

THE

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Vol. CXXXV. No. 3510. Friday, September 7, 1945.

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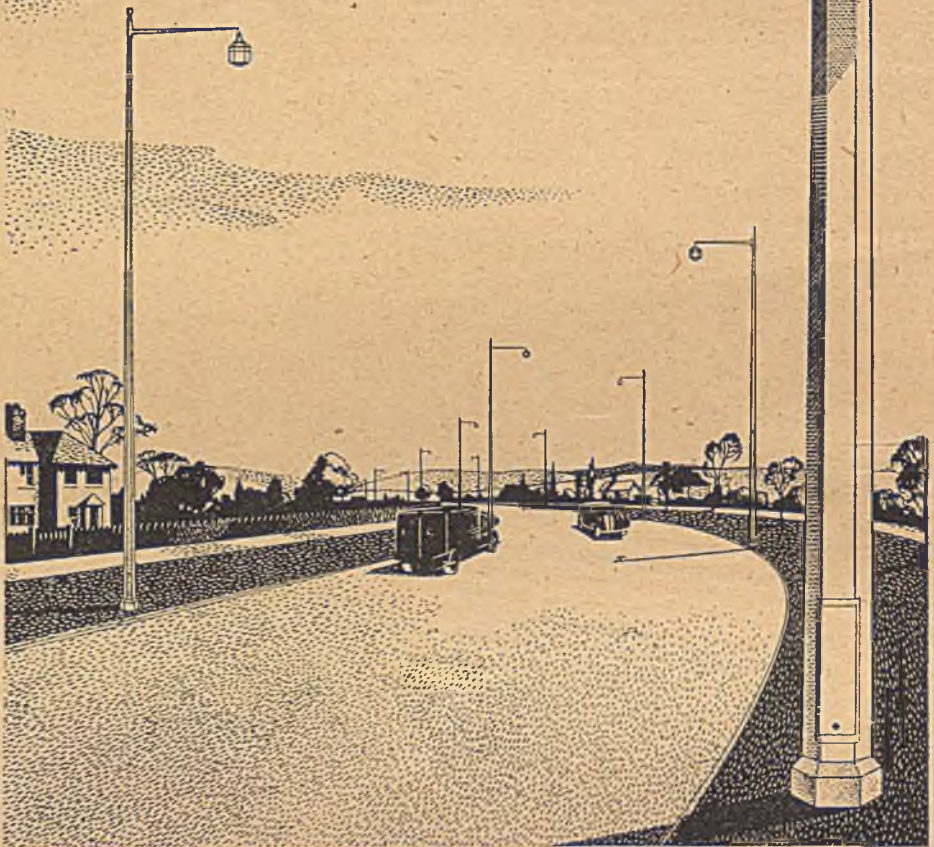
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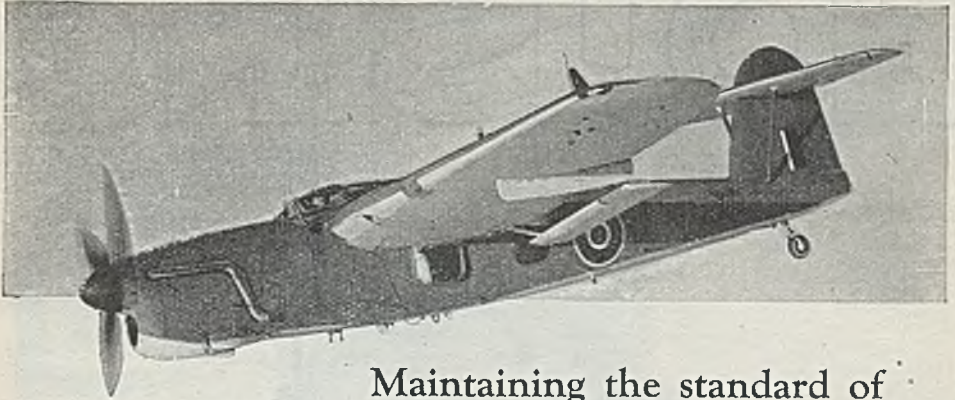
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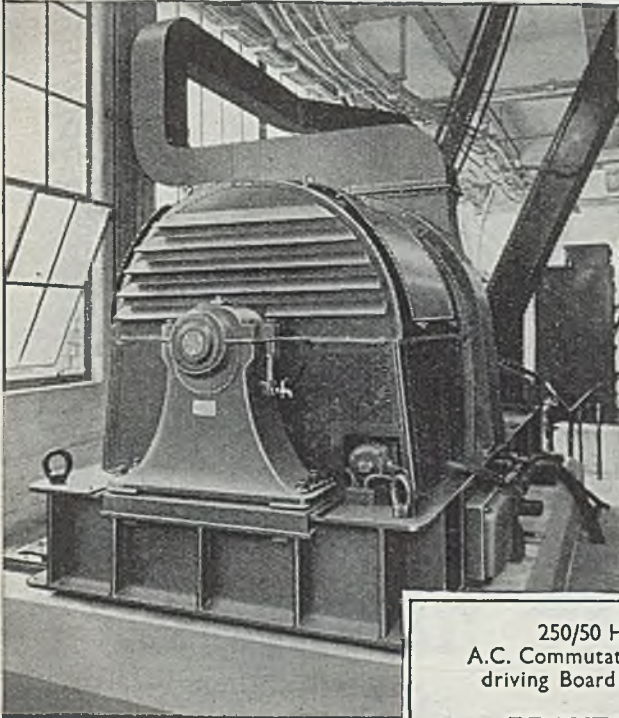
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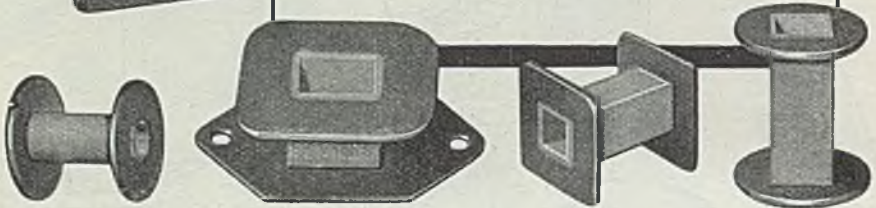
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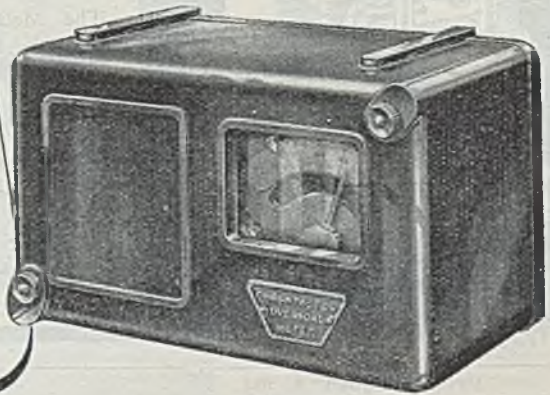
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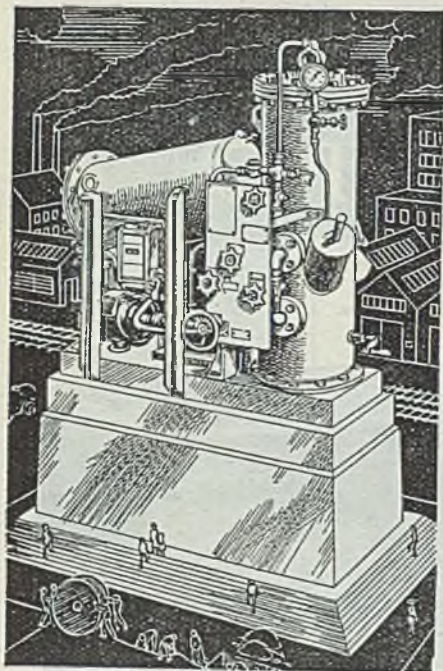
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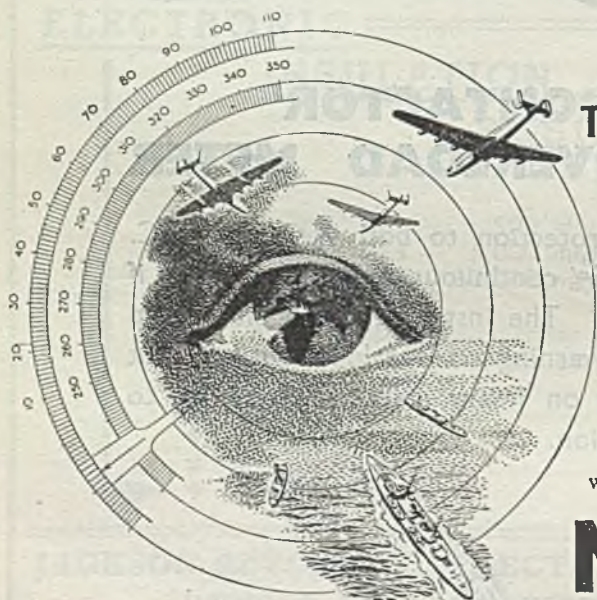
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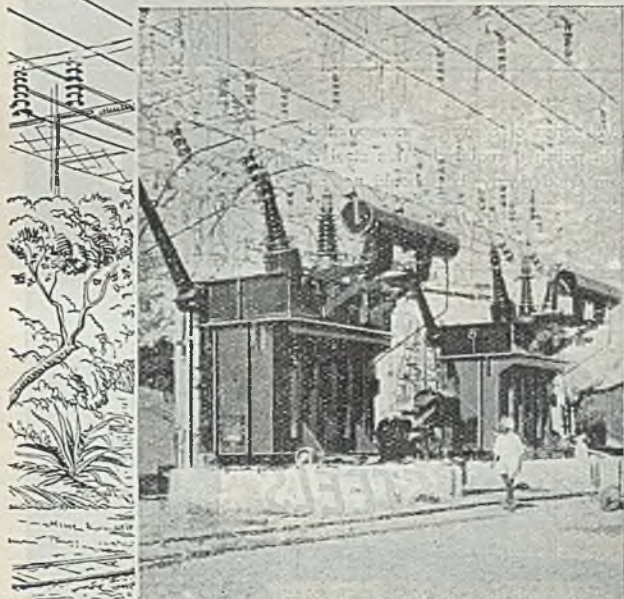
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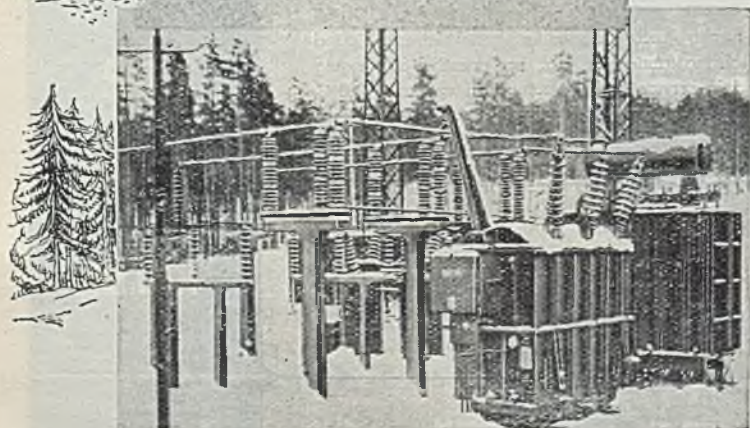
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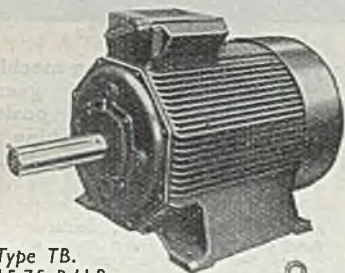
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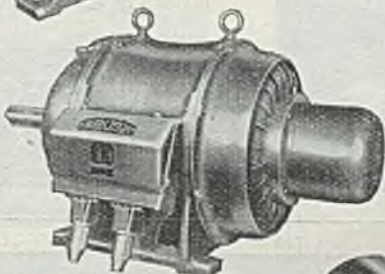
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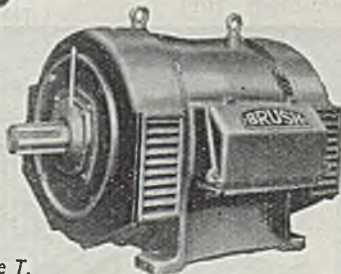
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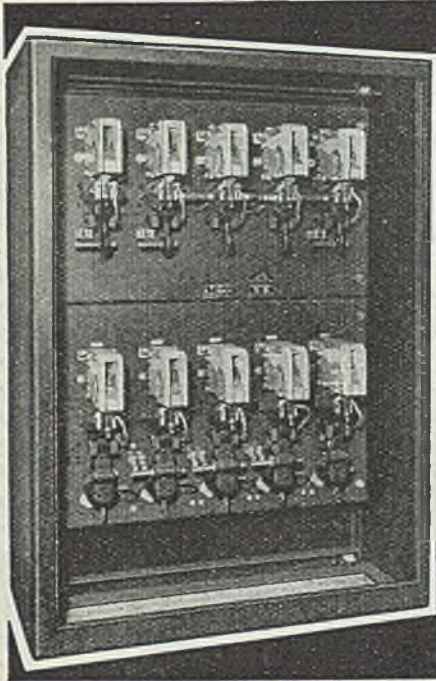
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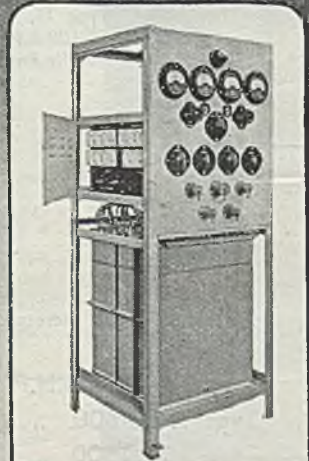
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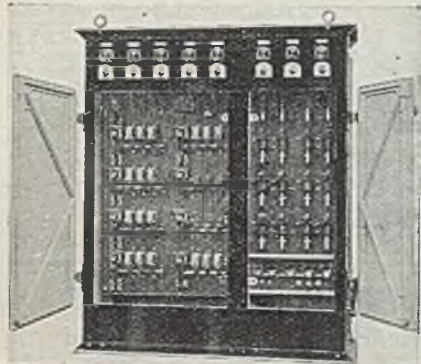


