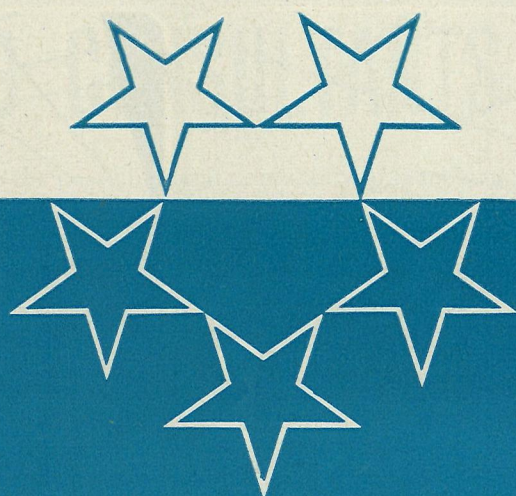


vol 1 no 2

LIGHTING EQUIPMENT NEWS



February 1967

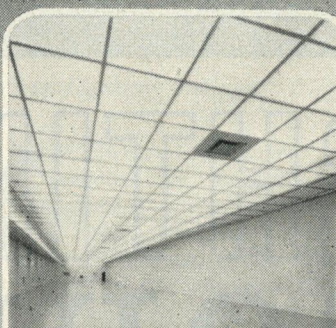
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Ceilings by ISORA



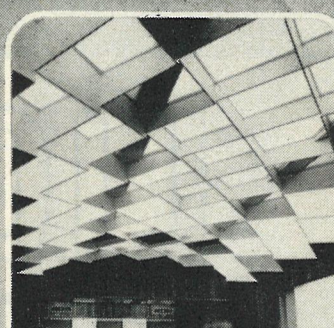
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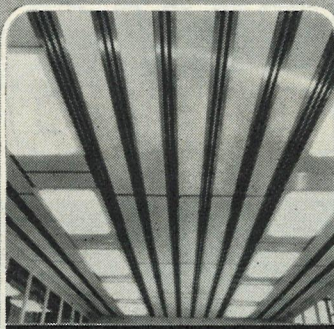
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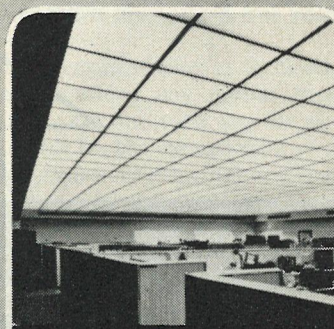
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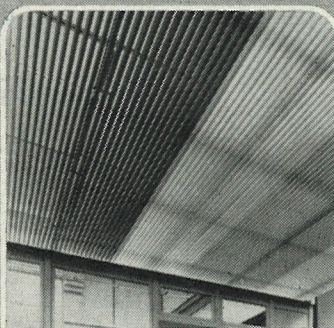
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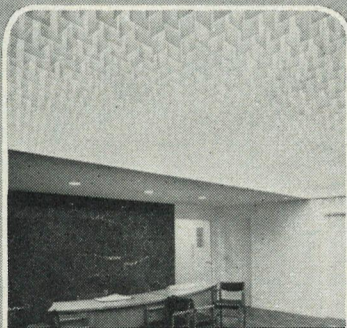
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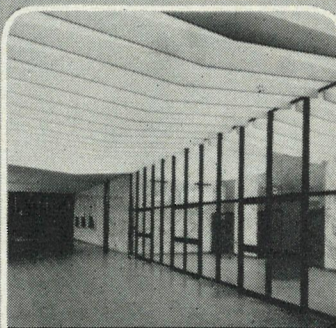
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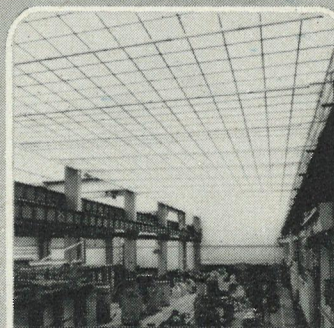
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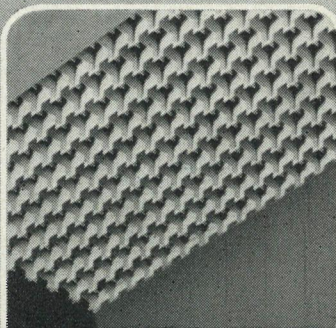
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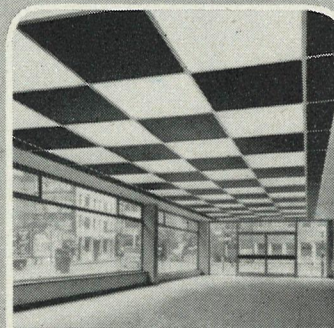
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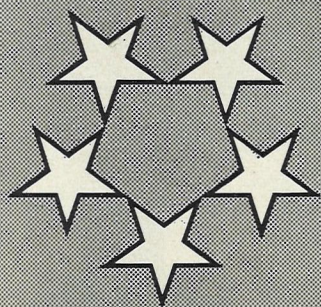
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LIGHTING EQUIPMENT NEWS

LIGHTING CONSULTANTS

WHEN research into the possibility and desirability of launching this new lighting journal was being conducted some time ago now, one of the fields of investigation was the number and different categories of readers likely to be interested in such a journal. This necessitated in turn a study of the present structure and method of operation of the lighting industry.

Although lighting may be considered as one of the engineering or environmental services associated with buildings and other applications, this study revealed that the practice adopted for the design and installation of lighting services—particularly in relation to the larger type of installation—was a surprising departure from the practice followed in other branches of the engineering services.

In the case of heating, ventilating and air conditioning services, for example, these are designed either by the contractor (particularly in the case of the smaller or more straight-forward installation) or by an independent firm of professional consulting engineers, the latter usually being engaged where larger or more complex installations are involved. Occasionally the design is undertaken by the staff of the client, although this normally applies only in the case of government departments such as the Ministry of Health or the Ministry of Public Building and Works.

The actual equipment to be installed is occasionally specified by the client, but more often by the consultant and/or the contractor, and the design work carried out by manufacturers is usually confined to specialist sub-components, such as instrument and control panels.

In the case of lighting installations, however, it would appear that the majority of installations are at present designed by specialist staff employed by the lighting equipment manufacturers, and that the electrical contractors carrying out the lighting installation merely undertake the design of the necessary wiring and switchgear etc. In some cases the choice of the equipment to be used is made by the client and sometimes by the architect responsible for the building etc., but in other cases the specification is left to the manufacturer. In only a limited number of cases are independent professional lighting consultants employed to design the lighting scheme and supervise its installation.

Limited Number

The immediate and obvious reason for this rather surprising dissimilarity is that there are, at present, very few firms of specialist lighting consultants in this country: our inquiries show only a mere handful. True, a number of mechanical and electrical consulting firms have lighting sections, but they do not, as a general rule, specialise in this work.

Why this situation is so is more difficult to define, but probably it stems largely from a lack of true appreciation of the importance of lighting installations and the need for expert design. This situation

(continued on page 21)

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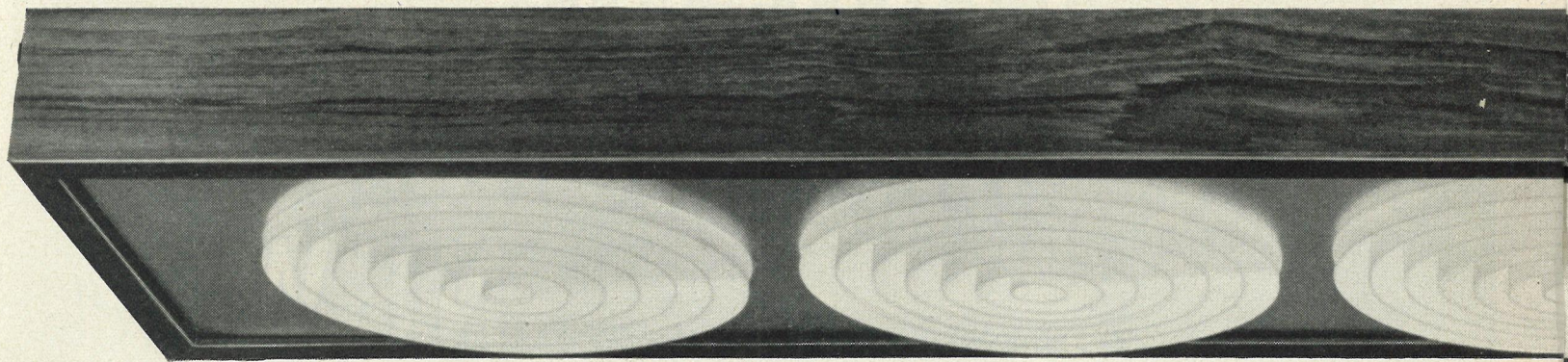
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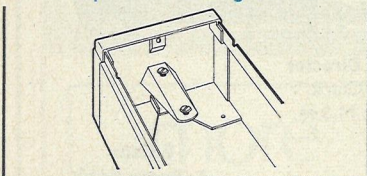
LIGHTING EQUIPMENT NEWS is a controlled circulation journal, and is sent free of charge each month to qualified readers, i.e., those concerned in an executive capacity with the design, specification, purchase, installation, operation, maintenance, distribution and sale of lamps, lighting fittings and accessories of all types for the lighting of domestic, industrial, commercial and public buildings, including display, street and specialised out-door lighting.



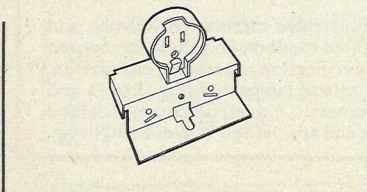
Osram-GEC's brilliant new

Behind the pretty faces (33 and reflectors) are the cut running and maintenance with new crisp styling to give lighting at

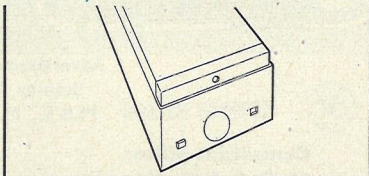
3/4" conduit entry provided in each end-plate with conduit clamping screw for ease of assembly and good earth continuity. Polypropylene wiring channel protects through cables.



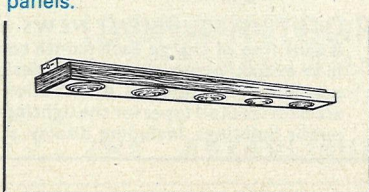
Exclusive new spring-loaded bi-pin holder with wiping contacts ensures clean, positive electrical contact.



Exclusive die-cast end-plates for rigid lampholder mounting, with positive keying to give accurate register for in-line continuous mounting without difficulty.



Revolutionary tray attachments in real teak veneer or white melamine decorative laminate with five new diffusing panels.



WHY THE NEW 103 LINE IS SUCH

103 LINE — a new approach to fluorescent lighting

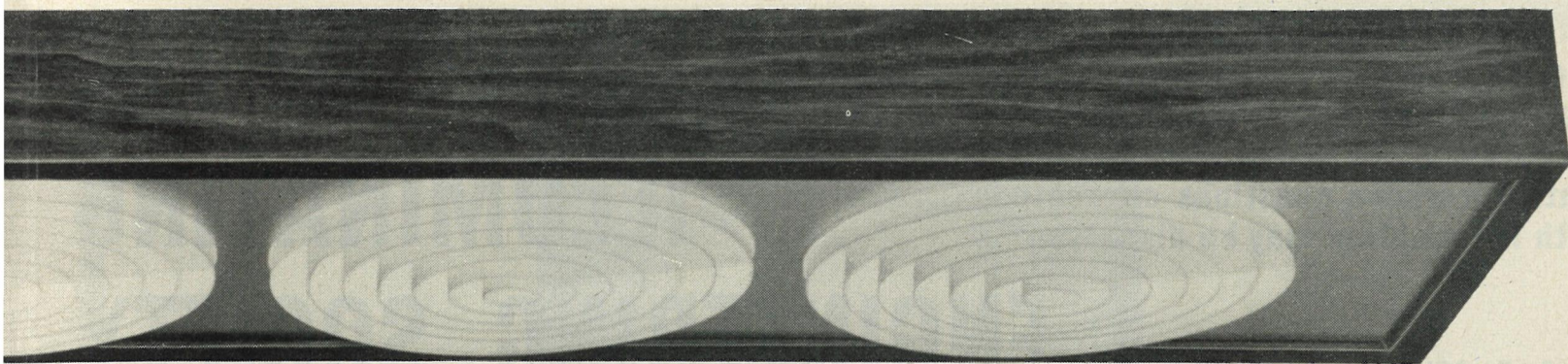
103 LINE is a big step forward. It offers a complete family of fittings suitable for every commercial use, from factory to boutique. The diffusers and reflectors include many designs completely new in concept. They represent an entirely new approach to the possibilities of fluorescent lighting.

New design for channels

Osram-GEC went right back to basics in planning the 103 LINE. The result is a new channel design which is better fitted to the job. It makes fixing and maintenance easier. The strong steel channel is finished to a very high standard in white acrylic paint to give greater resistance to damage and yellowing than ordinary stove enamel. Die-cast end-plates are used to give extra rigidity and have interlocking keyways to make accurate continuous mounting simpler.

New Bi-pin Holder makes tube replacement easy and safe, ensures reliable contact

One important feature of 103 LINE is the wiping contact in the



103 LINE

**exclusive channels, diffusers
important features that
costs and combine reliability
you better, more efficient
lower cost.**

AN IMPORTANT DEVELOPMENT IN FLUORESCENT LIGHTING

new spring-loaded bi-pin holder. This wiping contact "scrapes" the tube pin to ensure clean positive contact. All troubles associated with poor contact are eliminated. This holder, combined with another new feature—high quality GEC intermediate section, polyester-filled control gear—ensures correct tube performance, low-loss, cool, silent, trouble-free operation.

Switch or switchless — Three lampholder positions

103 LINE is available either switch or switchless, in 4 ft (40w), 5 ft (65w), and 8 ft (125w) channels. The 8 ft size is available also in 85w switchless version. In addition to the normal single and twin lampholder arrangement, there is a wide spaced version of the twin tube type with lampholders on either side of the channel. When used with the wider diffusers, this allows shallow close-to-the-ceiling mounting with improved optical performance and better overall appearance.

Teak Veneer and circular louvres

Among the many diffusers and reflectors unique to 103 LINE are some that completely revolutionise previous thinking on

fluorescent lighting. Most notable is an entirely new type of fluorescent diffuser incorporating 5 concentric circular louvres set in a satin aluminium panel supported by a teak veneer frame. This elegant pattern marries with circular tungsten fittings and makes it ideal for use in shops, hotels and restaurants. The teak veneer tray which won't warp is another interesting innovation. As an alternative, the tray is also offered with white melamine decorative laminate finish. These trays carry varied and original diffusing panels—prismatic low brightness, minicell louvres, opal plastic with unusual circular apertures. In addition to these unique attachments there is a full range of trough reflectors and 4 ft, 5 ft and 8 ft opal and prismatic diffusers.

