan has just been appointed head of promotion with special responsibility for the television and trade show sectors.

The firm has a no-sale policy; its equipment is for rental only.

Trade Literature in brief . . .

● **No Climb Products Ltd** has produced an illustrated leaflet of its lamp changing equipment which includes devices for changing a wide variety of lamps and lampcaps without the need for ladders or scaffolding.

● **The Electrical Installation Equipment Manufacturers' Association** has published a revised buyers' guide listing its members and their products.

● **Bernard Szeps Lighting Ltd** has a 60-page catalogue of its traditional and modern, decorative contract lighting. This ranges from huge Murano chandeliers to garden lighting.

● **Lytemode Ltd** has a leaflet on its expanded range of architectural lighting controls.

● **Lee Environmental Lighting's** 52-page catalogue is available in both booklet and ring binder formats. Stickypix in the ring binder version allow specifiers to peel pictures of lighting fittings off a backing sheet and attach them to installation plans.

● **Connect Lighting Systems Ltd** has five brochures of its low energy lighting products.

● **The London Trend Lighting Co Ltd** has a coloured leaflet and price list on its table lamp bases and lampshades.

Vikings control British theatres

After investigating 11 lighting control systems from UK and overseas manufacturers, Manchester's Library Theatre chose CCT AVAB Viking systems to update both the Library and Forum theatres.

Viking, which CCT claims is probably the most powerful and user friendly theatre control system in the world, scored particularly on its operator-performance relationship and ease of dealing with visiting productions.

There had been suggestions that the two theatres could manage with simpler controls, but the implication that only big theatres deserve the best technology denies the level of technical excellence achieved by even the smallest British regional theatre.

CCT was responsible not only for the supply of the systems but also for installation, personnel training and commissioning. The contract was completed to schedule.

The smaller Library theatre has a 96-way system which includes Processor, Command, Cross-fade, Mixer 1-4 and Designer facilities together with two coloured VDUs twin floppy discs and Viking voice control.

The control room is unusually small, but with some careful planning the result is a compact yet comfortable room.

A 24-scene master panel, completely independent of the desk, but integrated with the dimmer racks, provides back up for the system.

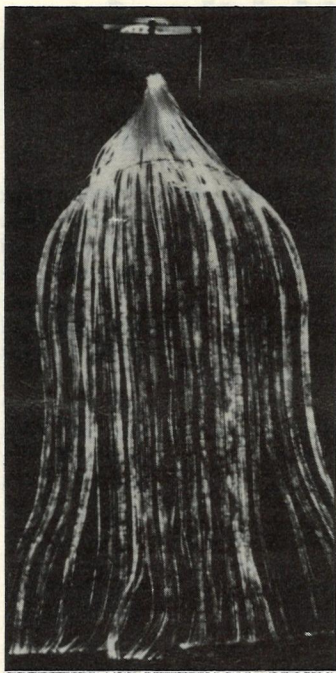
In the Forum theatre the system is somewhat larger, having 192 channels. It has three mixer modules instead of four and uses the 202 XP as back-up.

More moves in film and TV lighting

After 11 years as managing director of Samuelson Lighting Ltd, Graham Anderson has left to join lighting rental company AFM Lighting Ltd.

He will support its expansion into the TV and feature film markets, working alongside co-directors Andy Martin, Martin Maund and Ross Wilson.

"The industry is currently in a state of flux, which gives an organisation like AFM Lighting an excellent opportunity for growth," said Graham Anderson. AFM's work has included top-flight commercials and promotions for artists such as Cliff Richards and Wham!



New fibre for light images

A new type of fibre optic for lighting has been introduced by Eurotec Optical Fibres Ltd. Called Side-glo, it uses a technique that allows light to "leak out" at intervals along the whole length of the fibre instead of only at one end.

When grouped en masse it gives the effect of a soft wash of light and enables images and patterns to be built up using far less fibres than was previously necessary.