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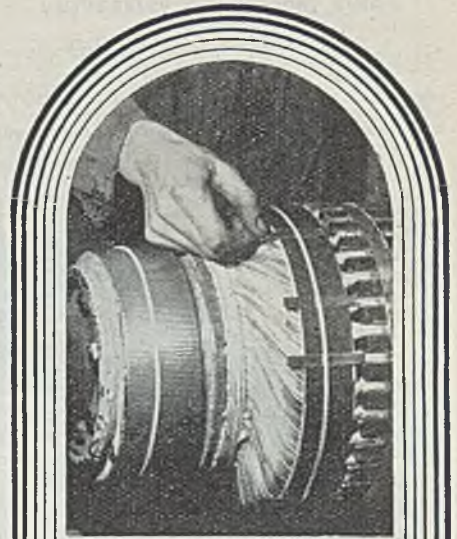
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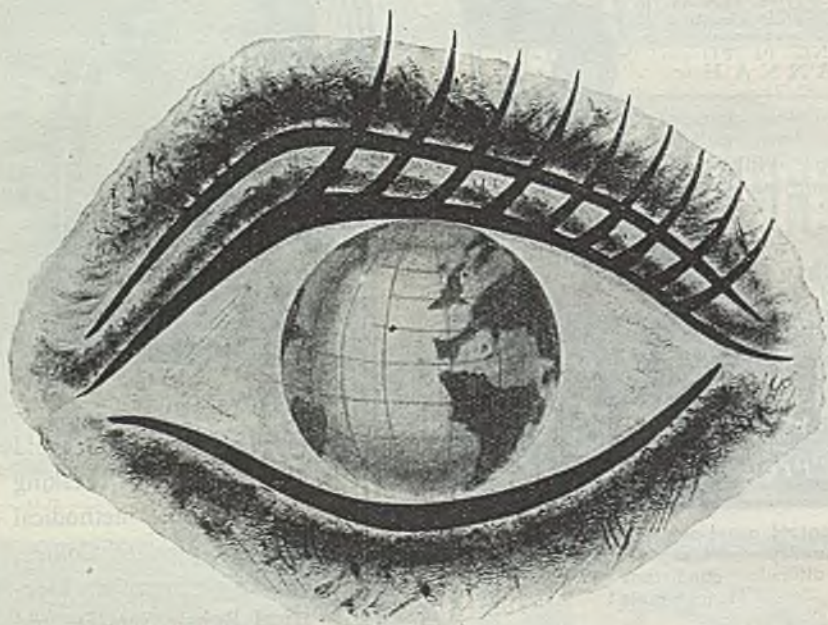
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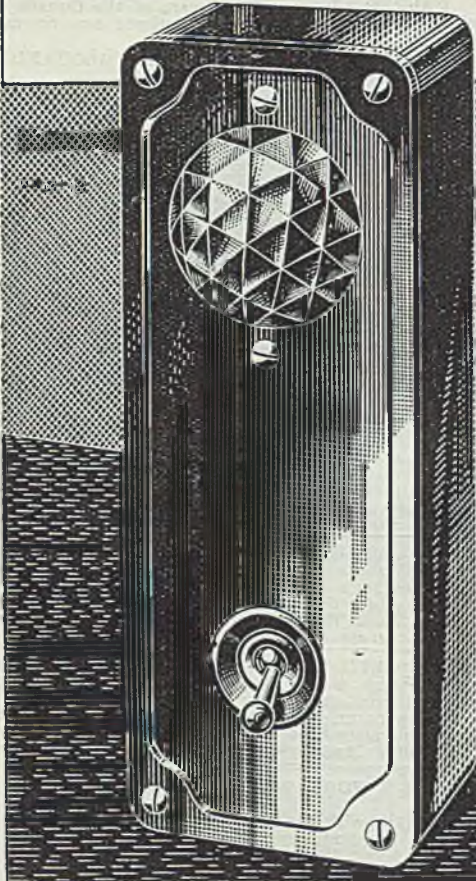
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No. 3510. [Vol. ^{No. 10} CXXXV]

September 7, 1945

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Public Lighting

A PART from the fact that it will be the first conference associated with the electrical industry to be held since VJ day, the arrangements made by the Association of Public Lighting Engineers for their gathering next week, all point to the occasion being of special interest from a technical angle. As we have said before, the problems of public lighting are not easy of solution because local authorities, reluctant to lose their grip on the control of street lighting, in their respective areas, are unsympathetic to the idea of a national standard.

The present patchwork of light and shadow which makes night travelling on our roads more dangerous than need be is the result, not of the public lighting engineer's conception of what street lighting should be, but is solely due to the independent action taken by local authorities with respect to what is considered by them to be adequate lighting.

It is about that point of adequacy that most of our street lighting troubles are centred, for many authorities, content to relate street lighting to their local needs,

make no provision for continuing through their streets the standard of lighting set by their neighbours.

This is borne out by the fact that many instances are to be found where the motorist, or pedestrian, after passing through an area illuminated by electric discharge or fluorescent lighting enters an area lighted by an early installation of low-wattage incandescent lamps, or vice versa, and some time must elapse before his or her vision becomes adjusted to the new conditions.

The question of standard, it will be appreciated, is not one of equipment or type of lighting, but is concerned only with the degree of illumination on the road surface, the elimination of "dark pools" between lighting standards, and ability to see ahead over distances sufficient to permit of evasive action being taken if required.

The meeting at Glasgow next week will doubtless, between the sessions, permit of discussion of these points, but unfortunately, definite action with a view to a national acceptance of any standard is beyond the scope of the lighting engineer, and, apart from preaching the gospel of enlightenment, there is nothing he can do.

From a technical efficiency standpoint, the equipment available to local authorities is far in advance of the conceptions of many street lighting committees, for the number who have made the most of modern lighting developments are, when the country is reviewed as a whole, relatively few. For this reason there appears to be scope for some sort of national drive with better street lighting as its object. The Government has expressed a hope for continued employment during the transition period, and the making of the necessary standards, lan-



terns and fittings for satisfactory street lighting throughout the country would go some way to realising that hope. Many existing street lighting installations are already overdue for renewal and but for the material and labour shortages would have already given way to more modern equipment. In the circumstances the suggestion of a national standard, and the release of men and material to permit of the standard being put into practical effect, should meet with sympathetic treatment at the hands of Government departments.

An Electric Heating Problem

WITH the autumn mornings and evenings rapidly descending upon us, the general public will once again turn to the portable electric fire for warmth. In other times the electrical industry would not only welcome this recognition of the convenience of electricity, but would at the same time be conducting campaigns to encourage it. To-day, however, the Ministry of Fuel has so handicapped the supply industry by its handling of the coal position, and the Ministry of Production so crippled the normal programme of generating station extensions, that the industry must view with some misgiving the possibility of this autumn load. There have during the summer months been issued various warnings about the coal situation during the coming winter, but the public, unless specially advised in the matter, may not necessarily associate those warnings with electricity consumption. Indeed, they may, on the other hand, turn to electric heating as a means of saving their coal stocks until full-day heating becomes necessary. In the circumstances the time seems none too early for the industry to resume its economy drive where consumption is concerned in order that load shedding may be avoided as much as possible.

Price of Government Policy

IT is true that with a reduction in the production of war equipment there may prove to be an alteration in the times of the peak load, but until that is determined otherwise the load period must be assumed to be as before. The Ministry of Fuel has left us in no doubt that we may expect a shedding of load during the winter, and if the autumn temperatures drop below normal it may

come sooner than is anticipated. The public should, in our view, therefore, be appealed to, and at the same time be advised in no uncertain manner that the inconvenience to which they may be put is in no way the responsibility of the industry. The reason for the shedding of load should be explained, and the fact that the Government would not listen to the industry's anticipation of the present shortage of generating capacity should be driven home. Electricity as a service has been brow-beaten enough at the hands of Governments, past and present, and it is time that the public were made to realise that the inconveniences they were called upon to suffer last winter, and may be called upon to endure again, were and are in no way due to the industry itself. The present position was anticipated in 1940, and the Government was advised of it; the Production Executive, however, took no appreciable action in the matter.

Big Indian Power Scheme

AN Indian parallel to the Tennessee valley scheme is envisaged in the project for the economic development of the Damodar river valley in Bihar and Bengal, investigations and surveys in connection with which are to be pushed ahead. The scheme of the Central Technical Power Board, estimated to cost £41 000 000, provides for the utilisation of the river and its tributaries for irrigation and the generation of electricity, and it is anticipated that it will bring very substantial economic and social advantages to millions of people in the Damodar valley and other areas. The installed capacity for the generation of electrical power at present is approximately 137 000 kW. The project provides for an inter-connected system of hydro-electric and thermal power stations, with a generating capacity of 350 000 kW, generating at a substantially lower average cost.

Our Returning Atlantic Liners

WITH the rapid return to the United States of the American Forces which took part in the defeat of Germany and her allies, it is anticipated that those that remain of our Atlantic liners will soon be sailing on their trans-Atlantic trade routes. As these ships will for military reasons have been stripped of their peace-time appoint-

ments, they will before resuming their normal passenger service need to be refitted, and the opportunity will thus present itself for including among the vessels' fittings such modern applications of electricity as fluorescent lighting, and so on. Many of the liners were built in British yards a good many years before the war, and their cooking equipment, judged by present-day standards, may not be of the best; in the circumstances their post-war refit will permit in most cases of modern electric cooking being installed, to say nothing of other electrical services which they may now lack. Ships of the type in question may be regarded as British ambassadors, and all who sail in them should have about them the best that British engineering can offer, in that by their degree of comfort so will the enterprise, initiative and ability of the country be judged. Given a free hand in the matter, the electrical industry would set an example to the world. The electrical equipment of the liner *QUEEN ELIZABETH*, planned before the war and described in our last issue, is an illustration of what can be done. Even this can be improved upon, following new developments.

A Transport Handicap

THE trend of development in the United Kingdom, and overseas, is towards the concentration of the generation of electricity in large stations and the use of high voltage transmission to cover greater distances. This necessitates the use of larger transformers. In the production of these and other heavy pieces of machinery, British manufacturers are seriously handicapped by transport difficulties, and attention is drawn to these by the B.E.A.M.A. Traffic Committee in a memorandum just published. They show that rail facilities are no longer adequate for certain electrical plant already manufactured and that rail transport of equipment now contemplated will not be possible. The industry, therefore, must rely on road transport, and the Ministry of Transport is being urged to give some indication of post-war limitations on size and weight. The present limits do not give electrical designers the scope required by projected developments and which is available to competitors in overseas markets. The industry is asking for facilities to enable pieces up to 33 ft. long, 15 ft. 6 in. wide,

18 ft. 7 in. high, and weighing 210 tons, to be moved over selected routes. Loads exceeding these dimensions have been transported by road in America and on the Continent.

Radio Industry's Peace-time Tasks

IF the official encouragement and support promised by Sir STAFFORD CRIPPS at the luncheon of the Radio Industry Council in London on Friday, is backed up with the provision of the necessary labour and materials, and freedom from cramping restrictions and control, the British radio industry can be relied upon to play a useful part in increasing our export trade. As the President of the Board of Trade pointed out, the industry has not only to meet the great arrears of demand for wireless sets and all forms of wireless transmission and reception, consequent upon the war, at home and overseas, but it has before it also the task of developing television and turning radar to its peace-time uses. As to radar, the industry, with the experience and technical knowledge gained during the war in meeting the tremendous and varying demands of the three Services, is in an advantageous position, and should be able to dominate a new field that is essentially its own and supply European and other overseas markets with radar equipment, unsurpassed in quality and performance.