It pays to see it's Osram-GEC

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When the Illuminating Engineering Society was founded in 1909 it was clearly stated that its main objective was simply "to provide an impartial platform where questions connected with illumination may be discussed".

By G. F. COLE, Secretary IES

THE WORK OF THE ILLUMINATING ENGINEERING SOCIETY

SECOND IN A SERIES OF ARTICLES ON ORGANISATIONS WITHIN THE LIGHTING INDUSTRY

WHATEVER may have changed since the founding of the Society in those early days its main objective is still the same. One does not have to be an engineer (whatever that or he may be) to be a member; one does not have to hold any paper or academic qualifications; one simply needs to have an interest in illumination (though these days we are more likely to say lighting than illumination). This of course means that many professions are interested; architects whose buildings need to be lit, municipal engineers whose streets need lighting, interior designers whose task of providing satisfying interiors is nullified without lighting (and indeed can be nullified with it if wrongly applied), opticians and ophthalmologists who are concerned with the end effect which is seeing, the makers of lamps and lighting equipment who provide the hardware, and the lighting engineer or designer whose unenviable task it is to satisfy everyone including the customer. Many other branches of engineering, electrical and mechanical, also come into the field of lighting. It is all those people that the IES was established to serve and which it now serves in a greater capacity than ever before.

Although the IES is not a professional society, anyone who claims to be concerned with lighting should be a member for it is only through the society that he can keep up to date in a rapidly changing business. Lighting technology is a very complex matter. Developments in light sources and materials used in lighting equipment follow one another with great rapidity which together with changes in building design—to mention but one factor amongst many—mean that the situation is never static. It is essential that there be means of keeping interested parties up to date—and this is what the IES does. And in accordance with its original objectives, it provides the means—indeed the only means—whereby the many

professions can make contact and discuss matters of interest.

Ever since its formation in 1909 the IES has enjoyed a high reputation and has been recognised in official and other circles as the representative body of those concerned with lighting and vision. Even during the first world war it was consulted and gave valuable assistance in solving lighting problems. It continued to grow in status during the inter-war period when the foundations were laid for what subsequently grew into the IES Code, the recommendations of which have been widely followed and respected in this country and overseas.

The IES Code is one example of the work of the IES Technical Committee which was first set up in 1930. On the outbreak of war in 1939 technical panels were immediately called upon to deal with matters of urgent national importance which for some years took precedence. Nevertheless, considerable respect was being built up for the Society and, to some extent because of the wide interests of its members, for the impartiality of its recommendations. The fact that the IES is not simply a society of lighting engineers is one reason for its strength.

After the war the IES, like other similar bodies, had many problems to solve and it was some years before the Technical Committee was re-established with a programme of work. Apart from the Code, and even this was now to see many changes, the work was very different from that of pre-war. New materials, new light sources, new requirements etc. had led to new requirements, new priorities and new techniques.

In the field of international co-operation in which the IES had taken a lead before the war, there was much ground to be recovered and the urge to export gave impetus to the re-establishment of this country in the forefront of lighting, a place it had

temporarily lost. Through its meetings, publications and conferences the IES has re-established itself, as witness the large number of overseas visitors from many countries who attended the IES Summer Meeting last May.

In 1946 the IES again took an active part in promoting the education and training of lighting engineers and there are now several colleges at which the City and Guilds examination in illuminating engineering can be taken. The Advanced examination is the main academic requirement for the Society's Diploma and for Diploma Membership which is the only means by which the technically qualified lighting engineer can be recognised. The Society also awards a Technical Certificate as a means of recognition of proficiency for those who, whilst not necessarily intending to become fully qualified lighting engineers, are employed on lighting work by contractors or with consultants or architects or with manufacturers.

The distinction of Fellowship is awarded to those members who have made important contributions to lighting or who have achieved outstanding positions in the lighting world. Two other classes of membership are Honorary Member and Honorary Fellow. The first is awarded to those who have achieved eminence in a field of science relating to lighting. Honorary Fellowship has been awarded only twice, the first time being to H.R.H. Prince Phillip Duke of Edinburgh on the occasion of the Society's golden jubilee in 1959. The other Honorary Fellow is Lord Chandos.

The standing of the society is also reflected in the list of distinguished men who have given the biennial Trotter-Paterson Memorial Lecture which includes Lord Adrian, Sir Solly Zuckerman, Sir Lawrence Bragg, Prof. Colin Buchanan etc.

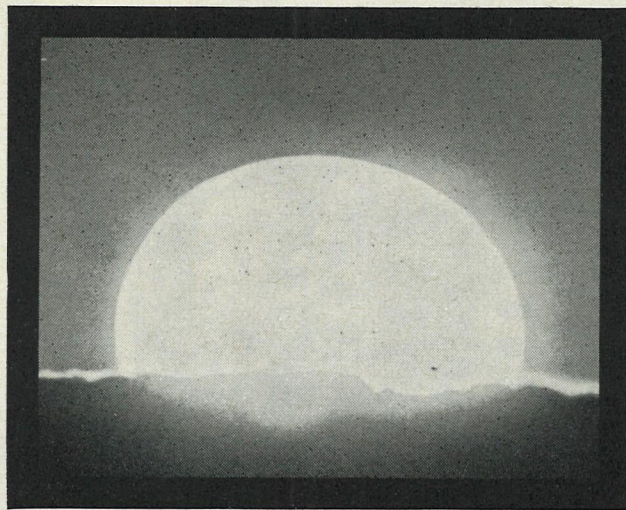
The membership of the Society

is currently 2,500 members in London, the 14 Centres and overseas. Meetings are held in London and in the Centres from October to May and programmes include visits and social functions. Every two years the Society holds a Summer Meeting which, as already mentioned, is attended by members and visitors from many other countries. The main papers presented to the Society are published in the Transactions. Other publications of the Society include "Light and Lighting" which is published monthly and sent to all members, Technical Reports prepared by panels of the Technical Committee, Monographs which include the highly specialised papers, and of course the IES Code, a new edition of which is now in preparation.

The wide range of interests represented by the membership of the IES is of particular significance in relation to such publications as the IES Code and Technical Reports. Examination of the constitution of the study panels which have produced those reports published so far shows that very few of the individuals involved are in fact employed by manufacturers of lamps or lighting equipment. The study panels and technical committees have no axes to grind—and by maintaining an impartial approach to lighting problems they best serve users of lighting and the industry.

The annual expenditure on lighting (lamps, fittings, power) of many large commercial and industrial firms or groups is considerable. Though they have undoubtedly gained from the work of the IES many such firms know little or nothing of its activities.

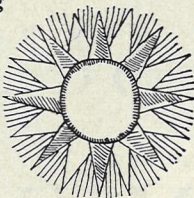
They have a great deal to gain by joining the Society, by becoming part of it and participating in its work. Full details are available on request from the Secretary, The Illuminating Engineering Society, York House, Westminster Bridge Road, London, S.E.1.



There goes our biggest competitor

If the sun ever got around to working a twenty-four hour day, we would be in trouble. As things are we're doing very well.

Every evening when the sun finishes for the day more and more people turn to Atlas to give them light. So every day the people at Atlas are involved in making sure they get that light.



The sun gets by simply by turning out an awful lot of light. But people ask much more of Atlas than they ask of the sun. They ask not just for a lot of light, but for lots of different types of light for lots of different situations.

Lights for bedrooms and boardrooms, highways and railways, airfields and playing fields. Spotlights, floodlights, bright lights, soft lights, small lights, big lights. It goes on and on, individual people with individual needs in lighting. Needs that can only be met by intelligent research and design. And it's in research and design that Atlas comes out tops. Here are three examples that show you just what we mean.

The first fitting is one from the Atlas Atlantic fluorescent range of fittings which have proved so popular in industry and commerce. The

Atlantic range consists of one basic spine with a huge choice of diffusers and reflectors. From factories to office blocks the versatile Atlantic will fill the bill. There are single tube, double and 4-tube patterns, 4ft., 5ft., 6ft. and 8ft. long—making the Atlantic range the most versatile of its kind.

The introduction of the tungsten halogen lamp has enabled Atlas to forge ahead in the field of floodlighting. The completely weatherproof floodlight illustrated is specifically designed to meet outdoor floodlighting needs. The tungsten halogen lamp allows the floodlight to be only half the size of conventional fittings, at the same time giving increased performance.

When you notice a display, but don't notice the lights that light the display, then the lights are probably Atlas. The small spotlight illustrated is designed as a compact spot with a narrow high-intensity beam, ideally suited for highlighting display points unobtrusively and cheaply.



These three fittings are typical of Atlas. If you would like further information on any of them, please write to us and we will be pleased to supply it. Meanwhile, keep your eye on the sun, after the New Year

he's going to have to put in a little extra time each day, just to keep ahead of Atlas.



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E.T. 500 M 500w
Tungsten halogen
floodlight
completely
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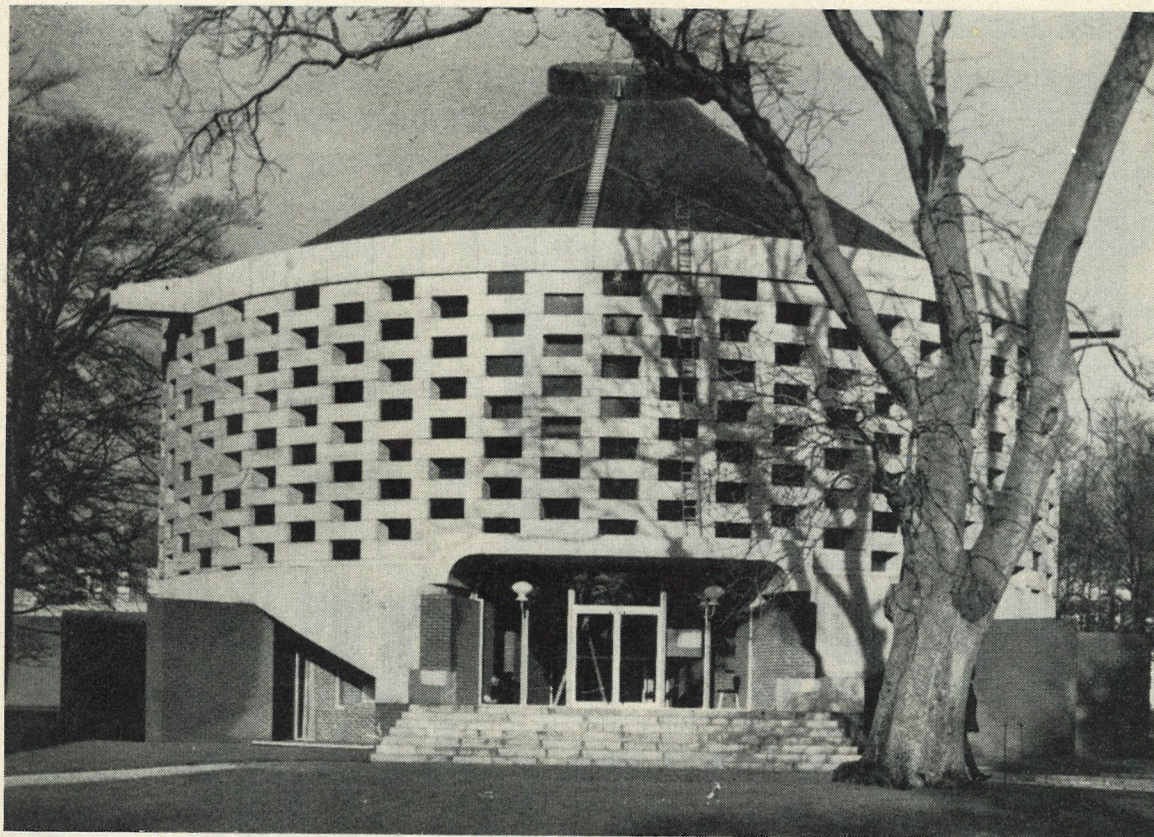
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display spotlight.
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Atlas design keeps Atlas ahead



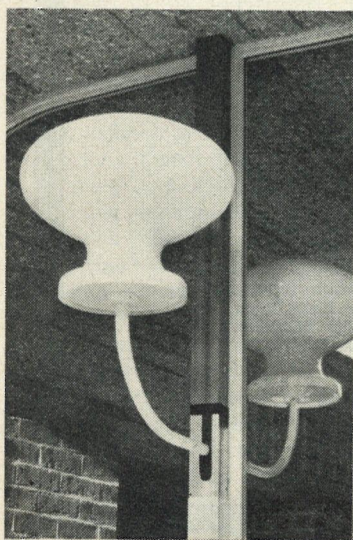
Equipment References

For more information on the equipment mentioned in this article, quote the relevant LEN reference number on the Reader Service Form.

Courtney Pope (Electrical) Ltd.	LEN 118
Atlas Lighting Ltd.	LEN 119
Electrical Installations Ltd.	LEN 120
Strand Electric Ltd	LEN 121
Lumitron Ltd.	LEN 122
C.M. Churchouse Ltd.	LEN 123
Allom Heffer & Co. Ltd.	LEN 124
Aureole Engineering Ltd.	LEN 125
James Longley & Co. Ltd.	LEN 126
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LIGHTING THE UNIVERSITY OF SUSSEX MEETING HOUSE

Opal glass diffuser fitting designed by Sir Basil Spence and made by Courtney Pope (Electrical) Ltd



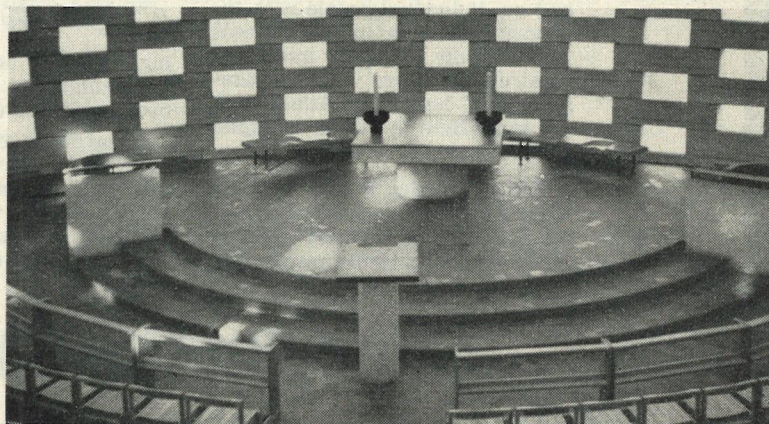
The meeting house is an unusual two-level structure designed to serve both as a Chapel for all denominations at the University and as a centre where meetings, discussions and recitals may be held.

The building is of circular plan 80 ft in diameter and is surrounded by a moat crossed at three points by bridges leading to entrance steps. The main entrance leads to the Central Hall on the Ground Floor. Surrounding the Circular Hall are the Recital Room, four Quiet Rooms for chaplains, a General Purpose Room, a Choir Room and Toilets. Two curved staircases on either side of the Entrance Hall lead to the Chapel on the First Floor with ancillary accommodation of Vestry and R.C. Chapel. The organ is situated on a gallery above the Vestry.