This offers creative opportunities to lighting designers looking for novel effects for buildings such as leisure centres, clubs, hotels and shops.

Eurotec is at Shaw Lane Industrial Estate, Ogdon Road, Doncaster DN2 4SQ.

Innovation by torchlight



The Innovation Centre at the Design Council, in London, uses Concord Lighting's Torch spotlights to display products that have won the 1989 British Design Awards. Although very tiny, these low voltage spotlights have inte-

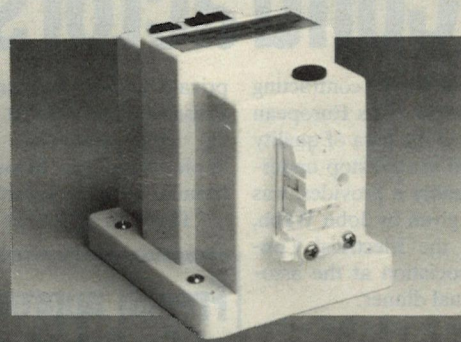
gral electronic transformers. They accept either 20, 35 or 50W tungsten halogen lamps and are mounted on lighting track to give flexibility in illuminating both graphics panels and three dimensional objects.

Light and Sound Show is growing

More than 100 companies have already booked space at Light & Sound Show '89 to be held at Olympia 2, London, from 10-13 September. It attracts visitors from theatres, clubs, pubs, touring and leisure venues.

A series of seminars is also being held alongside the show this year. Further information can be obtained from the organiser, David Street, 3D Services, 10 Barley Mow Passage, London W4 4PH (telephone 01-994 6477).

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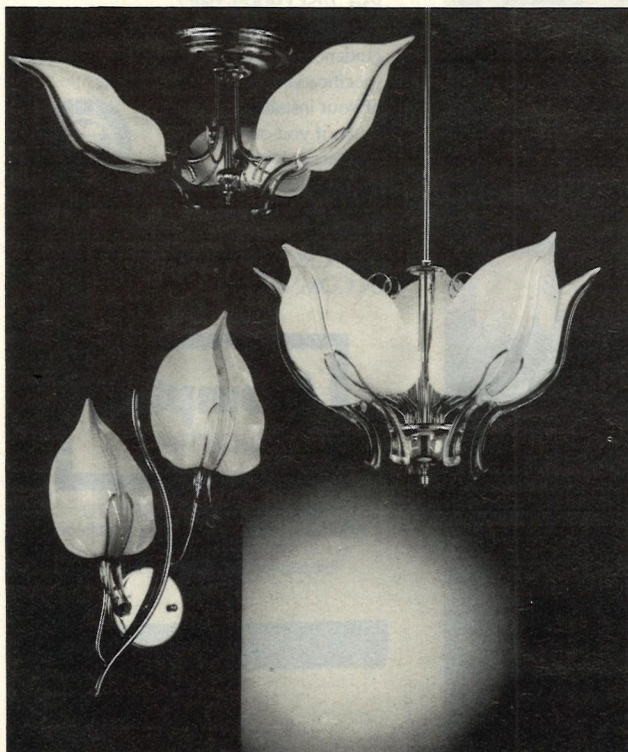


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UK Contractors are 'tops'

The UK electrical contracting industry is ahead of its European counterparts in the area of quality assurance and should stop under-selling the quality it provides, was the message given by John Webb, president of the Electrical Contractors' Association at the association's annual dinner.

He went on to warn that a dramatic change of priorities was needed to use this advantage fully when 1992 became a commercial reality.

As to the pattern of events leading to the single European market, it seemed unlikely that individual firms would go into Europe alone. It appeared much more likely and practical for a number to get together in joint enterprises and ventures, he said.

With this in mind, Mr Webb urged the electricity supply industry to co-operate with the

private sector in the run up to privatisation and beyond. Both had the same problems: European implications, the labour market, training — to name just a few.