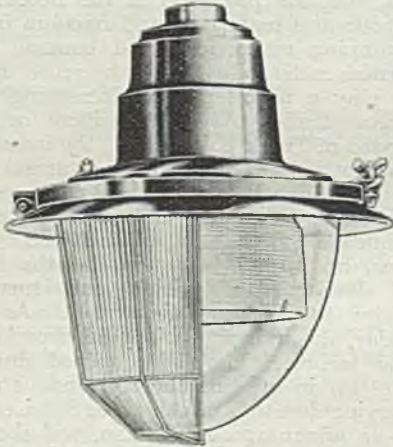
Television Fears

WITH regard to television the British radio industry is showing some uneasiness because of reported preparations by American producers to have sets in mass production and on the market early next year, and also because manufacturers in this country have not yet available a transmission service for testing purposes. At a meeting of the Television Development Committee of the Radio Industry Council last week the chairman declared that if the British industry did not move at once it would be too late. The Council is, therefore, asking the Government to introduce immediately a television still-pattern picture transmission from the Alexandra Palace, London, to enable sets to be tested and to assist in the training of workers. Given facilities for an early start the industry is confident of recovering and maintaining its pre-war lead not only at home, but also in the world markets.

The A.P.L.E. Conference

Electrical Equipment in the Exhibition

AT the exhibition in connection with the Annual conference of the Association of Public Lighting Engineers, which opens at Glasgow on Tuesday, there is to be a comprehensive display of electric lighting equipment, much of which is described below.



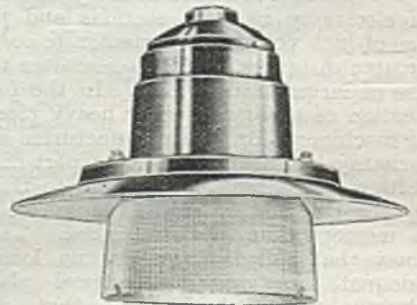
A Mazda Urban enclosed lantern

The Automatic Telephone and Electric Co., Ltd., are showing a working model of their Rythmatic control equipment for street lighting control, both centralised and sub-centralised methods being demonstrated. The model consists of a standard self-contained unit for sub-station area control. This is arranged to superimpose a ripple current on to the 230 V circuits. Actual receiving relays, connected across the 230 V mains, receive the signal and respond. The ripple current is generated in a miniature motor-alternator mounted inside the control cabinet. Facilities for the transmission of the six available signals are given on a manual selector switch and push button. In addition, three time-switches provide automatic transmission of three signals. A cleverly executed diorama of a city landscape, with a model power station, has miniature street lamps centrally operated from the receiving relays.

The Brighton Lighting and Electrical Engineering Co., Ltd. (BLEECO), are exhibiting representative types of their street refractor lanterns for gas-filled lamps; horizontal burning sodium and mercury E.D. lamps; vertical burning mercury E.D. lamps; swan-neck brackets with various types of fuse; switch fuse and time

switch fuse boxes, with also boxes to carry control gear for electric discharge lamps, and samples of a very compact form of illuminated bollard for island sites with opal globes or "Keep Left" signs. Two new designs of street lanterns are also being shown for the first time. One is a simple form of cast iron hood in combination with the new Holophane single-piece glass refractor for lamps from 100-200 W. for side and residential street lighting. The other is a novel form of horizontal lantern employing "gas-filled" electric lamps.

Stand No. 25 is largely a picture gallery of the extensive range of Mazda street lighting lanterns manufactured by the British Thomson-Houston Co., Ltd., and of the more notable street lighting installations planned by the company's lighting engineers. The main features, however, are an actual half-section of the Mazda Dilen lantern, enabling visitors to appreciate immediately its special constructional features and great simplicity and efficiency, and a concrete column base housing a typical set of the latest B.T.H. control gear. Mercer electric discharge lamps in their various forms are also exhibited together with Sodra (sodium vapour) and Mazda (tungsten filament) lamps. Three new additions to the Mazda range of lanterns have been developed and are in production. They are the Parish, Rural

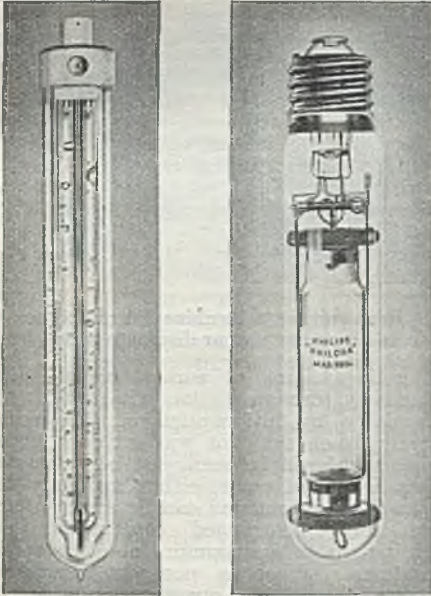


The B.T.H. Rural open lantern

and Urban, and are designed chiefly to meet conditions for overhead rural electrification schemes where columns or posts already exist. The three lanterns occupy a prominent place in the stand picture gallery.

Concrete Utilities, Ltd., are displaying a set of water-colour drawings depicting a variety of their designs, including their "Arc" series of brackets; a concrete

bollard; a typical lamp column base, showing the reinforcement and door fitting; and a composite concrete lantern head, which has been patented by the company, and the application developed in conjunction



Two examples of Philora lamps

with the Siemens Electric Lamps and Supplies, Ltd. This consists of a concrete head cast as part of the concrete bracket and so designed to accommodate a special ring which holds the lamp holder and refractor. All metal parts are non-ferrous, and this, in conjunction with the concrete lantern, is claimed to mark a big advance in the simplification of maintenance.

Exhibits by the **Edison Swan Electric Co., Ltd.**, will include the "London" Major, Medium and Minor lanterns, which are suitable for accommodating a wide range of Royal Ediswan Escura electric discharge lamps, or regular gas-filled lamps; also the Granby and Newland street lighting lanterns, the latter being designed to accommodate horizontally burning electric discharge lamps. Another item of interest will be a fully automatic colour-changing projector, which is particularly suitable for illuminating fountains or decorative lighting in parks or gardens.

The **Engineering and Lighting Equipment Co., Ltd.**, are featuring representative types for mercury and sodium discharge lighting and tungsten filament lamps, and new designs of raising and lowering gear and winch and control gear boxes. Their main road lighting fittings

include the Orbital lantern with cast-aluminium alloy body, hinged cast iron top fitted with two mica insulated terminals wired from the underside to the lampholder by means of heavy asbestos flexible; the Hamilton fitting, a one-piece aluminium alloy casting with provision for top or side suspension; the Golden Ray fitting for sodium discharge lamps, further improved by the re-designing of the prismatic plates. For tungsten filament lamps, the first of a new range of fittings to be shown includes the Welwyn, suitable for 60/200 W tungsten filament lamps or 80/125 W mercury lamps. It is a one-piece aluminium alloy casting with a new design of single-piece refractor, giving two-way distribution at 170° in the horizontal plane.

Gowshall, Ltd., will have on view some of their internally illuminated guardposts, and Mandalite lighting fittings for external illumination of mandatory signs, symbol plate sand advance direction signs.

The display of the **General Electric Co., Ltd.**, will be composed of a comprehensive range of lanterns and auxiliary street lighting equipment, and also an interesting demonstration of ripple control. The range of lanterns exhibited is of modern design and covers types for both main and side-road lighting. The optical system for each is designed for a specific application so that the light distribution is controlled within fine limits. The lanterns are designed mechanically so that they will withstand the rigours of inclement weather and servicing will be at a minimum. On the stand is shown, in model form, a representation of three-phase distribution network with distribution cables supplying power to the area, including the street lighting system, and centralised control of the lighting is effected by a small push button unit which would normally be under the supervision of a sub-station attendant. Samples of actual relays used in practice are fitted to the model and can be seen in operation. Some of the receiving relays are connected to street lanterns manufactured by the company.

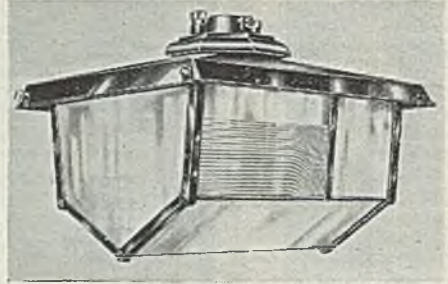
The stand of **Holophane, Ltd.**, is concerned principally with the correct planning of street lighting, utilising the wide range of Holophane glassware available for the purpose. A special booklet has been prepared, entitled "Street Lighting by Holophane," covering the principal problems involved, which should be helpful. Included in the leaflet are a number of specimen layouts showing in a convenient manner how particular kinds of streets can best be lit. Also on the stand are further examples of street lighting results and some examples of the equipment used.

Philips Lamps, Ltd., will have on their stand examples from the range of Philips' Philora discharge lamps and apparatus of public lighting and floodlighting types. A feature of the exhibit will be a display of lantern slides showing typical public lighting installations using Philora lamps. These will be projected on to a specially designed screen in the front of the stand.

Poles, Ltd., are displaying models of their Adastra products in the form of street lighting columns. The introduction of the tapering hexagonal section is an entirely new departure in the manufacture of steel columns. It is a development of the tapering circular standard, and is illustrated in a column with a 25 ft. mounting height and an outreach of 5 ft. Detailed improvements include extra heavy gauge metal for the manufacture of the sections themselves and a detachable slotted steel instrument panel. This is fitted inside the column near the ground level for fixing auxiliary apparatus used in connection with gaseous discharge lighting, remote control equipment, fuses and switches, raising and lowering gear winch, etc. Another model shows the hexagonal standard specially designed for vertical lanterns at 15 ft. mounting height. Swan-neck arms and other similar brackets are available.

On the stand of the **Record Electrical Co., Ltd.**, a working model of a portion of

a town's lighting system is to be shown to illustrate some applications of the Record remote operated selective switching units. These units can be applied to provide selective switching of lights on two



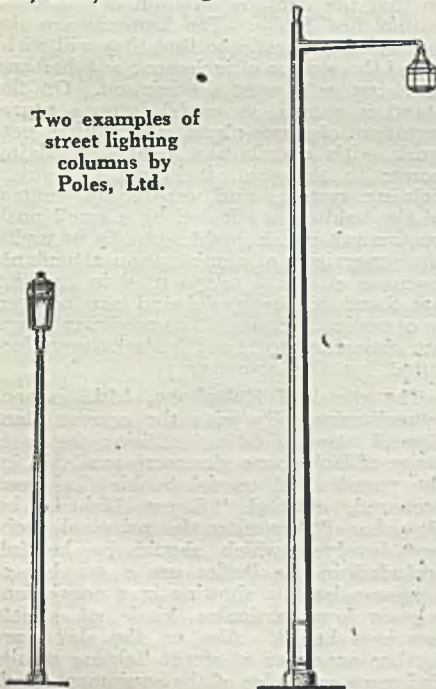
A Revo unit for a combination of sodium and mercury vapour discharge lamps

different systems of wiring, namely (a) selectivity through a pilot wire, and (b) selectivity by interruption of the main circuit, when no pilot wire exists. Both schemes, it will be seen, can be operated from a central point, either manually or by a time switch, and can be arranged to give any prearranged combination of lighting up to a maximum of eight combinations. When a non-pilot operated scheme is used the operating coils of all the switches in the circuit are energised during the whole time any lights are required on the circuit. This is not serious, however, as the burden due to each energising coil is very low, being approximately 3.5 VA at .26 power factor (less than 1 W), and for this expenditure of power the consumption of anything up to 1 000 W, depending upon the rating of the particular lamps, is saved in addition to wear and tear on lamps themselves.

Amongst the exhibits of the **Revo Electric Co., Ltd.**, are units specially designed for use with sodium and mercury vapour discharge lamps. An interesting example, utilising a combination of sodium discharge and gas-filled lamps in the one unit, is on view. This design is intended to overcome the objection which some engineers have towards the colour of sodium lamps, when used alone, and the combination of the lamps is so disposed that the maximum correcting effect is directed across the roadway where it is of most advantage, and detracts least from the remarkable definition obtained from mono-chromatic sodium light. The display covers units suitable for subsidiary as well as main roads, each distinctive in its own capabilities and appearance.

Sordoviso Switchgear, Ltd., are exhibiting a panel showing, in miniature, the

Two examples of street lighting columns by Poles, Ltd.



control of several sections of street lighting through the Sordoviso time delay cascade system. By the operation of a simple switch first one section, indicated by red bulbs, is lit; then the second, a blue section, followed by green and yellow. A brochure, L.409, "Controlled Street Lighting," gives an indication of the various systems of street lighting control in which the Sordoviso relays and contactors can be used.

Sangamo Weston, Ltd., are showing a range of synchronous time switches, including several types which have been designed for street lighting control; and are also suitable for many other automatic time control applications on a.c. circuits. All switches embody the type G synchronous motor, which is protected by fuses, and they are supplied for operation on 200/250 V, 50 cycle supplies. Silver contacts are fitted. Type SS switches are enclosed in bakelite cases and are of the plug-in type, i.e., the bakelite base forms the plug receptacle and eliminates the need for a separate terminal block. The switches are normally supplied with a common connection to one side of the motor and to one contact, but separate motor connections can be provided on all switches except the change-over types. When required, the switches can be supplied with back connecting terminals. A push-button switch for manual operation is fitted to all types. A range of weather-proof post mounting boxes is available for use with these switches. Other types of switches are enclosed in weatherproof cast iron boxes.