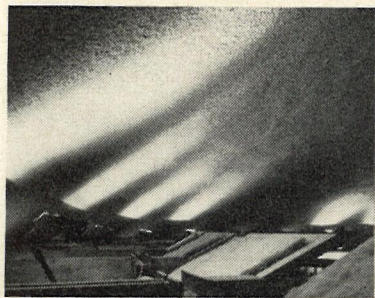
The whole of the conical

interior of the chapel roof acts virtually as a light fitting. By

day an elliptical roof light, in shades of pale grey-blue throws a downward radiance toward the altar. At dusk the electric lighting takes over to supplement the natural illumination



Looking toward the Altar from the Organ Gallery



Atlas Sunflood tungsten halogen fittings illuminate the conical chapel ceiling

detract from the sparkling colours of the glass walls by day and which, by night, would give the exterior of the building its strikingly dramatic effect.

The whole of the baffle installation is fed from twelve 30A ring mains in a trunking system fitted by the electrical sub-contractors Messrs. Electrical Installations Ltd. Six of these ring mains supply current for the upward facing lamps and six for those that are directed downwards, in each case via 13A socket connections. There are two distribution boards for these circuits which are individually controlled by contactors.

In addition to the indirect illumination by Atlas Sunfloods, 8 Strand Electric Baby Profile 250W spot-lamps are used at night to highlight the chancel area. Four of these fittings are

and finally replace it, giving a different but no less impressive effect. The Chapel walls are made up of coloured glass panels alternating with concrete blocks, the 'warmer' colours being concentrated on the north facing walls resulting in an impression of sunshine in dull conditions.

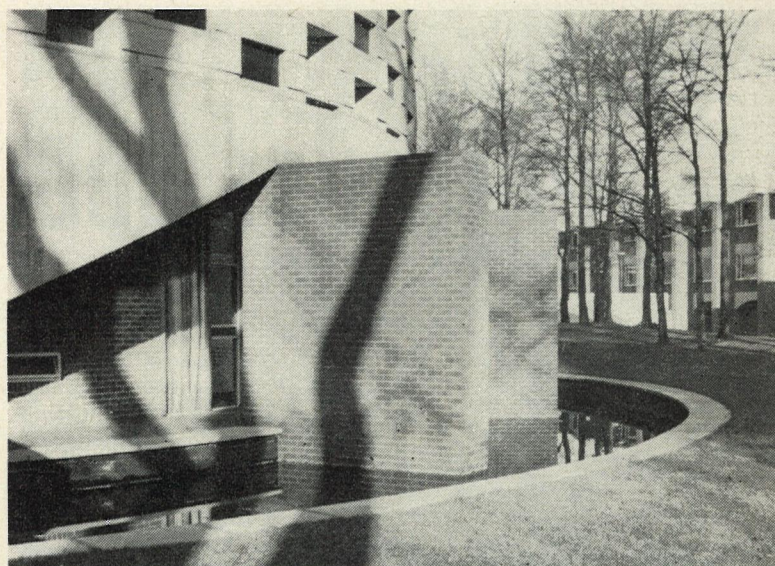


Entrance Hall showing special diffuser fittings

The time of day, the season of the year and the surrounding trees all tend to diversify the quality and character of the light within the building.

The major part of the Chapel illumination is supplied by 60 Atlas Sunflood tungsten halogen fittings. A concrete ring beam 24 ft above the floor is used to support 60 wooden lighting and acoustic baffles pivoted between concrete outriggers. Each of these glass-fibre padded baffles conceals an Atlas fitting. Thirty of the units illuminate the conical ceiling using the cross-projection method. The remaining 30 Sunfloods shine downwards to wash the walls with light. Each lamp is rated at 500W and has a life of 2000 hours. This method of lighting was chosen by the architect to provide unobtrusive sources of evenly distributed white light which would not

mounted on the back of the lighting baffles on each side of the altar and direct their light downwards through holes in the baffles. Another distribution board feeds these altar flood-lamps which are further controlled by individual key-switches. Situated on the ring main trunking are four spare socket outlets which are intended as connecting points for supplementary television lighting when this is required. Further provision is made for future lighting of the organ pipes from supplies terminating in 13A sockets on the Organ Gallery. This organ is expected to attract considerable attention as it is a specially constructed instrument which, unlike most organs, is designed for a heated building and which is made to a classic specification common on the Continent but rarely used in England.



The moat which surrounds the Chapel

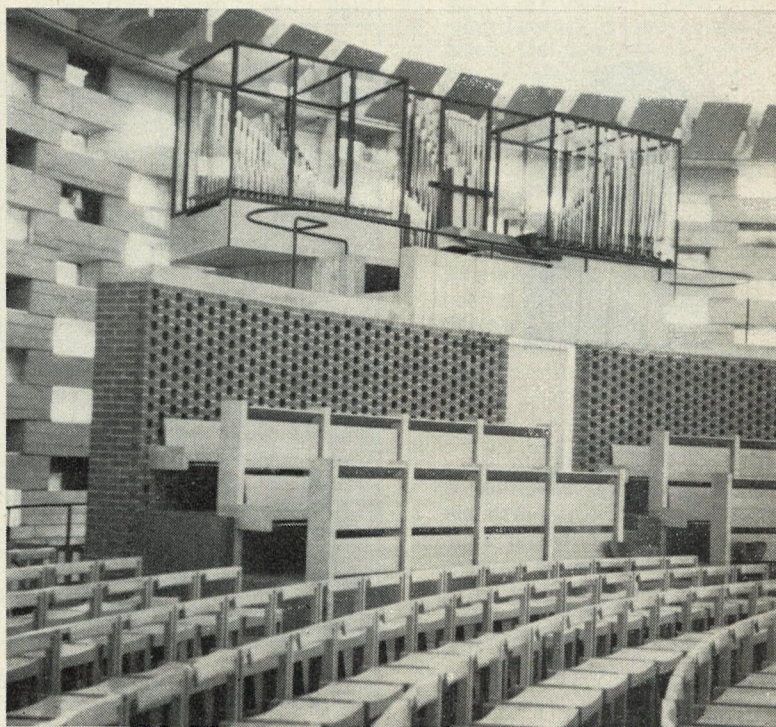
The main entrance to the ground floor consists of a glazed screen fitted with swing doors. On the mullions of this screen are a pair of large opal glass diffuser fittings designed by Sir Basil Spence and manufactured by Courtney Pope (Electrical) Ltd for this building. Each of these fittings is of 18 in diameter and 16 in depth; a 150W lamp is used. Two similar wall bracket fittings provide general lighting in the Entrance Hall, while a further 32 matching fittings, with 100W lamps are used throughout the ground floor rooms. An interesting feature of these diffuser fittings is the ease with which the glass may be removed for cleaning and bulb replacement by flicking three small levers on the mounting plate.

The access stairs to the first floor are lit by single Lumitron 1658 150W spotlights. Other installations comprise the 100W

glass 'brick' fittings by C. M. Churchouse Ltd. that are used in the Sacristy and in the spiral stairway to the Organ Gallery; the satin etched opal glass fittings by Allom Heffer in the Toilets; and the 150W PAR recessed cylinder fittings by Aureole Engineering, above the subsidiary entrance doors. These Aureole fittings were also installed in the Roman Catholic confessional booths, but in this situation 25W amber lamps are employed.

General levels of illumination throughout the building range from 15 to 16/lm ft².

The building was designed by Sir Basil Spence, OM, RA, RDI, PPRIBA and the Consulting Services Engineers were Sir Basil Spence, Bonnington and Collins. Main Contractors were James Longley and Co. Ltd. The Consulting Structural Engineers were Ove, Arup and Partners.



The Organ Gallery—note lighting baffles above

DEVELOPMENT OF THE HIGH PRESSURE SODIUM LAMP

By
G. N. GANDHI

THE growth of artificial lighting to date has been in three major stages. The first stage was the introduction of the filament lamp having a luminous efficiency of 3 lumens/watt; the second stage was the introduction of the fluorescent tube in 1939 with an efficiency of 25 lumens/watt and the third stage was marked with the introduction of the SOLACOLOR lamp in this country in 1966.

The trade name SOLACOLOR, of course refers to the high pressure sodium vapour—HPSV—lamp and for the first time a lamp has become available giving an initial efficiency of 95 lumens/watt combined with near white light. Table I below shows the comparative efficiency figures for various light sources of white or near white light.

The new lamp is similar in construction to an ordinary mercury MB/U lamp except for its discharge tube. The latter is made from a ceramic of sintered high density polycrystalline translucent alumina. This material is

similar in many ways to synthetic sapphire and permits the use of alkali metal vapours at high temperatures and pressures.

The discharge tube is filled with mercury in addition to the primary metal sodium, to form a buffer gas, necessary to achieve the required electrical characteristics. The discharge tube is supported in a metal frame and housed in an outer jacket, evacuated to reduce heat losses and thus to increase efficiency. Figure 1 shows the constructional detail of the lamp.

The most important characteristics of the lamp are its good colour appearance and balanced colour rendering properties. The lamp has a black body colour temperature of 2,100°K and the whiteness of its light is similar to that of a low wattage (mains voltage) incandescent lamp, creating a somewhat warm overall lighting effect.

The spectral energy distribution is such that the radiation is concentrated mainly in the visible part of the spectrum and it is

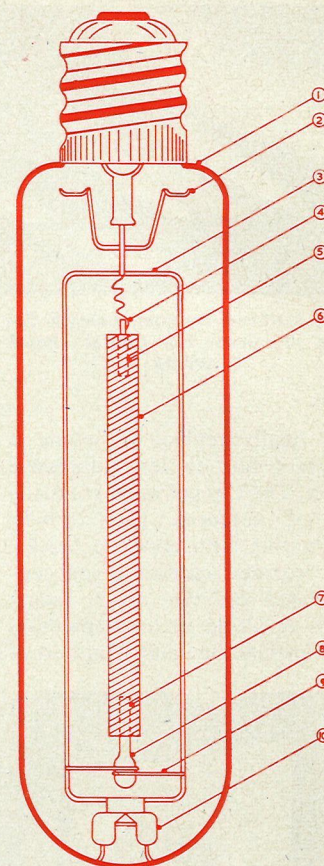
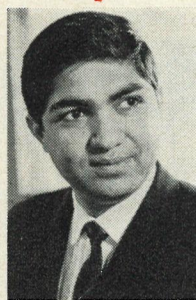


Fig. 1. (1) Evacuated outer jacket. (2) Getter cups. (3) Mounting frame. (4) Flexible support and connection. (5) Electrode. (6) Translucent ceramic discharge tube. (7) Electrode. (8) Metal exhaust tube. (9) Rigid support and connection. (10) End support.

relatively stronger where the eye is most sensitive. Table II shows the spectral luminance distribution in the eight band system, compared with Standard Illuminant A and the Osram Mercury Halide lamp. The resultant effect of this spectral distribution is that all colours are rendered well, but there is particular emphasis on reds and yellows. The rendition of the skin tones is very good and the colour of the light is flattering to the complexion.

Another important advantage of the lamp is its high luminous efficiency. Electricity cost for operating the lamps, which is the significant part of the annual lighting bill, will be considerably reduced and to a first approximation this is estimated to be inversely proportional to the lamp efficiencies shown in Table I. For the same wattage rating, the HPSV lamp gives a higher light output and will therefore achieve the required illumination with a minimum number of lighting points. This factor reduces the installation and maintenance costs considerably.

The particular advantage of this lamp to a fittings designer is its small, well defined light source. The source size is 90 mm x 9 mm with a maximum luminance of 900 stilb in the case of the 400W rating. This facilitates greater precision of refractor or reflector



Mr. C. N. Gandhi, 29, received his Diploma in Electrical Technology from Sir Cusrow Wadia Institute, Poona, India, and came to the U.K. in 1958. Since then he has been engaged in the illumination industry in this country and has specialised in discharge lamps. He received his Diploma of the Illuminating Engineering Society in 1965. Mr. Gandhi joined the staff of OSRAM-G.E.C. in 1965 where he has worked on numerous technical aspects of discharge lamps and lighting.

TABLE I

Lamp Type	Approx. Average Throughout* Life Efficiency in Lumens per Watt
G.L.S. Filament	13
Tungsten Halogen	20
Colour corrected mercury (MBF)	50
High efficiency tubular fluorescent MCF	70
400W SOLACOLOR	90

*Also referred to as "The Lighting Design Lumens" for some lamp types.

TABLE II

Band No.	1	2	3	4	5	6	7	8
Band Width (μ)	.40-.42	.42-.44	.44-.46	.46-.51	.51-.56	.56-.61	.61-.66	.66-.72
Standard Illum. A.	.0053	.0576	.243	5.33	33.54	42.67	16.56	1.54
400W HPSV	.002	.026	.090	2.30	11.4	72.8	13.0	.36
400W Mercury Halide	.030	.079	1.38	2.34	49.9	41.7	4.2	.35

Relative luminosity (per cent) in eight spectral bands for standard illuminant A (2,854°K), 400W high pressure sodium vapour lamp operating at 400W and for a mercury halide lamp.

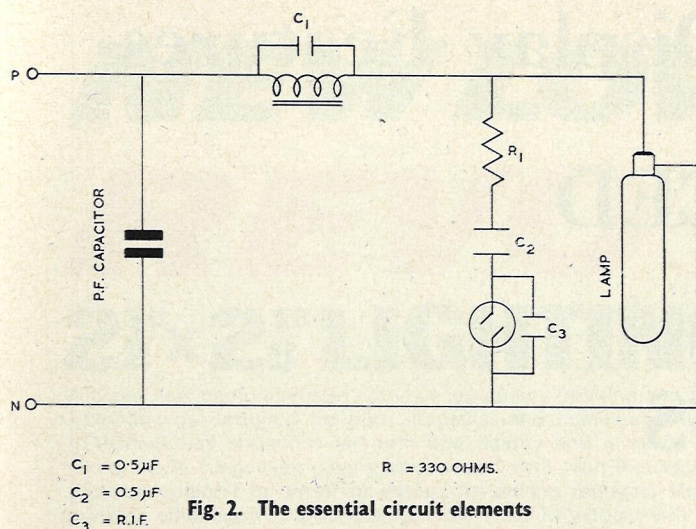


Fig. 2. The essential circuit elements

design, and may be accompanied by a reduction in overall dimensions.

The stability and starting conditions associated with the HPMV lamps are also to be found with the HPSV type in a more acute form. The essential circuit elements are shown in Figure 2. The voltage required to start the 400W lamp is a little over 240V and therefore a starting aid is provided to ensure reliable starting. This consists of a glow starter switch (similar to that used with the fluorescent tubes) in series with a capacitor C_2 and resistor R_1 . Components C_2 and R_1 restrict the current through the starter to about 50 milliamps and at this low current the glow starter will have an indefinitely long life without any possibility of the contacts welding.