"There is plenty of scope for

joint action. It is our earnest hope that privatisation will bring about a lot more co-operative action and that more boards will seek to join with us and not hold back any longer."

French approve of English design

Montana range of low voltage spotlights by Lita, which has gained a commendation in the French *Oscars du Design*, was designed in England by Stephen Hall, of Hallrichards.

In fact, Montana spotlights represent co-operation across several European frontiers: the ceramic body is made in England, the glass comes from Italy, castings from France and lampholder from West Germany.

Architect opens lighting show

Charles Gwathmey, internationally-known architect, will present the keynote address at the opening of Lighting World International exhibition on May 10. The show takes place at the Jacob K. Javits Convention Center, New York from May 10 to 12.

Gwathmey, principal of the architectural firm Gwathmey Siegel and Associates, New York, will discuss the relationship of light and lighting to architecture.

Lighting for a cupola

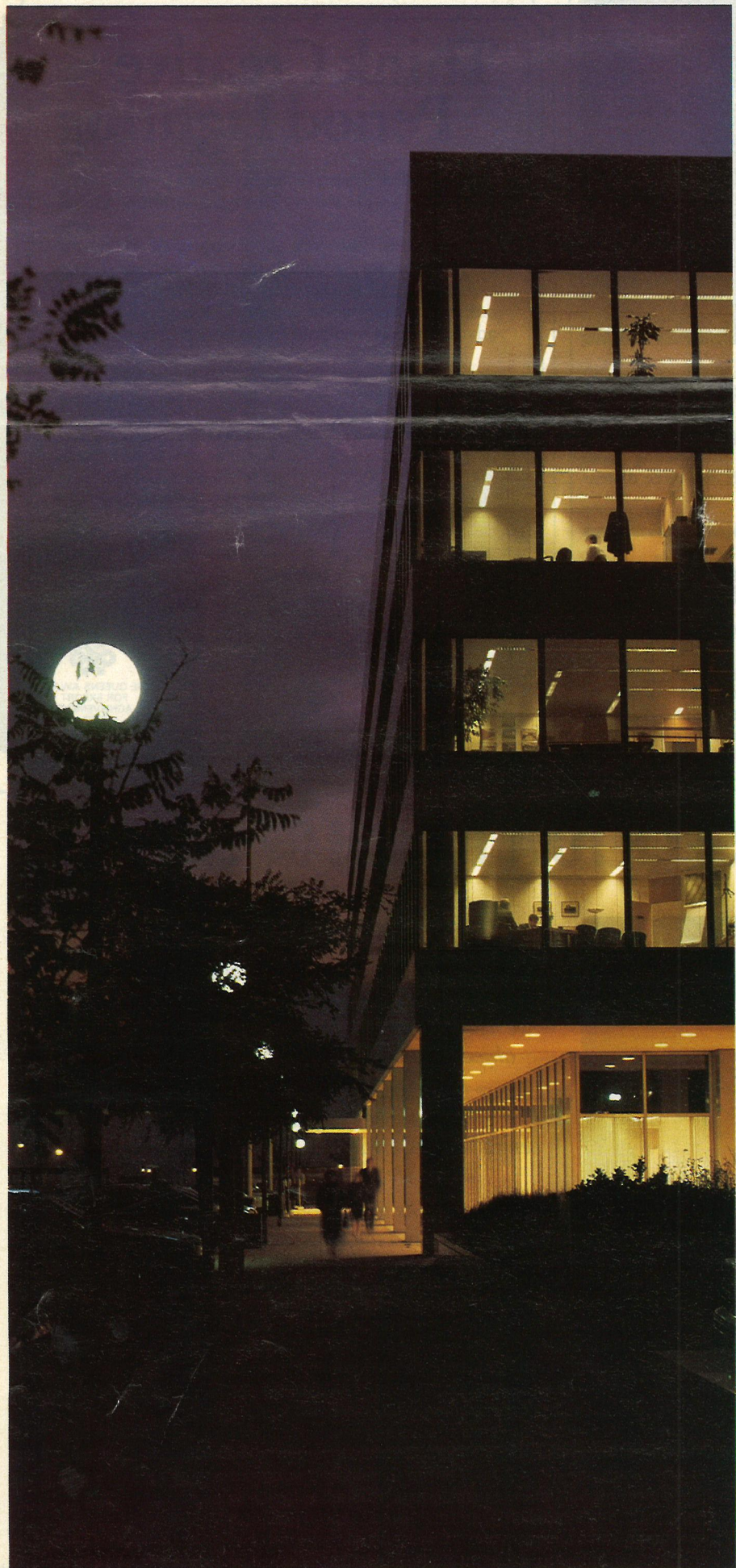
Moduline, an interconnecting recessed lighting system from Crompton Lighting, has been used to light the reception area in the newly refurbished Newcastle-upon-Tyne offices of chartered accountants and financial advisers Ernst & Whinney.