Siemens Electric Lamps and Supplies, Ltd., are displaying a representative selection of lamps and lanterns for the lighting of Group A and Group B roads. For group A lighting two lanterns are shown, the *Barnet-Sieray*, an attractive fabricated lantern of strong construction designed to give a long and useful life in service. Light control is by *Holophane* refractor panels, giving 160° or 180° spread between the main beams. The second lantern in this class is a new design of *Bi-Way* lantern with a *Holophane* bowl refractor. For Group B lighting an interesting exhibit is a concrete lantern evolved in collaboration with *Concrete Utilities, Ltd.*, mentioned above. Other lanterns for Group B road lighting exhibited are the side entry *Newton-Sieray* with single-piece *Holophane* dome refractor, and the *Camden-Sieray* with *Holophane* bowl refractor. Those concerned with transport will be interested in the new *Siemens* inspection pit lighting unit, designed for use with *Sieray* fluorescent tubular lamps. It is designed to fit into a recess of 4½ in. depth only. All the necessary control gear is housed in the fitting.

On the stand of **Venner Time Switches, Ltd.**, will be seen time switches of the hand-wound, electrically-wound and synchronous motor-driven types available in a wide range of weatherproof boxes to cover any specific requirements, the smaller models being suited for accommodation in the base of lamp columns, and the larger models for group control of street lighting. Solar dials may be included with all types, excepting the 15-day hand-wound model.

Egypt an Open Market

MUCH uncertainty must at present exist as to the prospects offered by Egypt as a post-war market according to a review of commercial conditions there (Stationery Office, 1s. net). So far as higher quality consumption goods of all kinds are concerned, it is clear that in the immediate future there will be a heavy demand. Among the richer classes there is a considerable call for domestic electrical equipment, etc.

The United Kingdom was consistently, up to the outbreak of war, Egypt's best customer and supplier, and U.K. interests can point to many successful instances of co-operation and development of Egypt's industrialisation. Egypt is well accustomed to our methods of training and will probably wish to import U.K. products on a considerable scale for the purpose of absorbing, at any rate in part, the large sterling balance which she holds. The task for U.K. exporters will, however, be

no easy one, in spite of these initial advantages, if it be assumed that Egypt will remain an open market where keen competition will be met from other countries.

The United Kingdom Official returns show that in 1938 we exported to Egypt electrical goods and apparatus to the value of £154 464, and in 1939 similar goods worth £186 891.

Intensive stimulation of Egyptian industries began early in the war, particularly after Italy became a belligerent and the Mediterranean was closed. A factory is under construction to produce electric lamp bulbs, the estimated capacity being three million units a year.

Hydro-electric power is to be developed on the *Aswan Dam*, and here also, it is proposed to manufacture synthetic nitrate, which is so essential to Egyptian agriculture, by the use of the hydro-electric power to be generated there. This development has long been contemplated.

Now It Can Be Told—VII

War Work of the British Thomson-Houston Co., Ltd.

IN this brief survey of the outstanding war achievements of the British Thomson-Houston Co., Ltd., it should first be pointed out that many of the company's peace-time products were indirectly required to meet the war effort. A very large amount of direct armament production was carried out, however, much of which, by utilising the research and engineering facilities of the B.T.H., was either designed by the company itself, or in close collaboration with various Government departments.

In the development of radar, the most phenomenal achievement of the war, the company played an important part, being responsible for the development and engineering of all kinds of radar sets for use at sea, in the air, and on land. The company made major contributions to the radar equipment which was an important factor in the sinking of the German battleships Scharnhorst and Bismarck, and in the victory of the Battle of Cape Matapan. Earlier in the war, and before radar came into such wide use, several thousand predictors were made by the company.

Jet Propulsion

One of the most noteworthy events of the war was the use of jet propulsion for aircraft. The jet engine was first developed by the B.T.H. company in conjunction with Air Commodore Whittle, and after exhaustive experiments, beginning in 1936, an engine, built by the company, was successfully flown for the first time in May, 1941, in a plane built by the Gloster Aircraft Co., Ltd. In September, 1941, a similar engine, manufactured at Rugby, was sent by the B.T.H. Co. to their associated company in the U.S.A.—the General Electric Co. (of New York)—for them to study and copy. Following the development of the jet engine, work has been done on the gas turbine, for which there are considerable future possibilities, particularly in the field of ship propulsion.

The danger of the acoustic mine was defeated with the help of the company, who for this purpose designed and developed over 800 oscillators. The work on these oscillators was put in hand immediately following the introduction of this mine by the Germans in December, 1940, and deliveries were commenced in March, 1941. The first oscillator made was the Fessenden type, but although this met with success, it suffered from certain inherent disadvantages in design. The company therefore proposed the use of the inductor type

oscillator, and after successful demonstrations the device was put into production, and subsequently into successful service against the acoustic mine, towards the end of 1941. The electric torpedo was another outstanding product of the company. This torpedo represents a radical change from the normal type, and no manufacturing technique for the device existed in this country when B.T.H. was asked to undertake the work. Moreover, the British model had to be made suitable for over water discharge (the German torpedo was not), and also lighter in weight to enable a heavier war-head containing more explosive to be adopted. Many difficulties had to be overcome before production was commenced on a large number of the torpedoes in a building specially erected and equipped for the purpose.

In the development of the atomic bomb the company also gave valuable assistance.

In addition to the important work mentioned above, the company manufactured thousands of Wellington bomber parts, aircraft magnetos, auto-timing devices, switches, motors, generators, compressors, servo motors for auto-pilot control, amplifiers for servo-position control, aircraft cameras, tank components, mines and shells.

Electricity in New Commons Chamber.—

Extensive use is to be made of electricity in the new House of Commons which, if given top priority, may be ready for occupation in just over three years. Speaking at a lunch-time meeting, arranged by the Town and Country Planning Association, last week, Mr. A. Gilbert Scott, who was associated with his brother, Sir Giles Gilbert Scott, in designing the new building, said it was decided to instal sound amplification by arrangement with the B.B.C. and 456 loud-speakers were being utilised, roughly one to every two persons. All these had to be incorporated inconspicuously in the seating. No provision was being made for broadcasting or television, though every known service was being installed, including annunciators, division bells, electric clocks, pneumatic tubes and vacuum cleaning, in addition to all types of heating and air-conditioning. Air conditioning with humidification and cleaning by electrical filtration by which dirt was attracted to a flat negative plate where it could be sponged off, was being installed in all new rooms and telephone boxes.

The Shetland Flying Boat

An "All Electric" Aircraft—Installation Described

THE "Shetland," Britain's largest and the world's fastest flying boat, with a top speed of 267 m.p.h., is of all-metal construction and is powered by four Bristol Centaurus engines. It has a wing span of 150 ft. and an overall length of 110 ft. The interior layout is in the form of two decks, each providing ample headroom. The lower deck is divided into compartments by bulkheads on which are mounted the various items of distribution equipment. As there is a complete absence of hydraulics the "Shetland" may be described as an "all-electric" aircraft.

refrigerator, radiators, drying cupboards, etc. Other advantages of the system may be summarised as follows:—

(a) The main engines are freed of ancillary equipment, i.e., oil and vacuum pumps, etc. This facilitates maintenance on the main engines and, more particularly, on the ancillary equipment which is driven by motors inside the hull.

(b) Current may be used when the aircraft is on the water without running the main engines. During cold weather this allows the crew and/or the passengers to board the aircraft with the interior thoroughly warmed. The advantage of a plentiful supply of power for radio, bilge pumps, etc., when the aircraft is on the water after a forced landing is obvious.

(c) The electrical equipment is easily serviced as the auxiliary generating plants are readily accessible and may be removed from the aircraft for complete overhaul with very little difficulty. The motors are of the squirrel cage type so that brush wear and commutator maintenance are eliminated.

New Design of Equipment

It will be appreciated that this installation involved a great deal of new design and development of equipment. The bulk of this equipment was designed and produced by the British Thomson-Houston Co., Ltd., J. A. Crabtree, Ltd., and Metropolitan-Vickers Electrical Co., Ltd., maintaining close collaboration with Short Bros. and Saunders-Roe through the British Thomson-Houston Co., acting as main contractor.

The auxiliary generating plants are of the P.6 type (illustrated in Fig. 1), designed and built by Rotol, Ltd., and may be briefly described as follows: The alternator is mounted in line with a six-cylinder horizontally opposed ("flat six") engine, its rotor being directly coupled to the crankshaft so that it forms the engine flywheel. The d.c. generator, which is in tandem with the alternator exciter, is mounted horizontally above the alternator and is driven from the crankshaft through a train of gears at a normal speed of 4 600 r.p.m., as compared with the 3 750 r.p.m. of the alternator and engine. The starter motor is mounted coaxially on the engine side of the d.c. generator. For emergency starting, dogs are provided on the tail of the alternator rotor to take a detachable starting handle. The alternator and d.c. generator for each auxiliary generating plant are rated as follows: Alternator, 110 V, 3-phase 250 cycles; normal rating 20

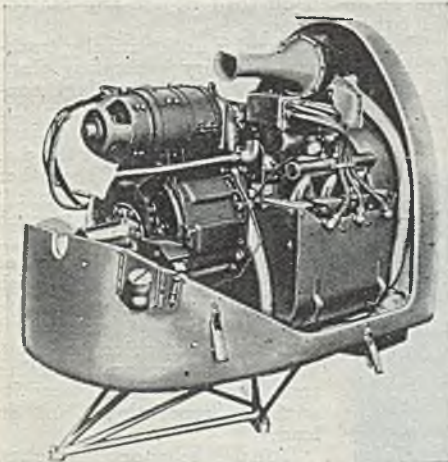


Fig. 1.—One of the auxiliary generating plants

The electrical power for the aircraft is provided by either of two identical auxiliary generating plants. This power is supplied at the following voltages: 110 V, three-phase, 250 cycles a.c.; 29 V, single-phase, 250 cycles a.c. (by transformer); 24 V d.c. (earth return).

From the above it will be seen that the "Shetland" installation represents a wide departure from normal British aircraft practice.

The decision to make this departure was taken by the design staffs of Short Bros. and Saunders-Roe only after exhaustive investigation. The chief factor which influenced this decision was the large electrical load that would be required for an aircraft of this size. Furthermore, a relatively unlimited source of power would add greatly to the comfort of the crew during the lengthy patrols that this aircraft would be capable of making. Typical of these comforts is the provision of a cooker, a

kW, at 3 750 r.p.m. (0.83 power factor); maximum rating for 5 mins., 32 kW, at 3 750 r.p.m. D.c. generator, 29 V; normal rating, 3 kW, at 4 600 r.p.m.; maximum rating for 5 mins., 4.8 kW, at 4 600 r.p.m.

The auxiliary generating plants which are completely enclosed in sound and fire-proof boxes are mounted side by side in a separate compartment or engine room, illustrated in Fig. 2. Two ducts connected to each of the sound-proof boxes convey the cooling air from, and the heated air to, the atmosphere through the side of the hull. The air is circulated throughout each auxiliary generating plant by a multi-blade fan mounted on the rear end of the engine crank shaft. When the doors of the compartment are closed the slight hum from the fans is completely excluded from any other part of the aircraft.

Each auxiliary generating plant is fitted with the normal aero engine electrical services, i.e., r.p.m. indicator, cylinder temperature gauge, fire extinguishers, and oil temperature engine. These instruments are duplicated so that the auxiliary gener-

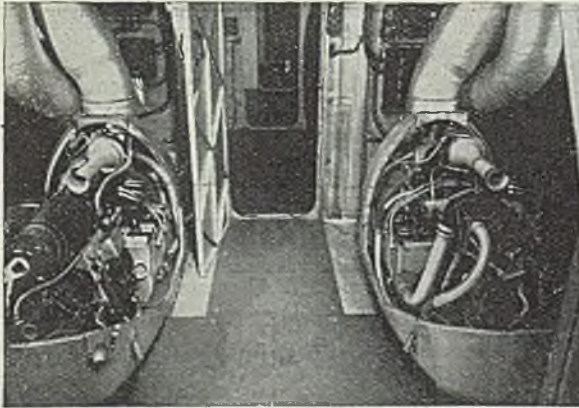


Fig. 2.—Showing position of generating plants

ating plants may be controlled either from a local panel in the same compartment or from the engineer's panel on the upper deck.

The engine of each auxiliary generating plant runs at a constant speed of 3 750 r.p.m. under the control of its governor at which speed the alternator voltage is maintained at 110 V by a carbon-pile type regulator. The voltage coil of the regulator is connected through a full-wave rectifier across one phase of the alternator output, and the carbon-pile in series with the field of the exciter. A variation in alternator voltage, due to a change in either the engine speed or the electrical load, will be transmitted to the voltage coil *via* the rectifier. This will cause the carbon pile

to alter its resistance and vary the current flowing in the exciter field. The output from the exciter will thus be affected and will return the alternator voltage to normal by increasing or decreasing its field strength.

The voltage output of the d.c. generator is regulated similarly, the carbon pile resistance being in series with the field winding and controlled by the output voltage.

When the auxiliary generating plants are not running the alternators and d.c. generators are in each case isolated from the load by a four-pole contactor, the coil of which is energised from the d.c. generator *via* the accumulator cut-out. It will thus be seen that when the d.c. generator reaches its working voltage the contactor will close and connect the alternator and generator to the load. Conversely, they will be taken off load if, for any reason, the cut-out opens.