The series impedance to restrict the current through the lamp is in the conventional form of a choke, but a capacitor C_1 (0.5 mfd.) is connected across this choke which substantially improves the ability of the lamp to withstand without extinction, sudden drops in supply voltage. This circuit arrangement is the subject of British Patent Application No. 33043/66.

Starting Characteristics

The starting and restarting time is about half that of HPMV types, i.e. about $1\frac{1}{2}$ minutes to run up to 80% of maximum output and $2\frac{1}{2}$ minutes for an extinguished lamp to cool, re-start and run up again. Neon is used as a starting gas and this enables the starting of the lamp to be virtually independent of the variations in ambient temperature which may be encountered anywhere in the world.

The fittings currently available for HPSV lamps are suitably modified versions of existing designs for incandescent or HPMV lamps. In due course, however, designs will be produced incorporating features to

secure the maximum advantages offered by the new lamp.

The immediate applications will be the familiar ones. The major indoor application is bound to be the lighting of the industrial interiors, but the lamp will also be popular for other large lofty interiors such as exhibition halls, sports arenas, stadiums, swimming pools, airport terminal buildings and the like. Streetlighting will be the major exterior application of this lamp. Figure 3 shows the experimental installation at Talbot Road, Dickson Road Junction, Blackpool, using Solacolor lamps. Existing post top lanterns were converted to take 3-400W high pressure sodium lamps. The columns are 35 ft high and the average spacing is approximately 70 ft. An illumination level of 7.5 lumens/ft² was measured at the ground level below the lanterns, and the colour appearance as well as the rendering were very satisfactory for the railway approach and shopping centre area.



Fig. 3. Solacolor high pressure sodium lamps by Osram-G.E.C. have been operating experimentally outside Blackpool North Station since last July. The installation, consisting of six G.E.C. post-top type lanterns, each housing three 400W lamps, was planned by Blackpool's Engineer, Mr. H. Carpenter, F.I.E.S., M.I.E.E.



Fig. 4. Trial floodlighting installation at Conway Castle. Four trough floodlights for close offset and two narrow beam projectors for longer throws are employed.

The lamp will also be widely used for space lighting, floodlighting and lighting for the outdoor sports. Figure 4 illustrates the trial floodlighting installation at Conway Castle. Four trough floodlights for close offset and two narrow beam projectors for longer throws were employed. Very interesting modelling effect was achieved and the colour appearance of the castle was warm and pleasing under the light from the high pressure sodium lamps.

New Techniques

It is likely that new techniques will be developed to make use of this lamp in more sophisticated interiors. A number of ideas have been suggested to describe the methods of using the lamp in conjunction with modular or suspended ceilings or using it with Downlighter technique or in different forms of indirect light-

ing. The HPSV lamp has already been successfully used for many installations and there is little doubt that this lamp is going to have a great impact on lighting.

Correspondence

SIR,

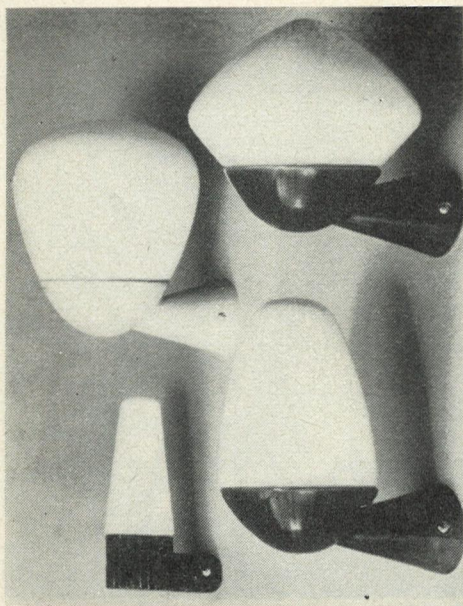
In the article "Lighting Progress" published in your January issue it is to be regretted that Mr. Atkinson did not touch on the drawbacks associated with high levels of illumination (other than economic). Already supermarkets and chain stores are using levels around 100 lumens/sq. ft. At night time, for a person whose eyes have become adapted to $\frac{1}{2}$ —1 lumen (much less in residential areas), it is a painful process to enter one of these shops. Conversely, having become adapted to these high levels it becomes dangerous to cross the road immediately after leaving, in the comparative gloom. Unfortunately when statistics become available on this aspect it will be too late to prevent accidents happening now. When fluorescent lighting was introduced 20 years ago in country lanes—to a modest 10 lumens/sq.ft.—it had to be withdrawn because of this hazard.

Reference has been made to the future use of the new discharge light sources in interiors. Unfortunately, because these lamps have clear envelopes, there is the characteristic flicker associated with discharge lamps, which is trying on the eyes and, of course, stroboscopic effects would preclude their use in machinery areas. Because of their high lumen output lamps would never be put close enough together to reduce the effect by connecting each to a different phase. Even using an indirect form of lighting and a translucent membrane, this flicker is noticeable.

Yours faithfully,

P. ARKLOW,

B.Eng., M.I.T.E., M.A.S.E.E.



Fittings from the Porcelain Series

Thomas Display Features

ADVANCED DESIGN FITTINGS

Including Hospital Prototype

AT A RECENT exhibition in London's Cavendish Hotel, Architects and members of the Press were invited to see the latest products of Frederick Thomas and Company Ltd. Many fittings of advanced design and specification were on display.

The FT400 Series of fluorescent fittings, announced last November, were on view for the first time. Suitable for use in schools, offices, stores and wherever quality of manufacture is important, the units have the advantage that they can be employed either singly or in continuous runs. Spacers, which have the same form and cross-section as the battens, are also available.

One of the most interesting items on display was a prototype fluorescent fitting designed specifically for installation in hospitals. This unit—which has been developed to conform to the detailed recommendations of the Ministry of Health and the Joint Committee on Lighting and Vision of the Department of Scientific and Industrial Research as well as those of the Medical Research Council and the Building Research Board, answers a widespread need for hospital fittings providing clinically acceptable lighting.

SAUCER FITTING

A new saucer fitting proved to be of interest to those responsible for the lighting of large public rooms and assembly halls. The fitting was pioneered for school use by the Essex County Council and it is designed to distribute light evenly over a wide area. Also exhibited were units in the Light Box Series. These have Perspex diffusers fixed to the metalwork by everlasting magnets. These enable

the fittings to be dismantled in seconds in order to insert a new lamp, or for cleaning purposes. No tools or screwdrivers are necessary and the units are designed for either semi-recessed or surface mounting. Suspended fluorescent reflectors were on show. These are intended mainly for lighting chalkboards and noticeboards. This range, which meets the need for controlled lighting on vertical surfaces, has an important institutional application, particularly in schools.

A series of modern outdoor column and wall fixing globe lights suitable for landscape and

functional application in gardens, patios and pedestrian areas were on view. The Mushroom Landscape Light was also exhibited.

DISTINCTIVE SHADES

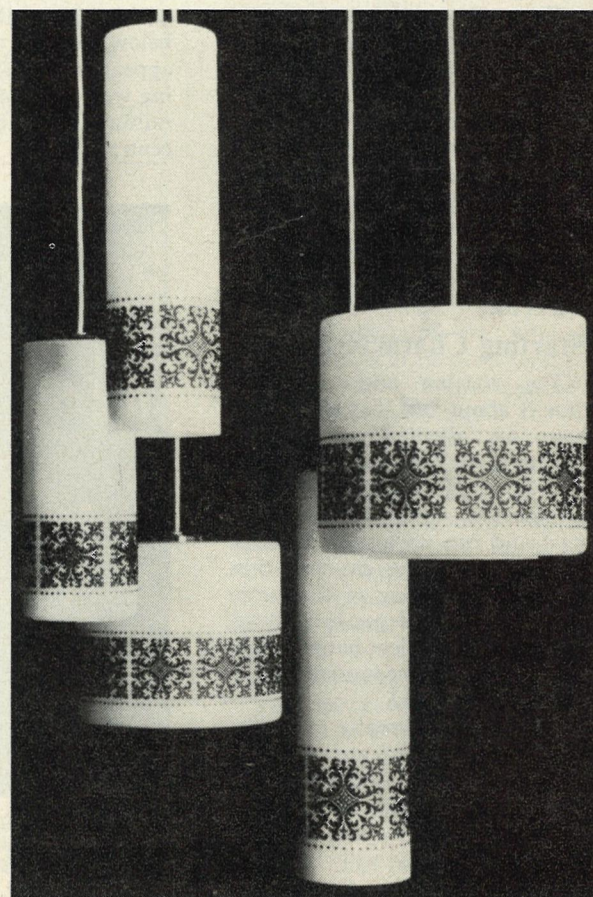
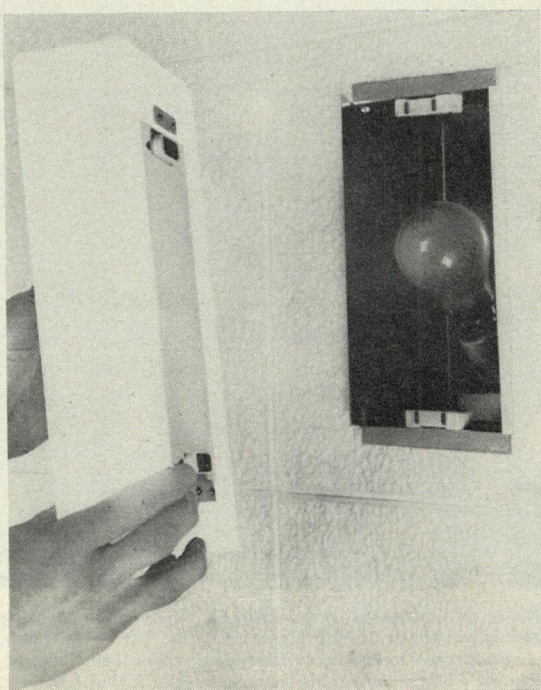
Some attractive porcelain fittings were to be seen. These were in a wide range of distinctive pastel shades, to match bathroom, cloakroom, kitchen and corridor colour schemes. The decorative fittings from the Arabesque Series were shown. These have an elegant pattern derived from a 16th century arabic design. This range of

lights is suitable for use in restaurants, and the fine detail is achieved by firing black crystal on to satin opal glass. One of these units has an apparent satin black finish which becomes a subtle blue when lit.

Completing the wide range of items on display were fittings from the sparkling, brilliant Crystal Series, some examples from the classically modern Svenska Series and a selection of cut glass prestige lighting fittings in the Orrefors range.

For further detailed information on these ranges please use Reader Service Form quoting LEN 128.

(Right) A selection of different shapes and sizes from the handsomely designed Arabesque Series. (Below) Fitting from the Light Box Series showing the ever-lasting magnets for fixing the Perspex diffuser



NEW LOW COST **REVOduct** 2½" x 2⅛" LIGHTING TRUNKING

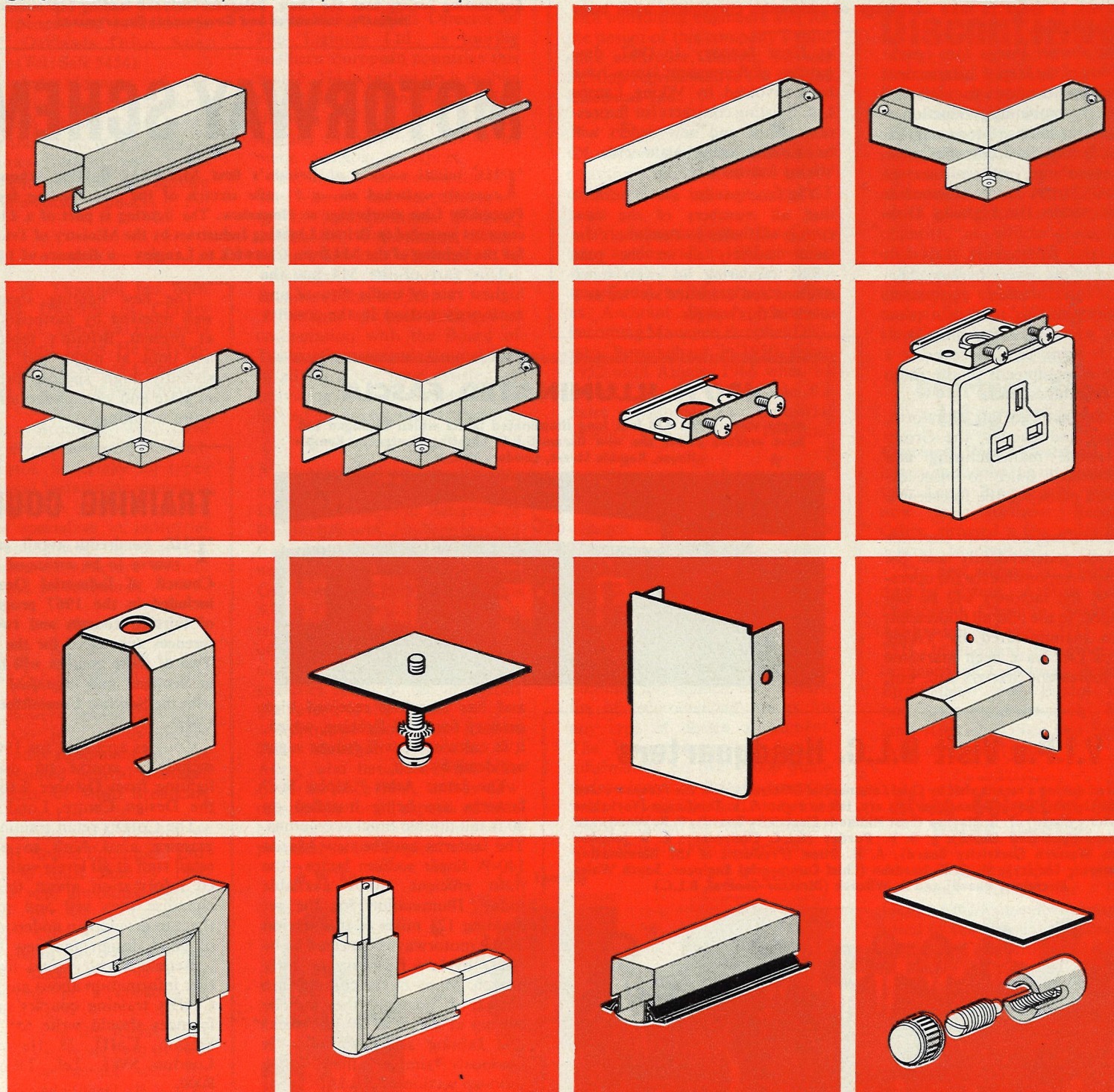
A brand new comprehensive range of top quality trunking and accessories. REVOduct is designed for both industrial and commercial applications. REVOduct has enormous strength and rigidity and is easily capable of taking 15 ft. suspension spans fully loaded with twin fluorescent fittings. Erection couldn't be faster or easier; no drilling required. Here is every trunking advantage at a surprisingly low cost. REVOduct will soon solve all your trunking problems. You can depend on it!