The versatility of the Moduline lighting system has been used to its full effect by providing continuous lighting around the hexagonal base of a featured cupola above the reception area.

The system comprises fluorescent luminaires with twin 36W lamps enclosed by prismatic panels supported by cross tees to create a neat unbroken run of lighting. An open-cell ceiling panel at the base of the cupola is also incorporated to allow natural daylight to filter through.



The reception area of the offices.



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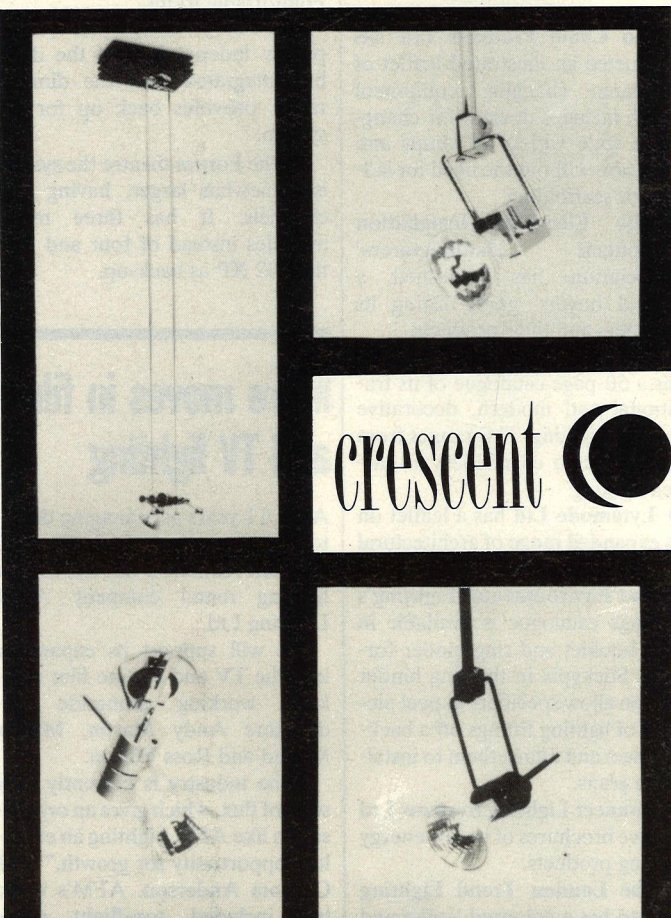
Spectacular caves in southern China which have recently been visited by the British China Caves Expedition. Lighting for torches, helmets and photography was powered by Duracell batteries to assist the exploration of this 500 000km² belt of limestone rocks.

IN YOUR NEXT ISSUE

Lighting of museums and art galleries will be one of the subjects considered in the May issue of *Lighting Equipment News*. A number of new museums have been opened in recent years and galleries in older, larger museums

have been re-lit, so this is an appropriate time to take a look at the techniques being used.

There will also be a report on new products seen at the Hanover Fair — the showcase of commercial and industrial lighting in Europe.



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