The electrical load is automatically transferred from one auxiliary generating plant to the other by means of auxiliary contacts on each main contactor. When the main contacts are open these auxiliary

contacts each complete the d.c. circuit to the coil of the other contactor. A "push to break" switch is also included in each main contactor coil circuit. These switches are known as the "transfer load push switches," and when the appropriate one is pressed it causes its contactor to open. When this happens, the other contactor closes and places its auxiliary generating plant on load.

Load selector switches, mounted on the local control panel in the A.G.P. compartment, may be set so that the auxiliary generating plants are running under either automatic or manual control. When a switch is set at the "hand" position it short circuits the

auxiliary contacts on the other main contactor and connects the d.c. feed directly to the coil of its contactor. A mechanical interlock prevents both switches being set to hand at the same time, as no provision is made for synchronising the alternators.

The distribution scheme for the a.c. system is of the "radiating feeder" type, the feeders commencing from the main distribution boxes. The d.c. scheme is a duplicate of the a.c. system, and has its own main and sub-distribution boxes. The 29 V a.c. system which is obtained from a transformer on each phase of the 110 V system is provided with its own sub-distribution boxes. All the main and sub-distribution boxes are clearly marked with the voltage they serve.

Alternative or emergency feeders are provided for those boxes which supply important circuits. In the event of the failure of a normal feeder the load is automatically transferred to the emergency feeder. In the circuit for the automatic changing of the feeders the coil of the normal contactor is energised from the rectifier as soon as the supply is on the normal feeder. Although the supply is on the emergency feeder at the same time, the output from its rectifier to the operating coil of the emergency contactor is broken by the auxiliary contacts on the normal contactor. Thus the emergency contactor can only close when the normal contactor opens its main contacts. A test button (push-to-break) is connected in series with the coil of the normal contactor so that the circuit may be broken to simulate a fault on the feeder for test purposes. A further safeguard on both the a.c. and the d.c. systems is the provision, in the main distribution boxes, of a thermal trip switch for each feeder. The individual circuits for the various services are fused locally at the sub-distribution boxes.

Those contactors used for the automatic change-over of feeders are in most cases housed in the sub-distribution boxes which they serve. Contactors used for motors are housed in special control boxes.

The majority of the purely d.c. circuits concern standard 24 V aircraft equipment on which no comment is necessary here, except to state that as most of these components are designed for two-wire operation, and as this system is single-wire the negative returns are earthed at the nearest junction or distribution box. A further function of the d.c. system is to provide the controlling current for the operating coils of the motor contactors.

The 110 V a.c. system is used mainly for power-consuming equipment, viz.: motors, electric radiators, etc. The motors used throughout the aircraft are manufactured by B.T.H., and are of the 250 cycle squirrel cage type. These motors are of extremely simple construction and are consequently easy to dismantle for servicing.

Those motors which require reversing are supplied *via* either of a pair of contactors, one connecting the supply direct, and the other with one phase reversed. The coil of the required contactor is energised by a selector switch in the 24 V d.c. feed. On the engine starting circuit, to avoid over-loading the supply cables by the simultaneous starting of both main engines on either wing, the coil of the contactor for each engine is fed *via* the aux-

iliary contacts on the contractor for the other engine in the same wing, these contacts being open when the main contacts are closed.

Probably the most interesting of the a.c. circuits is that used for flap operation. There are five positions to which the flaps may be set by means of a selector switch at the pilot's position. The motor is controlled by a pair of contactors which are in turn controlled by the pilot's selector switch in series with a barrel type limit switch driven by the torque shaft. The circuit is arranged so that a third contactor, controlled by a Sunvic type time delay relay, applies a 24 V d.c. braking current to one phase of the motor winding to prevent overrun when the a.c. contactor opens at the selected position.

The remaining circuits, of which there are approximately eighty in number, follow standard practice.

The wiring of the aircraft is on the system designed and developed by J. A. Crabtree and Co., Ltd., on which the S.B. a.c. wiring system is largely based. The most important single achievement of this system is probably the terminal shown sectionally in Fig. 3. The diagram is self-explanatory, but a point worthy of mention is that when the cable sleeves are "snapped" into position between the clamps a good electrical connection is made, the locking screw only being tightened to make it permanent. This feature is extremely useful for testing, etc., during installation and servicing. On the diagram the cable sleeves are shown soldered, a later development, however, is a tool for crimping them to the cable ends without solder. The advantages of this development during servicing operations are obvious. The terminals are assembled

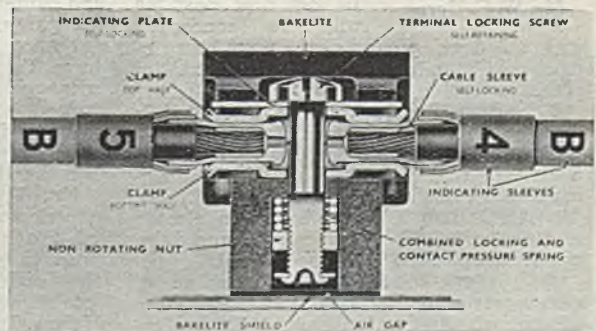


Fig. 3.—One of the terminals

in plastic blocks to fulfil various installation requirements.

The fuse units, on which the fuses may be easily replaced by shorting strips where required, are provided with compact "push-and-turn" switches for each outgoing feed,

so that a circuit with a fault may be readily isolated. Heavier switches of the same type are incorporated in the incoming units in the sub-distribution boxes so that an entire box and its feeds may be isolated. The boxes themselves are of extremely simple construction, each consisting of three pressings, in a range of sizes to meet any requirement. Conduit entries are closely spaced along all four sides of the boxes to allow conduits to enter from any angle, the unused entries being sealed by removable bushes.

The wiring is run throughout the aircraft in conduits extruded from polyvinyl-chloride compound. For physical protection the conduits are secured in inverted

ducts by quick-release canvas straps. Each conduit is provided with bushes of the same material to make a reasonably watertight connection to the box.

Some idea of the size of the installation may be gained from the fact that there are some 50 motors ranging in size from .035 H.P. to 4.75 H.P. Furthermore, apart from the main control and distribution boxes, the wiring system includes 23 sub-distribution boxes and 104 junction boxes.

We are indebted to the technical publications department of Short Brothers (Rochester and Bedford), Ltd., for supplying the information contained in this article.

Electrical Personalities

We are always glad to receive from readers news of their social and business activities for publication in this page. Paragraphs should be as brief as possible.

Mr. W. E. Doran is relinquishing his present position as technical sales manager with the Cambridge Instrument Co., Ltd., to become managing director of the Doran Instrument Co., Ltd. He received his early technical training at the West Ham Technical Institute and, after serving as a flying officer in the first world war, completed his education at Cambridge University, taking a degree in mechanical sciences.



Mr. W. E. Doran

In his new post he will be concerned with the development and manufacture of mechanical and electrical instruments of precision.

Mr. John Ambler has been elected a director of Leyland Motors, Ltd.

Mr. A. George E. Briggs has been elected a director and appointed assistant managing director of Tube Investments, Ltd., and **Mr. A. Graham Stewart** has been elected a director to fill the vacancy caused by the death of Sir Allan Macdiarmid.

Sir Robert B. Renwick, Controller of Communications Equipment at the Ministry of Aircraft Production since 1942, has relinquished that position. He remains Controller of Communications at the Air Ministry.

Mr. T. E. Nixon, director of Light Metals Control (Sheet and Strip) at the Ministry of Aircraft Production since 1941, is returning to the Northern Aluminium Co., Ltd., as from September 1, as assistant

manager of the London area sales office, which will be reopening in October.

Mr. H. G. White, after 25 years' service with the Metropolitan-Vickers Electrical Co.'s traction works at Sheffield, has joined the technical and commercial staff of Alfred Wiseman and Co., Ltd.

Mr. Arthur N. Duffett, resident constructional engineer to Rotherham electricity undertaking, has been appointed deputy electrical engineer at Blackburn in succession to **Mr. F. Barrell**, who has been appointed deputy electrical engineer at Leeds.

Over 20 members of the staff of **Mr. John Walsh**, electrical engineer, Blackburn, had their VE 3 holiday on August 29, when they travelled by motor coach to Ingleton and Morecambe. Mr. Walsh accompanied the party.

Santon, Ltd., announce that they now have the services of their London office manager, **Mr. K. J. Fulton**, who has returned from the Army and for the present is operating at the temporary address at "Inglecroft," Southwood Gardens, Hinchley Wood, Esher, Surrey.

Mr. T. S. Parkinson, deputy borough electrical engineer, St. Helens, and formerly of Blackburn, will commence duties as borough electrical engineer and manager of the Leigh electricity undertaking, on October 1. He entered the service of St. Helens Corporation as distribution superintendent in 1932, and a year ago was promoted assistant electrical engineer.

Mr. E. E. Howell, the new vice-principal of the Natal Technical College, Durban, is an electrical engineer. He received his technical training at Bristol University, and obtained practical experience with the Metropolitan-Vickers Electrical Co., Ltd.,

and H. T. Boothroyd, of Liverpool. In both firms he was employed in the design of heavy electrical and mechanical plant. His teaching experience was gained at Bristol University, Bradford Technical College and Cape Town Technical College.



Mr. A. A. Kift

Mr. A. A. Kift, who had served for 43 years with the Marconi's Wireless Telegraph Co., retired at the end of August. During the last twenty years he had been successively sales manager, assistant engineer-in-chief and contracts manager. Mr. Kift joined the company soon after its formation and helped to lay its foundations. As a member of the erecting staff he was engaged in fitting some of the first half dozen White Star liners to be equipped with wireless about the year 1902. After that Mr. Kift's work for the company, afloat and ashore, ranged from the Labrador Coast to Varna on the Black Sea, as well as in connection with the erection of stations round the English coast. His colleagues expressed their esteem and good wishes by the presentation of a cheque on his retirement.

Mr. Thomas Kirkham has resigned his position as managing director of Ericsson Telephones, Ltd., after 14 years' service in that capacity. He will, however, remain on the board, and in other directions also, he will continue to take a close interest in the company's affairs. **Air Commodore Hugh Leedham** has been appointed to suc-

ceed Mr. Kirkham. These changes took effect as from September 1.

Obituary

Mr. John Herbert Beckett, a director of the Walsall Electrical Co., Ltd., on August 24, aged 53 years.

George James Ross, for forty years in the service of Cable and Wireless, Ltd. He was an international table tennis player, a founder of the All-England Lawn Tennis Association, and a marksman.

Mr. S. E. Hall, at Bradford on August 20, aged 68 years. Mr. Hall joined the Institution of Electrical Engineers in 1898, and commenced business with the Sturtevant Engineering Co., Ltd., London, in 1900. In 1908 he joined the Adams Manufacturing Co., Ltd., at Bedford, and when that company was formed into the Igranic Electric Co., Ltd., Mr. Hall continued his career with the new company. He left the Bedford works in May, 1919, to take over the Yorkshire branch office from which he retired in March, 1943.

Mr. Arthur Ellis, consulting electrical engineer, of Messrs. Arthur Ellis and Partners, at Landaff, Glam., on September 1, aged 72 years. Third son of the late Sir Joseph Baxter Ellis, Mr. Ellis was educated at St. Bees, Cumberland, and he received his training with Sir Charles Parsons and Co., Ltd., and at Armstrong College, Newcastle-on-Tyne. He was resident engineer with the Cambridge Electric Light Co.; borough electrical engineer at Southport; borough electrical engineer and tramways manager at Bolton; and then city electrical engineer and tramways manager at Cardiff from 1899 to 1919, when he started his consulting practice in Cardiff.



Atlas lamp sales organisation in conference at the Holborn Restaurant, London. At the top table are Mr. Jules Thorn, chairman and managing director of Thorn Electrical Industries Ltd., Mr. A. S. Shier, sales director, and Mr. L. M. Glancy, northern director.

Radio Industry's Prospects

Sir Stafford Cripps Promises Official Support

SPEAKING at a luncheon given by the Radio Industry Council at Claridges Hotel, London, on Friday, Sir Stafford Cripps, President of the Board of Trade and Chairman of the Radio Board, said that the Government would take all practicable steps to see that the high prestige established by the research and development laboratories of the British radio industry in war was maintained and by official encouragement and support, was built up to even higher standards in peace. Only thus could they be sure of meeting the needs alike of national security and of the national economy.

Mr. Alfred Clark, president of the Council, was in the chair.

Our Greatest Single Advantage

Sir Stafford Cripps said that just as it was impossible, even if it had been desirable, to separate out the contributions to radar made by British and American scientists, so, here at home, we could not, if we would, separate the contributions made by the Government and industrial establishments. They treated all as partners in a single fellowship of science. That intimate intermingling of research and development minds was followed up by a corresponding co-operation of development and production minds, which could only be fully achieved within the industrial plant itself. From that interweaving of effort we derived our greatest single advantage in war achievement. Not only did we far outstrip the enemy, but he could confidently say that we outstripped all others in the art of carrying the research project into battle with the least possible delay.