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Lt. Col. R. E. Crompton, M.B.E. presents a bust of his grandfather, Col. R. E. B. Crompton to the Mayor of Chelmsford, Alderman C. A. Allsop, representing the Council. The presentation was in recognition of Col. Crompton's long association with the town of Chelmsford.



Lighting Conference

Part of the audience at the Conference on Lighting and Productivity in Industry and Commerce held at B.L.C. Headquarters. Principal speakers were J. G. Holmes, A.R.C.S., B.Sc., D.I.C., C.Eng., A.M.I.E.E., F.Inst.P., F.S.G.T., F.I.E.S., Technical Director, Holophane Ltd., A.N. Irens, M.Sc., D.F.H., M.I.E.S., J.P., Chairman, South Western Electricity Board, and A. Wilcock, C.Eng., A.M.I.E.E., F.I.E.S., Director-General of the B.L.C. A. H. Olson, B.Sc., A.C.G.I., M.I.E.E., F.I.E.S., President of the Illuminating Engineering Society took the Chair. Delegates included leading representatives of industry, commerce and Government Departments

LIGHTING COMPANIES IN BIG MERGER

THE three companies Endura Lamps Ltd., Fluorescent Starters Ltd. and Viking Lamps Ltd. merged their manufacturing facilities on November 22, 1966, in order to take advantage of economies consequent upon large scale operation.

The merger brings into operation one of the largest independent organisations within the electrical industry, combining production of fluorescent lamps, fluorescent fittings, fluorescent accessories, plastic mouldings, general service electric lamps and automobile lamps within the Lighting Division.

In the Industrial Division manufacture covers battery chargers, metal office equipment, plastic moulding tools and press tools, whilst an Electronics Division is being created covering a range of equipment in the radio and electronics trade.

With factories at Horsforth, Saltaire and Shipley, the Group has ample manufacturing and development space to meet expansion plans for the foreseeable future.

Each Company will continue to trade independently and the directors responsible for the operation of the factories will be unchanged. In the past all fluorescent lamps manufactured by Viking Lamps Ltd. have been marketed by Fluorescent Starters Ltd. but,

as from January 1, 1967, despatches of fluorescent lamps have been invoiced by Viking Lamps Ltd. Existing contracts for fluorescent lamps and new orders will be automatically dealt with by Viking Lamps Ltd.

The companies are confident that all members of the new Group will offer to customers the same courtesy as in the past whilst rendering an even more efficient and extended service as a result of this merger.

MOTORWAY SCHEME

THE initial section of Britain's first Motorway lighting scheme was recently switched on—a 1½-mile stretch of the M4 starting from the Piccadilly Line overbridge at Hounslow. The lighting is part of a £100,000 contract awarded to British Lighting Industries by the Ministry of Transport, for the lighting of the M4 from Chiswick to Langley—a distance of 14 miles.

This part of the M4 has the highest rate of traffic flow of any motorway section in the country

The new lighting should be well received by motorists, since at present Britain's motorways are unlit at night and at consistently high speeds, problems of glare and visual adaptation are more irritating.

120 ft ILLUMINATED FASCIA

Night view of the 120 foot long illuminated fascia which Claudgen Ltd. have erected above the new Osram-G.E.C. Lighting Centre in Kemble House, Kemble Street, London, W.C.2.



V.I.P.s Visit B.L.C. Headquarters

Pictured during a recent visit by Chief Commercial Officers to view the reconstructed British Lighting Council headquarters are, left to right: G. L. Tomlinson (Yorkshire Electricity Board); T. G. Blayney (East Midlands Electricity Board); P. H. Woodward (London Electricity Board); J. O. K. Purdey (B.L.C. Chairman); A. O. Johnson (South Western Electricity Board); A. H. Olson (President of the Illuminating Engineering Society); W. E. Richardson (Chief Commercial Engineer, South Wales Electricity Board) and A. Wilcock (Director-General, B.L.C.)



and has therefore received high priority for road lighting, which, it is calculated, will reduce night accidents by 30%.

The latest Atlas "Alpha Six" lanterns are being installed on 40 ft tall double bracket columns. The lanterns use the new Mazda 140-W linear sodium lamps—the most efficient lamps available today. Illumination for the remaining 12½ miles of this section of the motorway is expected to be ready by late February or early March. Many of the columns are already in position (they can be put up at a rate of 70 per week) and cabling and installation is obviously simpler than in a built-up section of road.

TRAINING COURSE

THE hundredth retail training course to be arranged by the Council of Industrial Design is included in the 1967 programme of thirteen courses and two conferences announced for the CoID. Two of these courses will be held in Scotland and organised jointly with the Scottish Committee of the CoID.

Courses arranged for 1967 will include a course on domestic lighting from October 9 to 13 at the Design Centre, London.

The CoID's retail training programme aims both to provide retail staff at all levels with detailed information about the merchandise they sell and to help them to develop an understanding of good design and new trends.

Retailers who would like further information about any of the CoID's training courses or conferences should write to: Retail Section, CoID, 28 Haymarket, London SW1. Tel: TRAfalgar 8000.

Town and Around



J. I. Oldfield



C. W. Tincknell



E. V. Bowers

As part of the reorganisation of their Commercial Department, Alkaline Batteries Ltd. of Redditch, manufacturers of Nife Alcad batteries and systems, are decentralising the Sales Division, and a new Regional Office has been opened at "Oaklands House", Oaklands Drive, Sale, Cheshire (Tel: Sale 5454).

Appointed Manager of the Region, which covers an area from South Cheshire and Yorkshire to the North of Scotland, is Mr. James Oldfield, who is responsible for the Sales and Service of all Nife Alcad products in the Region.

Mr. C. W. Tincknell has been appointed Director of Christy Brothers Ltd., Electrical Engineers of Chelmsford, Essex. He will continue in the position of Contracts Manager to which he was appointed last February.

Christy Brothers, who have offices at Chelmsford, Ipswich and Bristol, undertake all types of electrical installation contracts throughout the United Kingdom and are specialists in industrial and floodlighting applications. They also manufacture control panels and switchboards.

Mr. E. V. Bowers has retired from the A.E.I. Lamp and Lighting Co. Ltd.

Mr. Bowers joined the then B.T.H. Co. in 1949 to market marine radar equipment and was later appointed general manager and director of Multi Broadcast (Engineering) Ltd.

He was managing director of the B.T.H. Sound Equipment Ltd. from 1956 until January 1960 when he was appointed deputy manager of A.E.I. Lamp & Lighting Co. Ltd. Southern Region and in July was appointed manager. Since July 1965 he has been acting in a consultative capacity.

He served in the Royal Navy during the war from 1940 to 1946 and left the service with the rank of Commander (L) R.N.V.R.

He was awarded the M.B.E. (Military) in 1946.

Mr. Bowers was presented with a gold watch to mark his retirement.

Adam Wilson, Sales Director of Plus Lighting Ltd., is touring northern European countries this month. He is setting up a mobile exhibition in seven major cities, showing the full range of Plus lighting fittings, which is to be made available for export.

The mobile exhibition fits into Mr. Wilson's car and is being set up in leading hotels in Oslo, Stockholm, Copenhagen, Hamburg, Düsseldorf (February 15), Amsterdam (February 17) and Brussels (February 20).

The tour has been arranged in co-operation with the Board of Trade. Commercial Counsellors in all the cities have assisted by providing lists of retailers to be invited to attend the exhibitions.

A further stage in the reorganisation of the Commercial Department of Nife Batteries of Redditch, Worcs., has been reached with the recent opening of their new Regional Sales Office at 50 Grosvenor Gardens, London, S.W.1 (Tel: Sloane 7161). This is a part of the Company's policy of decentralising the Sales Division, and the new territory stretches south of the line from the Severn to the Wash.

Appointed Southern Region Sales Manager is Mr. R. W. Allen, who has been with Nife Batteries since 1948, and is now responsible for all aspects of sales and service of the Company's products in his Region.



R. W. Allen



C. G. Tomrley



J. H. Grant

DAVID Dawes, 36, who has been responsible for Osram-G.E.C.'s public relations for the last three years, has been appointed a director of the P.R. Agency retained to handle the account—Promotion Projects Ltd., of Regent Street, London W.1. Mr. Dawes also edits the company newspaper the "Osram-G.E.C. Express".

TORK Time Controls Ltd. have announced the appointment of Mr. Ronald Baker as U.K. Manager.

Mr. Baker was formerly Chief Engineer with E. J. Schofield & Co. Ltd., responsible for liaison with consulting engineers and for the design of this company's solid state controller. Earlier, he was lighting representative for Philips Electrical Ltd.

CROMPTON Parkinson Ltd., have regretfully announced the death of Mr. C. J. Johnson, aged 63 years.

Mr. Johnson joined the Company's sales staff in 1945 covering the South-East area. He later transferred to Manchester office as Assistant Branch Manager, becoming Manager, Supplies Division, Birmingham, in 1950. From 1952 until August 1966 when he retired, he was responsible for Sales Training in Industrial Motors and Lighting Division.

Mr. John Grant, M.S.I.A., has been appointed Manager of the Council of Industrial Design's Record of Designers in succession to Mrs. C. G. Tomrley, who retired on December 31, 1966. The Record of Designers offers a service to all industrial and commercial organisations seeking designers by providing, for a nominal five guinea fee, a short list of recommended names for any type of design assignment. The Record maintains detailed information on over 3,000 qualified designers in Britain, covering both the capital and consumer goods industries and interior, exhibition and graphic design.

FALKS AND OSBORN IN SALES TIE-UP

A MARKETING tie-up has been reached between Falks Ltd., 91 Farringdon Road, London E.C.1. and Osborn Manufacturing Company Ltd., Birmingham, whereby Falks have the exclusive marketing rights to the wholesale and retail trade of all the domestic lighting fittings manufactured by Osborn Manufacturing Company in the United Kingdom and Northern Ireland. The fittings will be marketed as Falks' Cobra Domestic Light Fittings.

RPM Practice Discontinued

HOLOPHANE LTD announce that they have discontinued the practice of retail price maintenance in accordance with the recent decision of the Electric Light Fittings Association. They now operate a recommended Net Price Schedule which give prices irrespective of quantity, at which Holophane offer their products to users.

These prices will allow a 5% discount to electrical contractors and a further 5% discount to electrical wholesalers.

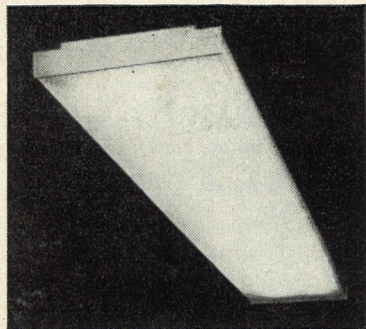
Courtney Pope Integration

Courtney, Pope (Electrical) Ltd., have announced the integration of their Leeds Branch with what is now the Northern Regional Office, situated a few miles from central Manchester.

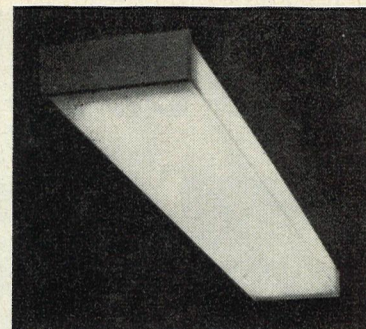
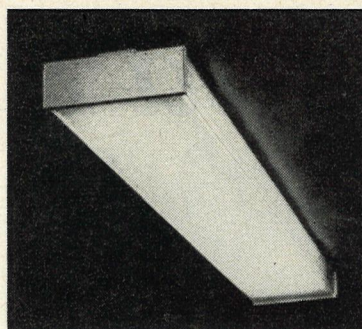
The new address is: Tudor Industrial Estate, Ashton Street, Dukinfield, Cheshire. Telephone Ashton-under-Lyne 3715 and 3571. In addition, the other two branches of Courtney, Pope in Birmingham and Bristol have both become, respectively, Midland Regional Office and South-West Regional Office.

Atlas Selected for Print Design

ATLAS Lighting Ltd. literature has been selected for "Print Design 1967", an exhibition sponsored by the Council of Industrial Design and the British Federation of Master Printers. The publication chosen, the Atlas Fluorescent Lighting Fittings Catalogue, will be shown at the Design Centre, London, from February 22 to March 27, at a special exhibition to mark the occasion.



(LEFT) THE KS FLUORESCENT FITTING WHICH HAS A VERY SHALLOW DIFFUSER WITH REEDED SIDES AND PRISMATIC BASE FOR MAXIMUM GLARE-FREE LIGHTING. (FIRST RIGHT) THE KGP FITTING WHICH REDUCES LATERAL LIGHT DISTRIBUTION BUT GIVES VERY EFFECTIVE DOWNWARD LIGHTING. (SECOND RIGHT) THE KGD FITTING WITH CLEAN-LINED OPAL REEDED DIFFUSER GIVING EVEN ALL-ROUND ILLUMINATION



A NEW series of commercial fluorescent light fittings with especially strong design appeal has been developed and launched by Atlas Lighting Ltd. The new fittings, called the London Line comprise a new KS shallow prismatic diffuser fitting, and the KG series chassis which is available with a variety of attractive wood, metal and louvre attachments.

London Line fittings are all twin-tube units, using either 8 ft 85W (Super-8) or 6 ft 85W (Super-6) tubes plus circuits of the most advanced and efficient kind. Altogether, using the various attachments and louvres, the range offers a total of 24 different fittings. Although the fittings are strikingly decorative, they are specifically designed for optimum efficiency in commercial installations with strict glare con-

THE ATLAS LONDON LINE

A SERIES OF COMMERCIAL FLUORESCENT LIGHT FITTINGS AVAILABLE WITH WOOD, METAL AND LOUVRE ATTACHMENTS

trol, in some cases down to BZ1 conditions.

The KS fitting has a very shallow translucent diffuser with reeded sides and a prismatic base, designed for maximum glare-free lighting. The spine is also unusually shallow and is hardly noticeable when viewed from beneath, thereby enhancing the slim attractive appearance of the fitting.

The KG fitting, the second of the new introductions, is available with several alternative attachments. First is the KGP fitting, a highly efficient prismatic diffuser which reduces lateral light distribution but gives very effective downward lighting. Then there is the KGD fitting, which uses a clean-lined opal reeded diffuser giving even all-round illumination.

Next, and completely different

in aesthetic concept, are the KGA, KGB and KGW fittings, all of which have stain anodised extruded aluminium frames. The KGA unit has an all-aluminium finish with horizontal etched bands, the KGB a centre band with a dark embossed leather finish, and the KGW a centre band of artificial wood. For use with the KGA, KGB and KGW fittings there are three diffuser panels—an opal dish, a metallised louvre and a prismatic diffuser, so that apart from the very unusual design of these fittings, considerable freedom of choice is offered by the interchangeability of the frames and different panels.