It was impossible for him to mention the names of all the firms in the radio industry who had contributed to that great achievement. In the field of scientific research in the laboratories, he would mention the following firms for their outstanding contribution: The Metropolitan-Vickers Electric Co., Ltd.; A. C. Cossor, Ltd.; Pye, Ltd.; and the General Electric Co., Ltd. Outstanding, too, for their contribution in scientific research as well as in development to the production stage were Dynatron Radio, Ltd.; Ferranti, Ltd., and Electric and Musical Industries, Ltd. In developing to the production stage the designs and models that came from the laboratories the following made particularly notable contributions: E. K. Cole, Ltd.; Murphy Radio, Ltd.; Bush Radio, Ltd.; Allan West, and the British Thomson-Houston Co., Ltd. All those firms also played their full part in actual production of the vast

quantities of radar equipment required by the Services, but in the production field he must also add for particularly honourable mention the names of the Standard Telephones and Cables, Ltd., and the Philips organisation.

An industry with a war-time record such as theirs should turn to the tasks of peace with confidence. Not only had they the task of meeting the great arrears of demand for wireless sets and all forms of wireless transmission and reception consequent upon the war, both at home and overseas, but they had before them the task of developing television and turning radar to peace-time uses. Just as television was going to bring new pleasure into our homes, so radar was going to revolutionise travel. For whether we travelled by land, by sea or air, radar could give us greater safety, greater regularity and greater punctuality. Radar, in fact, could "beat the weather."

When Mr. Winston Churchill was on his way back from the meeting with President Roosevelt at which the Atlantic Charter was signed, the battleship "Renown" in which he was travelling, ran into dense and impenetrable fog. Before the war a fog like that would have forced the battleship almost to a standstill, but because the ship was equipped with radar, it was able to steam ahead at 27 knots, and Mr. Churchill got back home as quickly as he would have done in the finest weather.

A Great Future

The day could not be far distant when ships of all nations would be fitted with radar, and delays to shipping due to fog, and perils of the deep like icebergs, would have gone for good. Whether radar could be applied to railways to eliminate delays due to fog was a question on which he would not attempt to express an opinion.

If our great radio firms continued to show the ingenuity, initiative and resourcefulness they displayed in the war, and if the close working partnership which had been developed between the Government research establishments, the universities and the scientists in the laboratories of the industrial firms could be continued into peace—as it must be—then he looked forward to a great future for their industry in both the home and foreign markets.

Mr. F. B. Duncan, chairman of the Radio Industry Council, said they looked to Sir Stafford to help them to get re-established quickly. If given the labour and the materials they would spare no effort to increase exports and keep on increasing them.

Domestic Heating and Fuel Saving

By G. A. T. BURDETT, A.M.I.E.A.

THE need for saving fuel, including electricity, will be as great during the coming winter as during previous years. The campaigns conducted by the Ministry of Fuel and Power must have had good effect, but now that the war in Europe is over, there may be a natural tendency for consumers to relax in their efforts to save fuel, particularly if the winter is a hard one.

Everyone connected with the fuel industries must, therefore, assist the consumers in the practice of economy. There is no doubt that the retailer and contractor can do something in this respect, particularly as regards heating. Fuel is wasted in the home, not so much because the consumer deliberately uses more than necessary, but owing to the low operating efficiency of some heating appliances and installations.

Causes of Low Efficiency

Low efficiency is due largely to the following reasons: (a) Appliances are badly designed and, therefore, have low overall efficiency; (b) installations are badly designed; (c) incorrect positioning of appliances and equipment; (d) incorrect equipment is used; (e) appliances have been allowed to fall into partial disrepair, and are not, therefore, operating at optimum efficiency; (f) structural features of the building cause undue loss of heat.

Little, if anything, can be done about badly designed heating appliances. If there are no alternatives, consumers will have to use them. Electric fires have a heating efficiency of 100 per cent., part of the heat being dissipated by radiation and the remainder by convection. Therefore, where a badly designed electric fire may appear inefficient due to low radiation, this assumption is not always correct, as the remainder of the heat must be dissipated into the room, viz., by convection. This point must always be appreciated by the user.

Other systems of heating, such as electrically operated central hot-water systems, do not produce the same efficiency, and to save fuel in such cases it is desirable to modify them. Those to be modified come in the category of badly designed installations. Although a central heating installation allows of little modification without scrapping, a higher efficiency can be obtained by suitable lagging of pipes and by cutting out isolated radiators. Lagging, at the present time, is not often worth the high cost

of labour and materials. Isolated radiators should, however, be cut out of the system and suitable local heaters installed in their place. Such modifications should be carried out irrespective of the heating agent, and since the number of electrically operated systems in use is very limited, the greatest scope will be found in the solid fuel, oil and gas fields.

Inconvenient positioning is one of the major faults in any installation. Electric systems are not the chief offenders owing to the high percentage of portable fires in use, but even these should be correctly positioned when in operation. The most conventional position for a portable fire is the fireplace. Although the natural place, it is also among the worst places. In electricity we have the advantage that no flue is required, but in nine cases out of ten the fire is placed in the grate, allowing a high proportion of the heat to go out of the room by way of the flue. Nearly all the convected heat is lost in this manner. Those fires which have a low radiant but a high convection efficiency thus produce a low overall operating efficiency. Convection is in any case increased owing to the high rate of circulation of air in the vicinity of the fireplace. Therefore, out through the chimney flies the valuable fuel we are attempting to save. Any blame for this must be attached to the contractors, since it is they who installed the heating points. Two yards of flex give the user very little choice of position.

Maintaining Room Temperature

Once the air temperature of a room is raised to a comfortable figure, a heater is only necessary to maintain that temperature. This is accomplished by either of two methods, namely: By trapping the heated air and thus not allowing any change of air in a room (making the atmosphere "stuffy" and unhealthy, which in any case is not recommended), or, alternatively, by heating the cold air as it enters or before it enters the room. This is the only satisfactory and practicable method and leads to greater economy of fuel.

Cold air enters a room normally through the door and open window. Cold draughts also are present below the windows. This is due to the warm air in the room cooling as it comes into contact with the cold glass, increasing in density and falling to the lower regions of the room. This fact, recognised by heating

engineers, results in the conventional position of a radiator or hot tubes under the window.

Where radiant fires, including coal fires, are the only source of heating, the occupants are not so favourably placed. The tendency is to sit in front of the fire or radiator, which causes great discomfort. We are nearly scorched in front, but still shiver because our backs are cold. Only one part of the room is, therefore, usable. A few years prior to the war the gas industry recognised this and introduced the background heater, with successful results.

Dealing With Cold Air

Electricity gives even greater scope, since no flue is required and any type of heater may be used. The writer achieved even better results by dealing with the cold air before it entered the room. Tubular heaters were placed in the hall, and each room was appreciably warmer.

A hall is usually a cold part of the house and the added comfort of a warm hall was worth the capital outlay for the first year alone. It is admitted, though, that the older house with its large hall does not always permit of this arrangement, since the overall consumption is higher than where individual rooms are heated. In such cases, hall heating must be considered as a separate venture, and does not contribute to the saving of fuel.

During the war, some criticism has been aimed at the imitation coal and log fire. The Ministry of Fuel and Power advised owners of these fires to remove the lamps and use only the heater portion.

There is another side to this question, not generally appreciated outside the industry. The psychological value of the imitation fire is high, and does in fact contribute towards fuel saving. On a wet warm summer's evening there is a temptation to light a fire or use the electric radiator. At the expense of about 60 W an hour's cheerfulness is obtained. Further, the heat is not lost, but usefully employed. During the winter, the users of an imitation fire will switch off the heating portion and retain the coal effect long before the users of the ordinary element type. Switching on is also similarly delayed with a considerable saving in fuel.

Inset fires are widely used, particularly in bedrooms and dining rooms where there are no fireplaces. Unfortunately, many of these are fitted with the bar type and not the reflector type element. This results in a high proportional loss of heat through the walls. Reflector types with the high uni-directional radiation characteristics ensure that a high proportion of the heat is thrown into the room.

Where bar type elements are fitted and

it is not practicable to fit reflectors and rod elements, the radiator should be examined and where necessary modified. A sheet of asbestos placed against the brickwork behind the fire, and a sheet of polished tin will improve the operating efficiency of the bar type inset fire.

Where practicable, fireplaces should be blocked up when portable fires are used. This can be done by means of painted asbestos, plywood or other suitable material. The screen should be removable when a coal fire is required on occasion.

A portable fire does not normally lose its efficiency if neglected. Reflectors of inset fires should be polished or the efficiency will drop. Since portable reflector fires are particularly useful for local heating (an occupant of a large room can provide local comfort at small cost with a reflector fire), the reflector should also be polished frequently or the heat loss to the neutral portion of the room will be high. Tubular heaters should not be polished. The dark mat finish allows of the highest radiant efficiency and reduces convection losses. This is important in the lofty room where heat is required in the lower region and not at ceiling level.

Attention paid to high and low heating panels and convectors, both as regards maintenance and position, also increases their useful heat output.

Thermal Insulation

The average domestic premises possess very little thermal insulation. Research into building methods and the use of materials promises more in this respect as regards future homes. By trapping the heat by the employment of suitable insulation materials, the running costs of a heating installation can be considerably reduced. Little can be achieved in this respect in the existing house except where the plaster walls and ceilings require renewing owing to bomb damage and dilapidation. Thermal insulation, however, should always be borne in mind, even where interior redecorations are carried out. Running costs can be reduced when the room is relined with one of the proprietary brands of fibre and other such "ceiling boards."

Each of the points examined above should be carefully considered. When the contractor is consulted with regard to a heating installation he will often find the opportunity to advise a client on thermal insulation, even though it is not his job to carry out such work. A customer's satisfaction from the reduced running costs, apart from the national effort of saving fuel, will tend to popularise electric heating and lead to further development.

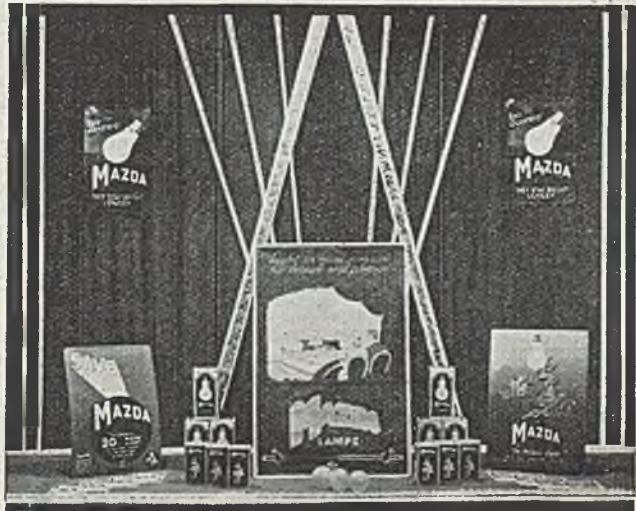
Lamp Sales Publicity

Window Display Designs and Literature for the Coming Season

Peace has come, and with it, the removal of most of the war-time lighting restrictions, but paper is still fully controlled for economic reasons, and, therefore, it is not yet possible to return to the pre-war volume of variety of publicity. However, Mazda lamp advertising during the coming autumn and winter will exploit to the full the most effective of the permissible avenues of propaganda. A Mazda lamp broadsheet (L.780) containing reduced prices on general service, sign and traction lamps, together with the full range of other Mazda lamps available, has been produced. In addition, a number of B.T.H. lighting bulletins dealing with street lighting, infra-red processes, fluorescent lighting, etc., are available, together with a leaflet explanatory of the new Mazda warm-white fluorescent lamp.

Show pieces to form part of a general window display have also been produced, but these are, of necessity, in limited supply. There are three different displays

made of linen with silk screened designs. These measure 3 ft. by 2 ft., are colourful



Mazda "Light in Good Measure" display

and attractive and a definite selling aid to resellers of Mazda lamps.

The advertising scheme for national newspapers and periodicals and the electrical, and technical journals is more ambitious than in the war years.

Atlas Lamp Sales Conference

The first post-war national sales conference in the electrical industry took place at the Holborn Restaurant on August 29, 30 and 31, when the whole of the Atlas lamp sales organisation met to discuss the company's distribution plans.

Two days were devoted to discussions on sales promotion, sales policy, and to a preview of some of the advertising matter that is being planned for the coming season. Sessions were devoted to technical developments, including demonstrations of Atlas fluorescent tubes and the new range of Atlas fluorescent trough reflectors. The sales representatives were given a short refresher course in illuminating engineering, covering every aspect of scientific lighting, and on Friday afternoon they were taken on a tour of four of the company's London

factories, including the lamp cap factory, which is one of the only two in the United Kingdom.

The conference was conducted by the sales director, Mr. A. Stanley Shier, supported by Mr. L. M. Glancy, the northern director. During the proceedings Mr. Jules Thorn, chairman and managing director of Thorn Electrical Industries, Ltd., lifted the curtain of secrecy over the company's war-time activities and revealed a magnificent record of service in the production of vital equipment for the war effort. Mr. Thorn also gave some indication of the company's plans for developing and extending their activities in the post-war period.

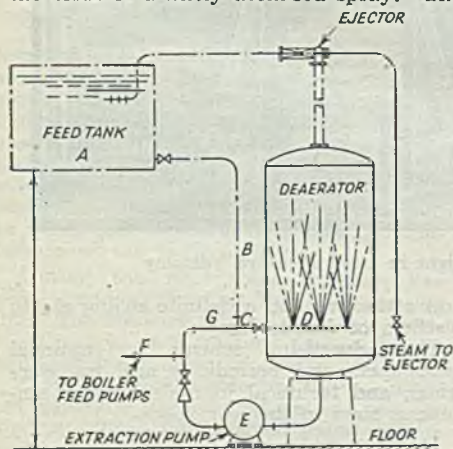
The conference wound up on Friday evening with a highly successful dinner.

New Equipment

Atomised Spray De-aerator—Electric Engine Timer

THE latest modifications of the atomising spray de-aerator made by **Hick, Hargreaves and Co., Ltd.**, result in a neat and efficient device, arranged generally as shown in the accompanying diagram, the use of which, it is claimed, eliminates every measurable trace of oxygen from the feed-water before its entry into the boiler feed pump.

The oxygen-impregnated feed-water flows from the elevated open feed tank "A" at a temperature of not less than 130°F. through pipes "B" and "C" to the de-aerating vessel, into which it enters through specially designed nozzles in pipes "D" in the form of a finely atomised spray. The



Diagrammatic arrangement of de-aerating plant by Hick, Hargreaves and Co., Ltd.

de-aerating vessel is maintained under vacuum by means of a steam-operated air ejector, whereby all the oxygen and other contained gases are released from the feed-water. The de-aerated feed-water is withdrawn from the de-aerating vessel by means of an extraction pump, having a larger capacity than that required by the boiler feed pump to which it is discharged through pipe "F," the balance being passed back through the pipes "G" and "C," and recirculated through the de-aerator.

This new arrangement ensures a high degree of de-aeration being obtained, whilst a constant head is maintained both on the extraction and boiler feed pumps. The pipes "D," through which the feed-water enters the de-aerator, either two or three in number, are each provided with a valve by means of which the flow of water to the

spray nozzles can be controlled so that should the plant be required to run continuously on reduced load, one or more of the valves can be shut off, with a corresponding reduction in the pumping power of the extraction plant. A non-return valve is included in the circuit between the de-aerator inlet and the extraction pump discharge, so that in the event of the extraction pump motor being stopped, feed-water is taken direct from the feed tank to the boiler feed pump. Also the discharge from the steam-operated air ejector can be directed into the feed tank so that heat is absorbed by the feed-water.

A new electric engine timer, made by **Runbaken Electrical Products** for the Services during the war, will shortly be available for civilian use in garages, service and repair depots. A development of the Synchronolite introduced by the company in 1937, the instrument enables precise timing to be effected easily and quickly. Operating on an entirely new principle, the h.t. "triggers" a discharge from condensers, which are fed by an internal converter. The result is an intense flash of exceptionally short duration. Its brilliance will illuminate fly wheel marks even in daylight and the timing and checking of engines is greatly simplified. There are models for 6, 12 and 24 V.

NEED FOR TELEVISION TEST FACILITIES

The Television Development Committee of the Radio Industry Council, at a special meeting in London on August 30, decided to make formal application to the Government for the immediate introduction of a television still-pattern picture transmission from the Alexandra Palace.

The Committee states that it is the intention of the industry to rehabilitate a large number of Servicemen who have been on radar and communication work. The B.B.C. have already begun to send out test signals on the television sound channel.

The chairman said the change in the international position encouraged the whole industry to feel that television programmes should start at an early date. The end of Lend-Lease made it imperative that production of sets for export should begin immediately. He disclosed the fact that America would have television sets on the market in mass production quantity early in 1946, and said that if British industry did not move at once it would be another case of "too little and too late."

News in Brief

Aid to China Fund.—As a result of a collection among employees of the Sifam Electrical Instrument Co., Ltd., a donation of £5 ls. 6d. has been sent to the British United Aid to China Fund.

Prestatyn Street Lighting.—Pleas were made at a recent meeting of the T.C. that the street lighting should be brought up to date by the introduction of electric lighting in place of the present gas system.

Prefabricated House Equipment.—The Fleetwood D.C. has decided that all appliances in the new prefabricated houses shall be electrically operated, and utility rooms are to be heated.

Burnley Economy Scheme.—The Corporation is giving effect to a scheme to save coal. The candle-power of lamps is being cut down from lighting-up time until 11 p.m. by 50 per cent. At 11 p.m. half the lights on main roads will be extinguished, and the rest at daybreak.

Public Utility Companies' Work.—In an effort to interest and inform the public on the work of public utility companies, the Camberley and Yorktown Ratepayers' Association arranged a public meeting at Camberley recently. Experts from the Yorktown Gas and Electricity Co. lectured.

Orders by Television.—It is reported that mail order shopping orders will be transmitted by television at a new departmental store to be built in New York.

Among other features will be doors operated by photo-electric cells.

Ban on Neon Signs.—Glasgow Highways and Planning Committee has banned certain neon signs, on the grounds that they destroy amenity or alternatively damage visibility and detract from vital traffic and other signs. The two main types involved are superstructure signs which rise above the skyline, and neon signs which formerly studded bridges crossing roads. Permitted signs will include buildings outlined in neon, cinema box signs, and signs set in the façade of a building.

Liverpool Telephone System.—In the immediate area of Liverpool, 17 000 telephone subscribers are now on the dialling system out of a total of about 50 000. But for the war the whole of the area would now have been automatic. Next year other exchanges will be mechanised. It will be several years before the conversion of the whole of Merseyside to the automatic system is completed.

Improved Mill Lighting.—To make weaving more attractive, special steps are being taken by Messrs. John Bury and Co., Accrington, who claim to be the first firm in the area to embark on certain large-scale operations. The change-over to well-spaced looms, floodlighting, and individual motor drives is coinciding with a gradual switch-over from war-time to peacetime production. The alterations, granted by licence from the Ministry of Supply, are now half completed.

Electrical Engineering Course.—Twelve New Zealand and Canadian technicians, serving in the Dominion Forces in this country, last

week attended a British Council leave course on "Electrical Engineering" at Birmingham University Overseas Club. The course comprised lectures by experts and visits to several factories in the Midlands.

Advertising in Rural Areas.—The Lancashire branch of the Council for the Preservation of Rural England anticipating that competition in business may lead to a resumption of unsightly outdoor advertising is to urge the Government to prohibit new commercial advertisements in rural areas, other than those essential advertisements permitted under existing by-laws. The branch is anxious not to hinder the provision of electricity supplies to rural communities which, it is expected, will now be expanded on a wide scale, but is concerned that new overhead lines shall be sited with the least possible injury to the scenery.

TWENTY-FIVE YEARS AGO

FROM THE ELECTRICIAN of September 3, 1920: Though the pre-war activities of the wireless telegraph amateur have been restricted by the Postmaster-General's regulations, the growth of amateur wireless clubs has greatly increased. There are now 41 clubs in the United Kingdom, with a membership of over 1 500, and the Post Office authorities are receiving fresh applications for licences every day. The restrictions on amateur installations are imposed in order to obviate interference with Government stations. In certain cases special permission is granted for the use of the thermionic valve for the reception of signals.

Planned Stagnation

By SIR ERNEST BENN

EVERYTHING in life is now firmly fixed within what the pundits call an economic framework; nothing remains un-planned. Work is prohibited unless approved by a Labour Exchange; it is an offence to seek to employ or to be employed without the intervention of authority; shopkeeping is illegal except under licence; materials are unobtainable until bureaucratic "experts" have satisfied themselves that no more pressing priority can be invented; the chaotic freedom of the distributing trades—the most efficient service ever offered to man—has been abolished to make room for plans and pools; imports and exports have been reduced to what little can trickle through the closely woven mesh of licence and permission; millions of our people are forbidden to move out of their organised inactivity until innumerable overlapping authorities have co-ordinated policy. The energy released by the scientists from the atomic bomb is almost paltry when compared with the human energy nullified and rendered useless by the order of the planners.

The Building Muddle

The prospect of somewhere to live recedes daily into the dimmer future. Six or eight separate Ministers have presided over unnumbered inter-departmental conferences and struggled to shift the onus of another plan on to the shoulders of another authority. All private building has been stopped, and the decay in the fabric of unbombed houses already exceeds the temporary patching and botching which is all that the experimental endeavours of unsuitable ability has been able to mobilise. The demoralisation of building labour is complete, and the new recruits are to be trained by persons whose qualification to train may consist of no more than the receipt of an official salary.

The outside world is no less favoured. Dumbarton Oaks, Hot Springs, Bretton Woods and San Francisco have elaborated and implemented the innocent unworldliness of the Atlantic Charter. Psychologists, experts, technicians and "organised" scientists have joined the swollen ranks of international bureaucracy, and, with official privilege and priority, fly round the globe to confer and quarrel over the fate of masses of human beings, none of whom are presumed to have any brains of their own and all of whom are prohibited to do otherwise than as decided by the rules of theory or the regulations of the impossible. A.M.G.O.T., U.N.R.R.A. and their opposite

numbers in almost every country in the world parade themselves in uniforms, which, notwithstanding the famine in clothes, are changed as rapidly as one stupid scheme or political trick succeeds another. From these over-crowded ranks thousands of self-respecting thwarted individuals, having discovered that U Never Really Receive Anything, are chafing to find a way of escape.

Most Stupid Generation

And all this and much more has been done, if you please, under the nose of a British Parliament which for ten years has been dominated by a substantial Conservative majority. That majority has deliberately sat back, maintained silence and allowed the planners to do their worst, rather than put the slightest hindrance in the way of the destructive work of war. Crass stupidity was never better backed by good intentions.

A very different situation has now arisen, for we have a much more substantial parliamentary majority and the most powerful Government of recent times, who really believe in the theories and methods that have brought us to this pass. Four hundred Members of Parliament and a hundred Ministers are pledged by all their gods to make a perfect world this way. Every obstacle to the achievement of that high purpose has disappeared. Profit—the very basis of the whole philosophy of Karl Marx—is repudiated with enthusiasm by the stupidest generation in our long history. Mr. Attlee's Government need not even pause to consider the lifeblood of all the progress of the past—the mainspring according to them of all the ills they have so successfully exploited. Competition—perhaps the first of Nature's laws—need give them no worry, for as Sir William Harcourt might say, "We are all trade unionists now." The practical processes of supply and demand have long ago been replaced by the statistical sophistries of demand and supply. For a full couple of generations, from thousands of platforms, Socialists have proclaimed that the economics of destruction, so successful in war, can be applied with equally satisfactory results to the piping times of peace. Nothing now stands between us and the complete realisation of these Utopian dreams—except that they are mad.

When, in my die-hard way, I have from time to time advocated the total abolition of control, I have been derided as an

anarchist, but could only anarchy be as bad as organised suicide?—for nothing less is in question. Witness the grave significance attaching to one of the first practical steps taken by the new Government. Whole shiploads of paper have been released for football pools, in the hope, no doubt, that nationalised education has left the populace in well-planned ignorance of the history of bread and circuses.

I do not myself believe it possible that forty-six million people can all be good judges of practical economics, but I do protest against the iniquity of those who, knowing better, devote themselves to the deliberate encouragement of ignorance. When America a fortnight ago took the very exceptional course of acting in strict accordance with the terms of an international agreement, the public was alarmed, and rightly so. Thereupon, setting a new low standard of conduct on the part of

British Premiers, Mr. Attlee professed a surprise, tho less said about which the better.

It cannot be long before a hungry people will turn again to the business man as their only hope, and it is imperative that the business men should themselves understand, and make it clear to the people, that they can only function to the best advantage of society in freedom from bureaucratic interference. For the meantime our sense of humour is the only refuge left to us, and perhaps not left for long, for one of these New World M.P.'s has already demanded the international control of research!

The Miracle of Britain—six hundred and eighty-four souls and mouths to the square mile—is the work of capitalism with all its inequalities and even hardships. We now have a Government pledged to find another and a better way. We shall see.

Electricity Supply

Watford.—The Electricity Committee reports a profit of £17 152 for the year.

Chichester.—The Electricity Committee is to erect an electric balancer at Sidlesham.

Sheffield.—Mains are to be extended by the Electricity Committee at a cost of £7 222.

Manchester.—The Electricity Committee has obtained sanction to borrow £45 000 for ash disposal extensions, and £10 000 for plant.

Chesterfield.—The Electricity Committee is to provide additional supply for the Chesterfield and Bolsover Water Board at Whispering Well at a cost of £1 700.

Accrington.—The profit on the electricity undertaking for the year ended March 31, was £8 157. After payment for new meters and new services a balance of £7 301 is carried forward.

Cockermouth (Cumberland).—The Cockermouth Farmers' Union has asked the County Committee to go into the legal position where farmers who are tenants of farms are unable to obtain electricity supplies through the refusal of the landlord to bear the cost of installation.

Chesterfield.—At a meeting of the Electricity Committee the Electrical Engineer reported as to the existing scheme for the supply of electricity to Swaddale estate by the Staveley Coal and Iron Co., Ltd., and suggested that now certain restrictions had been revoked it was desirable that this area should be absorbed in the corporation's supply system. He was authorised to open negotiations with a view to effecting such change-over.