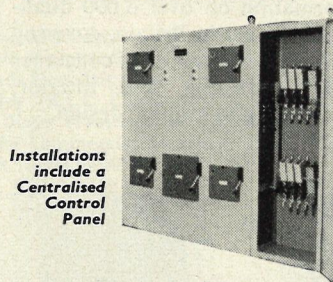
An important architectural feature of the "London Line" fittings is that they are all standard modular sizes, i.e. 6 ft by 1 ft or 8 ft by 1 ft and that being unusually slender they are invaluable for use where ceilings are low. Both the 6 ft and 8 ft units are for 240V operation.

For more information use Reader Service Form quoting LEN 131

FLOODLIGHTING by the TOWERMASTER RANGE

Designed and fabricated generally to the requirements of BS.449 & BS.CP3 CH.V for use in nominal maximum wind velocities of 80 m.p.h.

We specialise in planning and installing floodlights for all purposes and in the successful completion of very many different installations we have learned the answers to all the problems involved. Hand your problem to our team of designers and engineers.

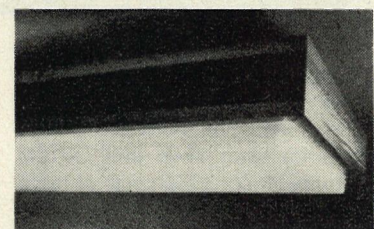
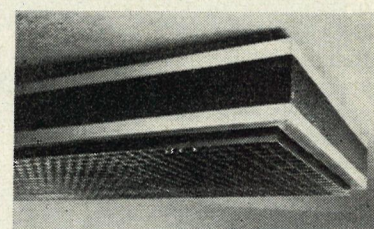
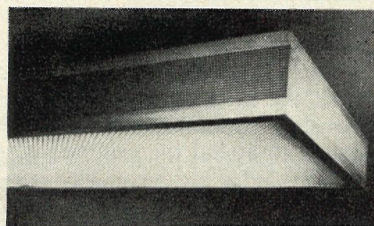


Installations include a Centralised Control Panel

Christy Bros Ltd

Chelmsford, Essex. Tel: Chelmsford 53414-7 Ipswich, Suffolk. Telephone 75202
Bristol, Gloucs. Telephone 663518

For more information use Reader Service Form quoting LEN 130



(Above, top) KGA fluorescent fitting with prismatic diffuser has a satin anodised extruded aluminium frame finished with etched horizontal bands. (Centre) KGB fitting with a louvred diffuser, has a satin anodised extruded aluminium frame with a centre band of a dark embossed leather finish. (Immediately above) KGW fitting with an opal dish diffuser has a satin anodised extruded aluminium frame finished with a centre band of artificial wood.

HOME LIGHTING WEEK

THE British Lighting Council stand at Liteshow '67 was devoted to a 'Home Lighting Week '67', which will operate nationally from October 30 to November 4 this year.

A 'Golden Opportunity' (for selling lighting) is to be the Home Lighting Week theme. It is cleverly emphasised in shop window and interior displays on the stand where gold and orange Oroglass panels and gold Lurex drapes are used with polystyrene cubes to demonstrate how a few inexpensive props, effectively combined with carefully selected colour, can give dramatic unity to an assorted variety of lighting fittings.

This 'Golden Opportunity' theme will be echoed throughout the promotional literature, showcards and tickets the B.L.C. is preparing for the Week.

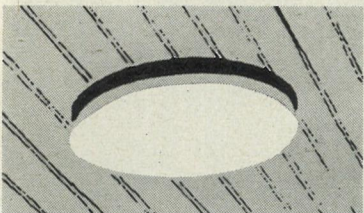
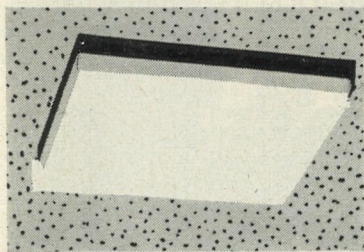
The B.L.C. is to announce detailed plans in July and will be pleased to hear from retailers who wish to participate.

Duet

And Tungstyle

TWO NEW MAJOR ADDITIONS TO THE ADVANCED EKCO-ENSIGN RANGE OF MODERN FITTINGS

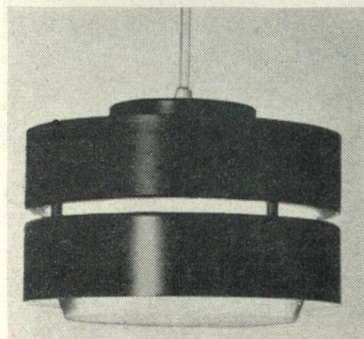
Two important major additions to the 1966/67 range of Ekco Lighting fittings are announced by Ekco-Ensign Electric Ltd. First of these is the Ekco Duet range of fluorescent fittings. These



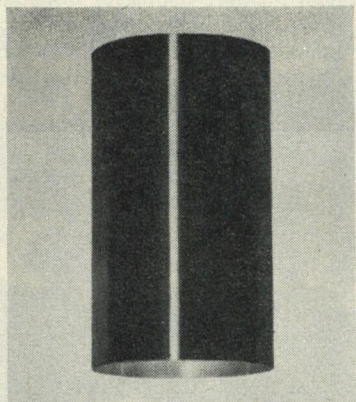
(Top) The Ekco Duet Circular and (immediately above) the Ekco Duet Modular

contemporary black-and-white ceiling fittings have been specially developed by Ekco-Ensign engineers to achieve the highest standards of design, manufacture and performance. The clean lines and continental styling of the Duet fittings make them ideally suitable for municipal, commercial and other lighting applications, and particularly for interiors where modern decorative techniques are employed.

In addition to its stimulating appearance, the range incorporates many technical features not normally included in this class of equipment. Sealed to reduce the ingress of dust and with provision for continuous mounting and grouping, this most advanced range is a marked



A unit from the Tungstyle Opal range

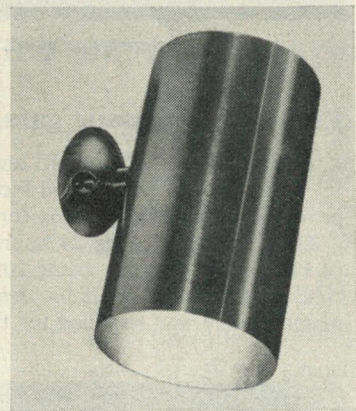


A fitting from the Tungstyle Cylindrical Range. These are suitable for Ekco BC lamps up to 150W.

departure from conventional lighting design practice.

Modular and non-modular types are obtainable from stock and an opal circular diffuser model will soon be available.

The second addition is the Ekco Tungstyle range of lighting fittings. This versatile and sophisticated range of modern tungsten



Wall mounting version from the Tungstyle Cylindrical Range

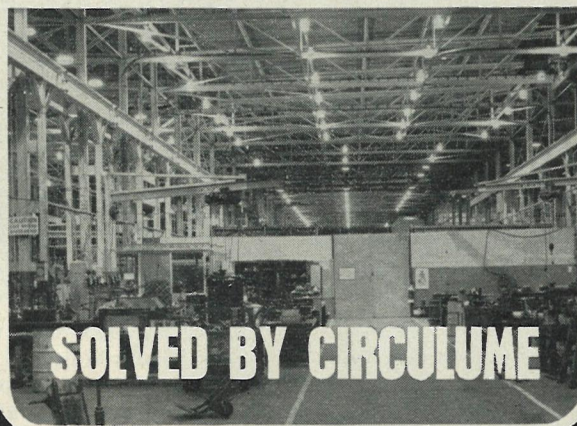
lamp fittings has been designed to complement the decor of high class hotels and restaurants, show-rooms and boutiques, prestige foyers, reception areas and other locations. Three basic styles can be combined with a number of attachments to provide over 150 single or multi lamp suspension arrangements.

Catalogues illustrating and describing the Ekco "Duet" and "Tungstyle" ranges of lighting fittings are available now from Ekco-Ensign Electric Ltd.

For more information use Reader Service Form quoting LEN 132

PROBLEM:

HOW TO IMPROVE THE LIGHTING EFFICIENCY IN ESSO'S CENTRAL MAINTENANCE BUILDING AT FAWLEY



SOLVED BY CIRCULUME

£11,718 gross savings
per annum with Circulume Hilite

One of the largest and most modern refineries in Europe, the Esso plant at Fawley, proves without doubt the efficiency, economy, superiority of Circulume mercury fluorescent lighting for industrial applications.

The reduction in maintenance and running cost achieved at Fawley by Circulume:

a) Electricity costs:	£9,391
b) Lamp costs:	£ 823
c) Relamping and cleaning costs:	£1,504

£11,718

How was this achieved? The high efficiency of Circulume Hilite fittings with MBFR/U lamps produces the same lumen output using less than half the electricity required by tungsten. And because they have a much longer life span, maintenance and replacement costs are dramatically down.

The Circular Integral Ballast—invented by Circulume—is coupled directly to existing lighting fittings or supplied as an integral part of new units, eliminating cumbersome and expensive brick-type control gear.

Increase your lighting efficiency and save money too! Write today for full information on the modern *economic* way of lighting all industrial premises.

CIRCULUME LTD.

VICTORIA WORKS • LAVINIA STREET • MANCHESTER 8.

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Telephone: 7005

CL7

NEW INSTALLATIONS

Motorway Lighting



Lighting on the Port Talbot motorway

MORE than 300 Osram-G.E.C. lanterns have been used to light the new £5 million Port Talbot Motorway, South Wales.

The 4-mile long dual carriageway is lit by 292 semi cut-off lanterns, equipped with 150W Osram SOX lamps. Approach roads are lit by 20 similar cut-off lanterns, each equipped with a 1,000W SOX lamp.

Each lantern is attached to 12 ft long outreach brackets on 35 ft high tapered steel columns. Osram have also supplied all control gear.

The By-Pass, which in places rises 45 ft above the town on concrete pillars, is the first motorway in Wales to have continuous lighting. It was one of the worst traffic bottlenecks in Britain.

The project is under the control of the Department of the Secretary of State for Wales. The main consultants were Sir Owen Williams & Partners; the quantity surveyor: George Corderoy & Co; associated electrical engineers: Cairns and Byles Ltd; and the electrical contractors: Electrical Installations Ltd.

LEN 134

British Railways Module Installation



Revo modules used at Ealing Broadway

THE above photograph shows Ealing Broadway, one of the newest stations on British Railways Western Region.

The lighting scheme for this construction was designed by the Engineering Services Section of the Chief Civil Engineer of British Railways

Western Region, and fifty-nine Revo 4 ft by 2 ft recessed module fittings (thirty-eight twin-tube and twenty-one three tube fittings) were used in the booking hall and covered footbridge. The installation was carried out by the Electrical Contractors Service Electrical Co. Ltd., of Stanmore, Middlesex.

Photograph by courtesy of the Chief Civil Engineer, Western Region, British Rail.

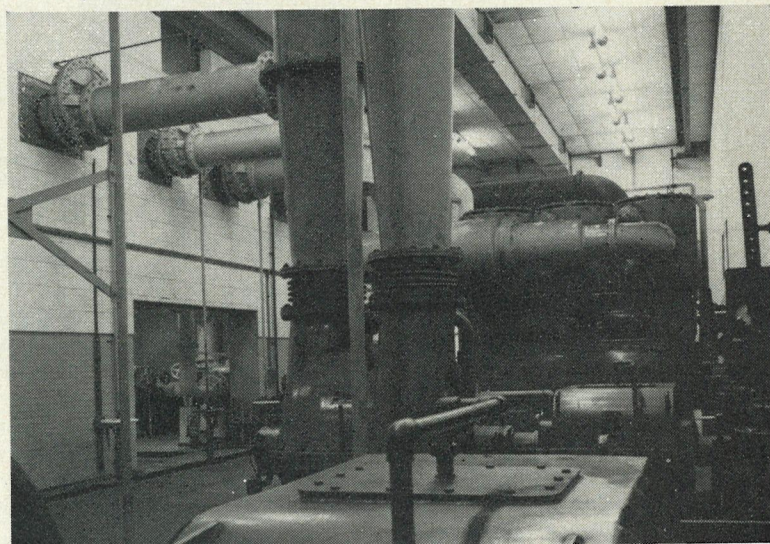
LEN 135

Flameproof fittings for Manchester compressor house

THE compression plant in the Bradford Road, Manchester compressor house, which consists mainly of diesel driven reciprocating compressors and high pressure boosters, is used to supply towns gas into medium and high pressure mains for distribution over the Greater Manchester area. Mazda 5 ft Flameproof fluorescent fittings have been installed for the lighting of the compressor house.

The fitting is a single ended design comprising cast aluminium end boxes, rigidly supported over the length of the fitting by a steel connecting tube. Control gear is mounted in one end casting. Neoprene gaskets are provided at each joint to make the fitting weatherproof and dust-tight. The Mazda 5 ft 80W fluorescent tube is protected by a toughened glass cylinder and is replaceable from one end of the fitting or from below.

LEN 136



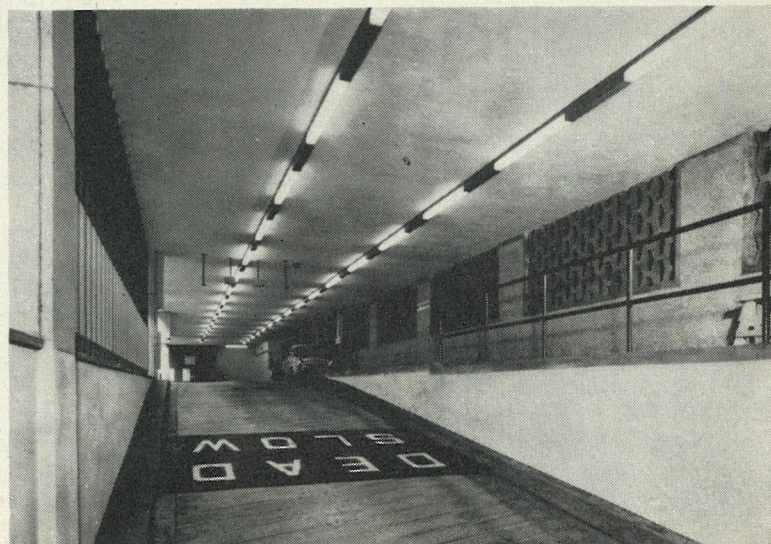
Compression plant, Bradford Road, Manchester

Europark automatic garage

SITUATED in the heart of London's Mayfair, and within a few minutes walk of Regent Street and Piccadilly Circus, the new Europark Garage provides under-cover parking for 500 cars.

The Car Park is open 24 hours a day and is believed to be the first of its kind in this country, being largely automatic.

A total of 185 specially designed EKCO fluorescent fittings were manufactured and supplied for the project. Each fitting consists of sheet



Europark garage with cover for over 500 cars

The Lighting Exhibition 1967

**The 1967 Lighting Exhibition
will be the largest of its kind ever
held in the United Kingdom — over twice
the size of the Lighting Exhibition held in 1965.**

Covering all types of lamps and lighting fittings, the Lighting Exhibition provides an outstanding chance for visitors to see and assess the latest developments from all over the world.

The Lighting Exhibition—entirely separate and self-contained—will be held in conjunction with the London International Engineering and Marine Exhibition.

Earls Court, London

25th April—4th May 1967

Opening hours: 10 a.m.—6 p.m. daily (closed Sunday, April 30)
Sponsored by the Electric Light Fittings Association, Ltd.
Organised by F. W. Bridges & Sons, Ltd.,
Commonwealth House, New Oxford Street, London, W.C.1.
Tel: CHAncery 9011. Cables: Indatfa London WC1. Telex: 262567.

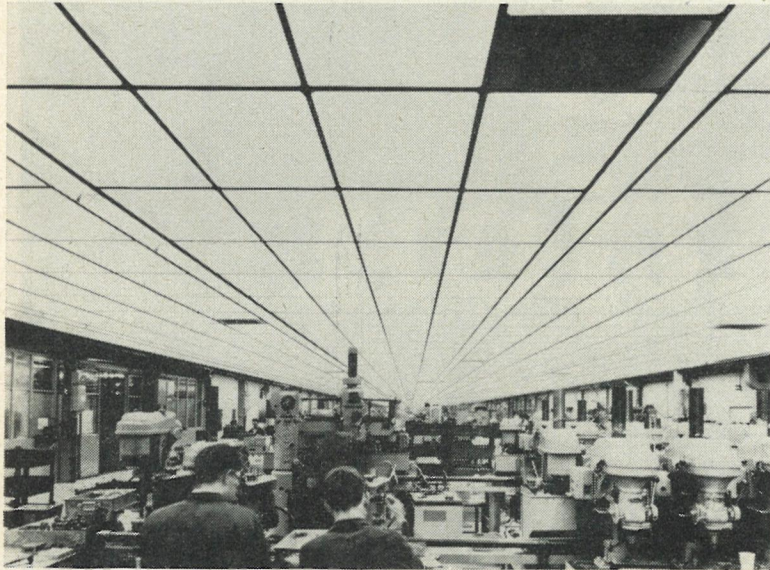
steel gear housing made in "Zintex" and finished in high quality epoxy resin white stove enamel. A square section opal plastic gasketed diffuser completes the unit, which has a separate gear tray to facilitate installation. The diffuser is arranged to fit inside the overlapping fitting metalwork, thereby rendering the fitting drip-proof.

In the drive-in Entrance area, there are two continuous rows of fluorescent fittings, each row comprising eight single tube units joined by a 2 ft long metal coupling piece of similar cross sectional size.

The Car Park was built under the direction of the City Engineer of the City of Westminster, as part of the Council's off-street parking programme.

LEN 138

Translucent ceiling for IBM Greenock



THE illustration shows the installation of a translucent ceiling covering 40,000 sq.ft, which has just been completed for IBM United Kingdom Ltd. at their Scottish Plant near Greenock.

Despite the fact that IBM's factory was only built in 1954, conditions had to be improved to suit modern techniques and advanced methods now used in the electronics field. The exclusion of dust, an evenly controlled temperature all the year round and reduction of solar heat gain during the summer months were essential. All these requirements were met by the use of a single system when the translucent ceiling installation was completed.

After considerable technical study of the project, I.B.M. decided to use the Thermalucut double-layer translucent PVC film ceiling manufactured by Isora Integrated Ceilings Ltd. of Slough, Bucks. Special panels 60 ins by 36 ins in size were made, incorporating natural film on the upper membrane and daylight blue film on the lower. The total light transmission factor of these two films is approximately 70%, so that one of the great benefits of the installation is that the client still enjoys ample natural daylight from the roof-lights above. A still air space of $1\frac{3}{16}$ ins is created between the two membranes giving excellent thermal insulation and virtually eliminating the problem of dirt and dust on the panels being visible from below. An even temperature of 70°F is now maintained during all seasons.

A notable feature of the installation is that the whole of the existing lighting scheme, consisting of 5 ft twin batten fluorescent fittings, was incorporated into the new ceiling and remains flush with the grid-work.

The entire ceiling installation of 40,000 sq.ft, was completed during the annual holiday close down period of three weeks by R. F. Morrison & Co. Ltd. of Drumchapel, Glasgow, Isora's Scottish Agents. LEN 139

Mercury lighting at Colwyn Bay

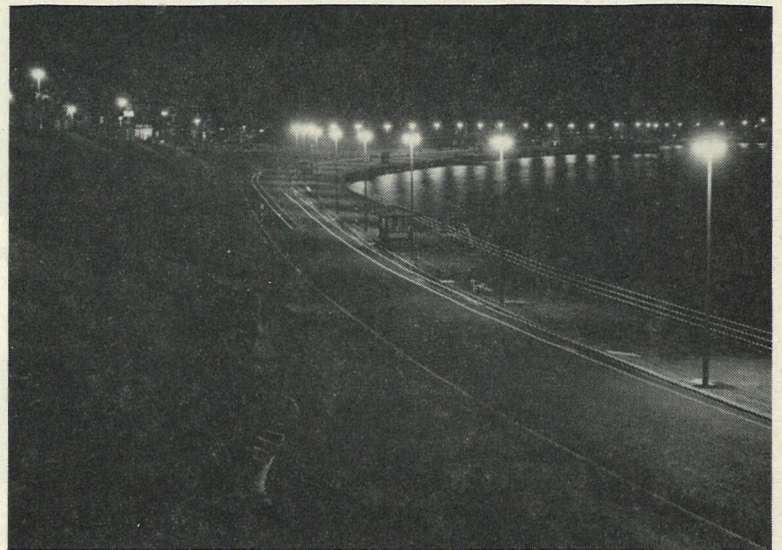
STREETLIGHTING lanterns similar to those in use in London's Oxford Street, have been installed along the entire length of the sea-front promenade at Colwyn Bay, North Wales.

The lanterns were designed by Osram-G.E.C. Ltd., the company which also lit Oxford Street.

The Colwyn Bay lanterns, supplied under a £12,000 contract, are octagonal in shape—a complete break from the conventional circular post-top lanterns found on most seaside promenades.

On the main promenade there are 131 lanterns, each containing three 400W mercury lamps, while on the elevated Cayley promenade, between Colwyn and Rhos-on-Sea, there are 28 lanterns, each containing three 125W mercury lamps. These lanterns have been specially designed to

match the 400W units. All the columns—of tapered galvanised steel—are spaced at 100 ft intervals. LEN 140



Street lighting on Colwyn Bay Seafront

Special fittings in office installation

USING nearly 700 fluorescent fittings, Atlas Lighting have recently provided the office lighting of the premises of Messrs. Tileman Estates Ltd., 131, Upper Richmond Road, Putney, S.W.15. Specially designed and manufactured by Atlas, the fittings are to the requirements of the architects Messrs Farmer & Dark who are also one of the tenants. The lighting intensities were designed to 40 L/sq.ft minimum.

A feature of the special design is that by the simple addition of control gear components the fittings may be easily converted from single to twin tube operation.

The six by one foot 65W and two by one foot 40W fluorescent fittings were made to fit into a ceiling specifically designed to integrate lighting



Office lighting on premises of Messrs. Tileman Estates Ltd

and air conditioning together with partitioning fixings on a strict three foot module.

The tenants of the building are Messrs. Tileman & Co., designers and constructors of power station chimneys, Farmer & Dark, architects and engineers; and Douglas Scott Associates, industrial designers, all of whom use a large part of their areas for drawing offices; and Messrs. Werff Fashions. LEN 141

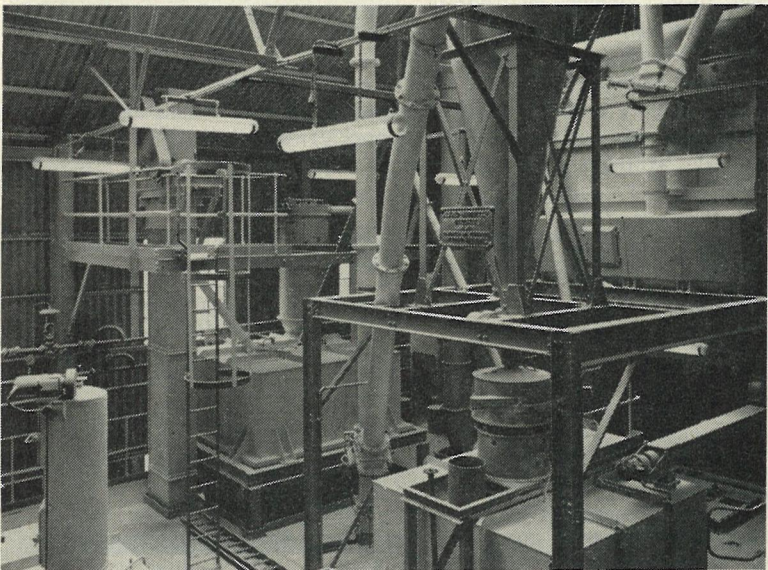
Vapour-proof fluorescent units in ASPP plant

FLUORESCENT lighting was used for a process line at the Oldbury chemical works of Albright & Wilson Ltd. when the new Acid Sodium Pyrophosphate (ASPP) plant came on stream earlier this year. The working conditions in the plant, which would have caused the rapid deterioration of normal lighting equipment, led to the selection of Crompton Parkinson Clenelite vapour- and dustproof fittings, and over 130

twin-tube units are installed in the plant.

The annual output of the plant will be some 7,000 tons of ASPP and about 4,000 tons of monosodium orthophosphate (MSP). ASPP is sold under the trade name Puron and is widely used in the baking industry, also in the tanning of leather, while the MSP is mainly exported for animal foodstuffs.

There is a bagging operation at the final section of the process line and it is mainly from this point that a certain amount of the finely milled



Oldbury chemical works ASPP plant

ASPP escapes to the atmosphere to settle on the equipment, floor, walls, pipework and lighting fittings.

Apart from the heat and vibration in the plant, it was because of the air-borne dust that enclosed lighting fittings were needed, and the Clenelites have proved completely satisfactory in use since the plant was brought into operation.

The accompanying photograph shows a group of the fittings just before cleaning under the established planned maintenance scheme. In some cases a deposit of ASPP and soda ash has built up to a depth of $\frac{1}{2}$ in on the upper surfaces of the fittings without causing any significant reduction in the level of illumination.

All the fittings are provided with plug and socket connections to facilitate maintenance. The neoprene seals at the ends of the Clenelites have been coated with MS4 silicone grease (produced by Midland Silicones, a member of the Albright & Wilson Group) to facilitate their removal for maintenance purposes and to enhance their sealing properties.

The new plant cost approximately £500,000 to build and all aspects of its design, including the lighting scheme, were handled by Albright & Wilson's own Central Engineering Department. The electrical contractors were Tanjon (Newcastle) Ltd. The process line is fully automated, and a total of 20 operatives are able to produce a higher tonnage than an existing plant employing 70 people.

LEN 142

LIGHTING CONSULTANTS *(from page 3)*

ation is undoubtedly complicated by the difficulty in accurately defining a lighting engineer and agreeing accepted standards of education and training. At the present time lighting specialists and consultants appear to be a mixture of architects with some design and electrical experience, electrical engineers with lighting knowledge and some feeling for design, and designers with a smattering of both architecture and electrical engineering.

Whether there is a need for more lighting consultants, with perhaps a proper pattern of training and recognition, or whether the present method of manufacturer-designed installations is best suited to today's needs, is a matter on which we should welcome opinions and comment. We would have thought that, on balance, there was a definite need for more properly trained independent lighting consultants, coupled with more emphasis on lighting, as opposed to electrical design, on the part of the electrical contractors themselves.

Control your lighting the modern way

with R.T.E. PHOTO-ELECTRIC EQUIPMENT

Note these points

DETECTOR

1. PATENTED DESIGN—SELF-CLEANING
2. SIMPLE FIXING—SINGLE $\frac{5}{8}$ " HOLE
3. NO INTERFERENCE WITH LANTERN DESIGN—BARELY NOTICEABLE
4. COMPLETELY WEATHERPROOF

CONTROL UNIT

1. PLUG-IN DESIGN
2. TEST SWITCH
3. FULLY ADJUSTABLE—EASILY ACCESSIBLE
4. LOWEST PRICE

The accepted design for both interior and exterior lighting control

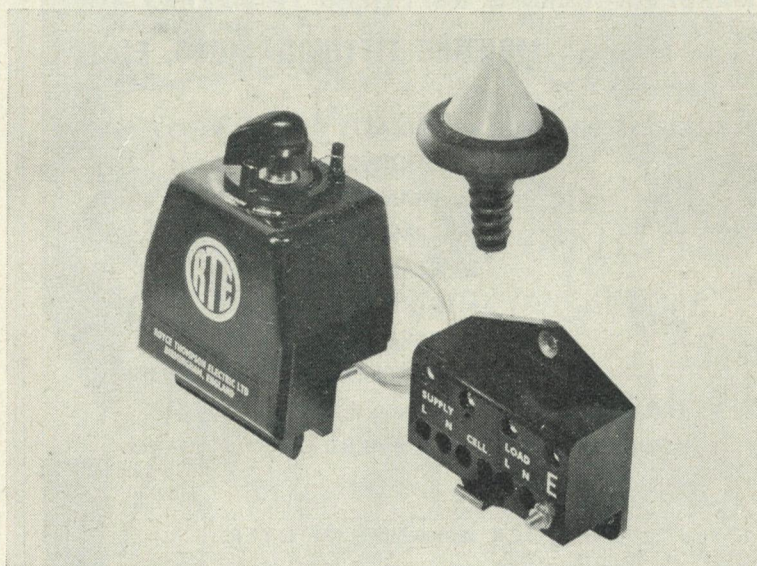
227 R.T.E. units control all roadway lighting on the Severn Bridge

Details from:

ROYCE THOMPSON ELECTRIC LTD.

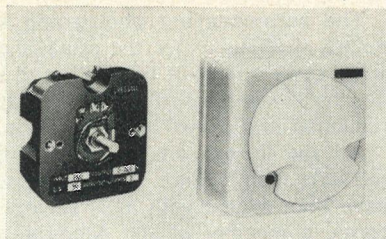
CHESTER WORKS · DENNIS ROAD · BIRMINGHAM 12

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SOLID STATE VOLTAGE CONTROLLER

Dimmer to Replace Switch



THE Cresall Manufacturing Company is now producing

the Thyristat, an addition to their range of power controllers. It is a robustly constructed solid state device with particular application to incandescent and fluorescent lamp dimming. Normally, the Thyristat replaces the conventional switch in lighting circuits while providing progressively smooth variation over the range from full brightness to blackout. The device may also be used as a speed controller for small power tools, fans etc. The controller is designed for use on standard a.c. single-phase supplies and is conservatively rated at 2A. Circuitry includes an on/off switch and r.f. interference suppression components. Encapsulation of the assembly provides sound electrical and mechanical protection and facilitates fitting the moulded module into a B.S. single-gang conduit system box. When the unit is employed for controlling fluorescent lamp circuits, an additional choke is required. The Thyristat is available in three standard versions: basic module, wall mounting unit, and a metal clad portable unit complete with 13A socket outlet. The company expects that considerable interest will be created in this product for all general and domestic applications. For circuits where there is a demand for heavier current, a larger type of unit is required. The company manufactures industrial type units to satisfy this demand in ratings of 5 A, 10 A and 20 A. Units are available with normal a.c. input voltage ratings of 210 to 250 r.m.s.

Prices: Basic module £6; wall mounting model, £6 10s; 13 A portable model with socket, £7.

Delivery: ex stock.

For more information use Reader Service Form quoting LEN 144

PUSH-ON CONNECTORS

Pin Connector System

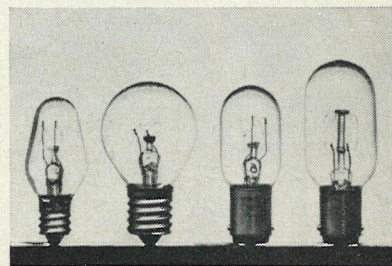
ANNIS and Cox (Tools) Ltd. are manufacturing a new series of components for fluorescent fittings which incorporate pin connectors for use with barrel push-on terminals instead of the more usual soldered connections. These components are already being used by a major fittings manufacturer and others are likely to adopt the same system. The new connectors are not only cheaper than the older arrangement but considerably speed-up production processes.

Price and delivery: on application.

For more information use Reader Service Form quoting LEN 146

APPLIANCE LAMPS

Shock Resistant Range



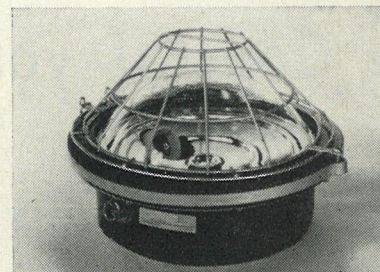
DEVELOPMENT of a shock-resistant incandescent appliance lamp has been announced by **Sylvania International**. The lamp was made possible by advances in metallurgy and coil technology resulting in the development of a pliable filament through the addition of rare earth metals to tungsten. The combination resulted in a shock absorbant alloy highly efficient in shock or vibration applications. The new lamp is available in two 10 W sizes, a 10-15 W version and a 25 W size (illustrated left to right). The new lamps are designed for use in freezers, washing machines, and where vibration levels are an important factor.

Price and delivery: on application.

For more information use Reader Service Form quoting LEN 147

RUBBER LIGHTING UNITS

Portable Lamps for interior and exterior use



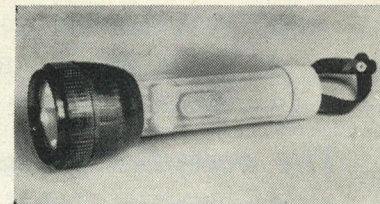
ADJUSTALITE Ltd. are distributing the Indalux range of portable rubber lighting units. Models include fluorescent hand-lamps. Magnetic limpet fittings, waterproof fittings, all-round floor or wall units (illustrated) and clamp-on lighting units for workshop use. Also supplied are tripod units suitable for rough ground, such as building sites. The tripod is adjustable in height from 5 ft 7 in to 9 ft. The unit is adjustable for sloping ground of up to 1:1, 25 gradient.

Prices and delivery: on application.

For more information use Reader Service Form quoting LEN 148

WEATHERPROOF AND WATER RESISTANT TORCH

For Continuous or Flashing Light



THE Aqualite torch from **Lyvia of London Ltd.** runs on two mono-cell batteries and is completely weatherproof and water resistant. The torch is 8½ in long with a 2 in diameter reflector. There are two switches set inside soft plastic, one is for continuous light and the other for a blinking light. An unusual feature of this all plastic torch is that it floats and cannot therefore be lost. For this reason it is invaluable to boatmen, fishermen, underwater swimmers, etc. It also has a wrist strap attached to the end, for use underwater and the screw end is made watertight with a washer.

Price: 8s 10d plus tax.

Delivery: ex stock.

For more information use Reader Service Form quoting LEN 149



SMART & BROWN LIGHTING LTD.,

**MANUFACTURERS & SUPPLIERS TO MAKERS OF
LIGHTING FITTINGS, SIGNS, Etc.**

FLUORESCENT LAMP

- BALLASTS
- CHOKES
- TRANSFORMERS
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- STARTER SWITCHES
- STARTER HOLDERS
- TERMINAL BLOCKS
- BATTERY OPERATED UNITS
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For more information use Reader Service Form quoting LEN 145

Trade Publications

Victor Products (Wallsend) Ltd. have published two leaflets. The first describes the use of their Victor flameproof and weatherproof fluorescent fittings for garage pit lighting. The second leaflet describes a new product, the Victor flameproof switch unit which consists of two micro-switches mounted in tandem with an electrical rating of 250V at 10A.

LEN 150

Denco Accessories Ltd. state that in view of the withdrawal of the 10% import surcharge last December it has been possible to reduce the prices of most of the articles that they import. They have therefore issued a new price list which covers all the items shown in their illustrated catalogue and the new additional lines such as burglar alarms and cycle dynamo headlamps.

LEN 151

A new leaflet, No. E2 is now available from **Bill Switchgear Ltd** for inclusion in the current catalogue. This leaflet deals with the company's extended range of standard busbar chambers which now embodies a range of 400A capacity.

LEN 152

A 32-page booklet for the amateur photographer called *Better Pictures* has been produced by **Osram-G.E.C. Ltd.** The booklet discusses the nature of flashbulbs and methods of exposure calculation, as well as the general characteristics of tungsten filament photographic lamps. A special section is devoted to the requirements of colour, and lighting technique is also evaluated. A glossary of lighting terms is included. The booklet, size 8 in x 5 in is available free.

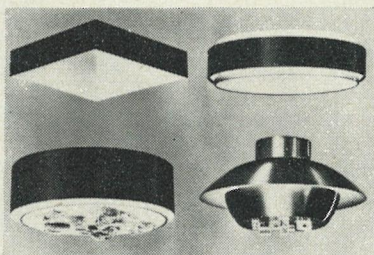
LEN 153

An informative brochure on the automatic photoelectric control of street and road lighting has been prepared by **Tork Time Controls Ltd.** Listed as No. 121, the 8-page brochure offers full information on photoelectric controls and provides the answers to many questions on the dusk-to-dawn control of street lighting. The brochure is designed as a working manual and reference guide for the engineer specifying lighting controls.

LEN 154

OSRAM ADDS 34 FITTINGS TO RAAK RANGE

300 Variations Available



THIRTY-FOUR lighting fittings have been added to their successful Raak range by **Osram-G.E.C. Ltd.**

The complete range of distinctive designs now enables the manufacturers to offer a choice of 300 variations to cater for domestic and commercial use. Outstanding among the new pendants is a choice of a white anodised metal or copper cone-shaped fitting (F30177) set with colourful crystals. Another (F30178) is constructed of two metal reflector bowls of 13 in diameter, separated by a transparent plastic float. At the base of the lower bowl is a black louvre allowing clear downward light. Three silver anodised cylindrical fittings, available in ceiling mounted and pendant versions are designed to provide maximum lighting flexibility. One of the cylinders has a diaphragm which renders radiated light 'invisible' to the eye, the second has an inner cylinder of transparent material, while the third has an enclosed base of pure rock crystals. The fittings illustrated include the F45605 (top left) a square metal ceiling fitting with pure white plastic pyramid diffuser and black metal rim; the F45614 (right) a ceiling mounting circular fitting with black floating rim supporting a louvre of glossy white nylon rings; the F45618 (bottom left) a metal ceiling fitting framed by a glass panel studded with glass crystals; and the F30176 (right) a copper pendant fitting with a circular top reflector and a lower circular reflector pierced by transparent studs. A new standard lamp is included in the range. It consists of a choice of grey-violet or clear glass spheres into which is built a silver anodised reflector with spotlight. The head can be swivelled in any direction.

Price and delivery: on application.

For more information use Reader Service Form quoting LEN 155

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When replying direct to advertisers, kindly mention **LIGHTING EQUIPMENT NEWS**. Alternatively, please use Reader Service Form (between pages 16 and 17).

Classified Advertisements

BUSINESS OPPORTUNITIES

A Company specialising in wholesaling lighting equipment, offer the business for sale. At the present time there is an extremely healthy order book, also a vast amount of business to come in within the next few months. The selling price will be around £10,000. Genuine enquiries only to Box C.002, "Lighting Equipment News", 35 Red Lion Square, London, W.C.1.

C002

DAVIS, CASH & CO LTD

Lighting Specialists

ESTB. 1862

SORRY!

We have nothing to sell except our brains and manufacturing skills

WE MAKE ANY TYPE OF LIGHTING FITTING TO SPECIFICATION

We are manufacturers of all types of special tungsten and fluorescent lighting fittings and specialists in sheet metal and light engineering

NOTHING IS TOO LARGE OR SMALL

Architects and consultants specially catered for

DAVIS, CASH & CO LTD

METALCRAFT WORKS (OFF ALEXANDRA ROAD)
PONDERS END, ENFIELD, MDDX, TEL: HOW 4028-9

For more information use Reader Service Form quoting LEN 156

EMERGENCY LANTERN

Small Unit for General Use

A SMALL round working lantern has been added to the existing range of lanterns from **Lyvia of London Ltd.** It has two on/off switches—white for a continuous beam and red for a flashing emergency light. Power is supplied by two mono-cell batteries housed in the base.

Price: 12s 6d plus tax.

Delivery: ex stock.

For more information use Reader Service Form quoting LEN 157



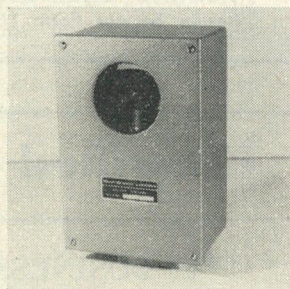
LONG RANGE LIGHT PROJECTOR

Unit for Ranges up to 75 ft

HIRD-BROWN Ltd. have announced the availability of a long-range light projector for use primarily in photo-electric applications. The unit, called the WP, incorporates its own mains transformer to supply the 12 V, 21 W tungsten filament lamp, and the optical system consists of a $3\frac{1}{2}$ in high accuracy parabolic mirror complete with adjustment mechanism. The projector is designed to give ample light for photo-electric purposes at ranges up to 75 ft and an infra-red filter may be fitted if required.

Price and delivery: on application.

For more information use Reader Service Form quoting LEN 158



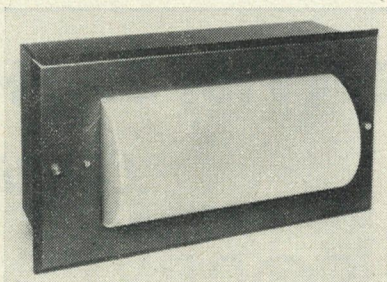
SECUNDALUX MARK III

Self-Contained Lighting Unit

RANK Audio Visual Division have incorporated modifications in the Secundalux Mark III, claimed as the only self-contained lighting unit meeting the special safety regulations demanded by local licensing authorities. The height of the lighting box has been increased to nine inches to improve access to the accumulators and bulbs. An extension to the range of the voltage selector has been made to accommodate power supplies between 105 V and 250 V. A detailed new leaflet has been produced incorporating all the modifications.

Prices and delivery: on application.

For more information use Reader Service Form quoting LEN 159



DECORATIVE FITTINGS FROM OSRAM

Additions to Conquest Range

SEVEN fittings are being added to **Osram-G.E.C. Ltd.** Conquest range. The new fittings are finished in satin silver aluminium, unlike the older models which are finished in copper bronze. Each fitting is designed so that the light source cannot be seen from normal angles of view.

Prices: from £3 6s 3d to £11 4s 0d.

Delivery: on application.



For more information use Reader Service Form quoting LEN 160

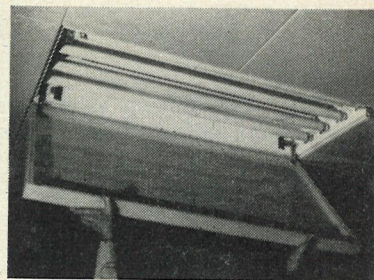
MODULAR LIGHT FITTINGS

707 Frameless Series

ALLOM Heffer have announced the introduction of the 707 frameless series of lighting fittings. The series has been designed for quick and easy maintenance. Fittings are available in both recessed and surface mounting versions in the following modules as standard: 1 ft x 1 ft, 2 ft x 2 ft, 4 ft x 2 ft, 6 ft x 2 ft, 4 ft x 1 ft, and 5 ft x 1 ft but other sizes are also produced. Prismatic diffusers are standard alternatives to opal diffusers. A version of the 6 ft x 2 ft module is available for the new 6 ft 85 W lamps.

Prices and delivery: on application.

For more information use Reader Service Form quoting LEN 161



1500W ELECTRONIC DIMMER MODULE

Self-Contained Unit

TO meet the requirements of electrical installation engineers needing a compact dimmer unit for small scale lighting control, **Electro-sonic Ltd.** have introduced a 1500 W self-contained electronic dimmer module. It is designed for incorporation into control panels where its sturdy design will give a professional appearance to one-off installations. It is also well suited for use with light-weight portable equipment used in sales presentations, fashion shows, etc. Each dimmer is independent but any number can be racked together to give multi channel facilities. Control is by a quadrant lever with an engraved perspex scale $3\frac{1}{2}$ in long.

Price: £17 10s 0d.

Delivery: ex stock.

For more information use Reader Service Form quoting LEN 162



COLOUR CABARET DECORATIVE FITTINGS

Seven Osram Pendants

THE Colour Cabaret fittings are the latest additions to **Osram-G.E.C. Ltd.** successful low-cost C range. Hanging singly or in groups, the new glasses can be used to create splashes of colour in the home, hotels, bars and similar situations.

Price: £3 1s 4d each.

Delivery: ex stock.

For more information use Reader Service Form quoting LEN 163



KIT FOR ADAPTING LANTERNS FOR PHOTOELECTRIC CONTROL

Alternative to Time Switch

AN adaptor kit, to facilitate adding three-prong locking receptacles to most lanterns, is now available from **Tork Time Controls Ltd.** Once fitted with the receptacle the lantern will accept the standard 3-prong lock-plug photoelectric control so that lighting is turned on automatically when daylight diminishes and is turned off at dawn, when no longer required. The 3-prong lock-plug photoelectric control does not require an electrician to install or replace it. Unlike a time switch, it can be installed or replaced by any maintenance personnel. The kit, catalogued as K20, consists of a receptacle, spacer, $\frac{1}{4}$ in gasket, and locking washer so that the control can be readily oriented in the proper direction and maintained at the proper height on the lantern or column.

Price and delivery: on application.

For more information use Reader Service Form quoting LEN 164