Manchester.—According to the annual report of the passenger transport department working expenses of the locally operated trolley-buses averaged 19.731d. per mile (total expenses 23.178d.). The Corporation operates 153 trolley-buses. In the year to March 31 last, receipts from trolley-buses amounted to £461 383, passengers carried 62 236 959, and mileage travelled 4 098 921. The net surplus on revenue account was £59 388.

Glasgow.—At a meeting of the Electricity Committee the Central Electricity Board inquired if the corporation would be prepared to agree to meetings being arranged from time to time between Messrs. Merz and M'Lellan, consulting engineers, and representatives of the Board with a view to overcoming difficulties which may arise in the construction of the new station, particularly with reference to general progress in regard to the placing of orders, any changes in the proposed commissioning date, etc., on the understanding that such discussions would not interfere with the normal relationship between the corporation and the consulting engineers. The Committee agreed.

Watford.—At a meeting of the Electricity Committee it was reported that during the next 12 to 18 months it was anticipated that several hundred temporary houses would be erected and tenanted. Some would be all-electric, and the remainder equipped with electrical apparatus in various forms. It was probable that the Norwich system of charge would be the most suitable in all cases. The general manager suggested that in collaboration with the borough treasurer a

weekly collection be instituted. A weekly collection on account of 3s. 6d. per week in the case of all-electric houses and 2s. 6d. in the other cases should approximately meet the usual quarterly account when any cash adjustment to the actual consumption would be made. The Committee accepted the proposals in principle and requested the Borough Treasurer and the Electrical Engineer to proceed with the arrangements for an experimental period and to report finally at a later date.

Aberdeen.—Due to the high cost of coal and the rise in workers' wages, an increase in electricity charges will take effect from the November-December meter readings following approval by the Electricity Commissioners. For lighting the flat rate will be 3½d. per unit, as compared with 3¼d.

For prepayment meters the rate rises per unit from 3¼d. to 3½d. For motive power the new rates for the first 125 units per quarter will be 2½d. per unit, as against 2d.; for the next 1 250 units, 1½d.; for the next 3 500 units, 1¼d., as compared with 1¼d. and all over 5 000 units, 0.8d., as against 0.7d. The new heating and cooking charges will be 1¼d. per unit, as compared with 1d., for the first 750 units per quarter, and all over 750 units, ½d., as against ⅓d. The City Electrical Engineer stated that the financial result of last year, by which £17 040 had to be taken from the reserve fund, was disappointing. He also said that it cannot be guaranteed that the city will not have to suffer cuts in electricity supply during the coming winter, in view of the coal situation.

Contracts Open

WE give below the latest information regarding contracts for which tenders are invited. In the case of overseas contracts, particulars are to be had from the Department of Overseas Trade, Millbank, London, S.W.1 (corner Horseferry Road), unless otherwise stated.

Lochgelly B.C., September 8.—Electric lighting installations in connection with 42 houses to complete the Lumphinnans Road housing scheme. Particulars from the Burgh Surveyor, Town House, Lochgelly; deposit, £2 2s.

W. Riding of Yorkshire C.C., September 8.—Electrical work in connection with the new dental clinic, Bonegate House, Brighouse. Specifications from the West Riding Architect, County Hall, Wakefield.

Birmingham Electric Supply Department, September 12.—Supply and delivery during the period ending September 30, 1946, of electric kettles, saucepans, cookers, wash-boilers, circulator water heaters, cooker control units and circulator control units. Specifications from Mr. F. W. Lawton, 14, Dale End, Birmingham 4.

Manchester City Council, September 12.—Supply, delivery and erection at Stuart Street generating station, Bradford, of four coal wagon tippers (Ram type). Spec. (834) may be obtained from Mr. R. A. S. Thwaites, Electricity Department, Town Hall, Manchester; deposit, £1 ls.

Burton-upon-Trent B.C., September 19.—(a) Supply and laying of 18 600 yards, 25 sq. in. 11 000 V cable; (b) supply and laying of 6 750 yards, 3 sq. in., 3 300 V cable; and (c) supply of 6 500 yards, 25 sq. in., l.t. cable. Specification from Mr. T. Hall, Electricity Offices, Horninglow Street, Burton-upon-Trent.

Brierfield U.D.C., September 20.—Supply, delivery and placing into position, of two 250 kVA three-phase 6 600/400 V transformers. Specification from Mr. N. Ashton, "Electricity House," Colne Road, Brierfield; deposit, £1 ls.

Brierfield U.D.C., September 20.—Supply, delivery and erection of 6 600 V metal-clad switchgear. Specification from Mr. N. Ashton, "Electricity House," Colne Road, Brierfield; deposit, £1 ls.

Birmingham Electric Supply Department, October 4.—Supply, delivery and erection of 132 kV double-circuit steel tower overhead transmission lines, approximately 19 miles; deposit, £2. Particulars from Mr. F. W. Lawton, 14, Dale End, Birmingham, 4.

Woolwich B.C., October 9.—Supply, delivery and erection of one 750 kW Diesel alternator and four 30 MVA outdoor reactors. Specifications from the Borough Electrical Engineer, Electric House, Powis Street, Woolwich, S.E.18; deposit, £1 ls.

North of Scotland Hydro-electric Board, October 15.—Supply, delivery and erection of 132 000 V transmission lines. Specification from Mr. T. Lawrie, 16, Rothsay Terrace, Edinburgh, 3; deposit, £5 5s.

Overseas

Eire Electricity Supply Board, December 14.—Civil construction work in connection with the hydro-electric development of the River Erne, Co. Donegal, including, (1) Power development at Cathleen's Falls, for installation of about 40 000 kW; (2) power development at Cliff for installation of 10 000 kW. Particulars from Mr. P. J. Dempsey, Electricity Supply Board, 60/62, Upper Mount Street, Dublin; deposit, £21.

Industrial Information

Electrical Factory for Bangor.—The Board of Trade has allocated to British Electric Meters, Ltd., a large factory at Bangor to be used for the production of electrical equipment.

Cheerful Rationing.—This month's card issued by the E.A.W., includes among its recipes two new ideas for cooking tomatoes, and also describes a satisfactory method of salting beans. There are also several useful household hints.

Lamp and Valve Factory for Gateshead.—The General Electric Co., Ltd., are to start a lamp and valve assembly factory on the Team Valley Estate, Gateshead. At present about 50 Tyneside girls are being trained at the firm's Wembley and Hammersmith works in the handling of the machinery to be installed at the Gateshead factory.

Production and Engineering.—The principal features of the current bulletin issued by the Ministry of Labour and National Service and the Ministry of Production deal with efficient ventilation for the factory; the training of draughtsmen; band or belt conveyors; the reallocation of industrial labour; thread rolling on automatics; sampling inspection schemes; and the machining of laminated fabrics.

Preliminary Trade Communications.—The Board of Trade announce that there is full freedom of business communication with Holland, Norway, Greece, Yugoslavia, Czechoslovakia and Poland subject to the requirements of Trading with the Enemy legislation. This means in practice that it is not possible to enter into firm commitments regarding the exchange of goods or the making of payments, but that correspondence is permitted regarding such matters as prices and terms of delivery in anticipation of the resumption of trade.

New Refrigerator Factory.—L. Sterne and Co., Ltd., refrigerating engineers, have been granted a licence for the erection of a new factory of 50 000 sq. ft., at Hillington Trading Estate, Glasgow. This will give them a total of 77 000 sq. ft. in this trading estate, there being already in existence a plant of 27 000 sq. ft. which has been engaged on war-time Government production. Both will be converted to the production of refrigeration plant of the "Sternette" type, for the various retail trades using refrigeration.

E.W.F. List of Members.—The list of members of the Electrical Wholesalers' Federation for 1945, just published, is arranged in two sections, the first giving the names in alphabetical order, and the second showing the E.W.F. membership distribution in the principal towns. The

booklet also contains the names of the officers and members of the council for the year, and past-presidents. Since its creation in 1914 the federation has strictly maintained the fundamental principle that its members must be accredited electrical wholesale distributors, with suitable premises, equipment and organisation.

Increase in Telephones in Sweden.—The number of telephones in Sweden increased by 74 600 during 1944 to 1 145 600. This corresponds to 177 telephones per 1 000 inhabitants. In Stockholm the average number of telephones per 1 000 inhabitants had risen from 462 in 1943 to 483. At the end of 1944 56.6 per cent. of all telephones in Sweden were connected to the automatic network. The net surplus of the Telephone and Telegraph Administration for 1944 amounted to £3 453 000. The number of radio receiving sets increased during 1944, by 75 000 to 1 784 000.

Experts Tour German Factories.—A party of engineering experts appointed by the Gauge and Tool Makers' Association is touring Germany under the auspices of the Control Commission and visiting selected factories in the Reich whose methods of manufacturing gauges and measuring instruments, jigs and fixtures, precision tools, moulds and dies, might be of interest to association members. A second party, nominated by the Diamond Tool and Gauge Manufacturers' Section of the association, is also in Germany visiting selected factories engaged during the war in the production of diamond tools and gauges.

Automatic Regulators for Heat Control.—Elliott Brothers (London) Ltd., have issued a revised edition of List 815 which deals with new developments of their automatic regulators. A recently introduced general purposes pattern, the "O" regulator, for "on-off" or "high-low" control is described and particulars are also given of the latest type of "F" regulator for "floating" control, with the necessary ancillary equipment for both types. These regulators have many general applications and may be used wherever it is possible for a measurement to be made by electrical methods.

Modern Trawler's Equipment.—Hall, Russell and Co., Ltd., Aberdeen, have received an order for a large trawler from Le Ministère des Travaux Publics et des Transports du Gouvernement Provisoire de la République Française, to be employed mainly in cod fishing on the Newfoundland Banks, also in Iceland and Greenland waters. The vessel is to be of the most

modern type and auxiliary machinery includes an electric windlass and capstan, refrigerating machine and insulated cold chambers. Two electric generating sets are to be installed in the engine room. Electric light and power are to be fitted throughout, with radio, echo sounding gear and other special equipment.

Electrical Equipment in Mines and Quarries.—Owing to the fact that there is still necessity to conserve supplies of cable and apparatus, the Minister of Fuel and Power has made Orders suspending for a further two years, until July 1, 1947, full compliance with the Quarries General Regulations (electricity), 1938, and the Metalliferous Mines General Regulations, 1938. The Electricity Regulations for Quarries which came into force on July 1, 1938, allowed quarry owners a period of seven years in which to bring cables and other apparatus then in use into compliance with those regulations. The Metalliferous Mines General Regulations, 1938, contained a similar provision as regards electric cables and other apparatus installed at the surface.

E.R.A. Technical Report.—A technical report, entitled "Means of Load Representation," by P. Schiller, has been published by the British Electrical and Allied Industries Research Association. It deals with the utility and preparation of two- and three-dimensional representations of loads, more particularly daily load curves, load-duration curves, kilowatt-kilowatt-hour curves, seasonal demand curves, load models, and load maps. Special attention is given to load models, greater use of which is recommended. For this purpose an improved arrangement, designated E.R.A. type load model, has been developed, the materials for which will be available in standardised form. Copies of the report may be obtained from the association at 15, Savoy Street, London, W.C.2, price 9s., postage 3d.

Transport of Heavy Machines.—The B.E.A.M.A. has published a memorandum, entitled "The Transport of Heavy and Indivisible Loads," by the association's Traffic Committee, describing the difficulties confronting the electrical engineering industry in the transport of large and heavy indivisible pieces of electrical machinery from factories to sites or to ports for shipment abroad. It is shown that railway loading gauge dimensions in this country are smaller than in any other country manufacturing heavy electrical plant and that equipment now being designed cannot be conveyed by rail in Great Britain. As a matter of urgency for the industry, guidance by the Ministry of Transport is sought as to the maximum

overall dimensions and weight of any indivisible piece that may be transported by road in the future. The price of the publication is 6d. net.

Turbo-electric Liner.—The "Beaverdell," first of four sister ships for the Canadian Pacific Railway, was launched recently from the Kingston, Port Glasgow, yard of Lithgows Ltd. Two more are building there and one at Fairfields, in Govan. The new ship is 10 000 gross tons and 10 800 tons deadweight. She has 200 000 c. ft. of refrigerated space and will be used as from early 1946 on the transport of perishable food commodities from Canada and manufactured goods on the return trip. She will have electrically-operated cargo winches and handling equipment. Her engine installation is built to the specification of Mr. John Johnson, consultant to the C.P.R., and will develop 9 000 v.h.p. and about 17 knots. The machinery contracts were placed with C. A. Parsons and Co. the boilers with Babcock and Wilcox, Ltd., and the installation of the whole with John G. Kincaid and Co., Ltd. It is understood that the boilers are of the watertube type developing 280 deg. F. and 280 lbs. per sq. in. pressure.

Bristol Engineering Exhibition.—The B.T.H. display at the Bristol Engineering Manufacturers' Association Exhibition, which opens to-day, Sept. 7, is wholly devoted to industrial fittings from their Mazdalux range. Industrial reflectors—dispersive, concentrating, diffusing, etc.,



A Mazdalux flameproof unit

for use with Mazda and Merera lamps—are shown. So are two units employing the Mazda 5 ft. 80 W fluorescent lamp. These are the Mazdalux F.207 fitting and the Mazdalux flameproof fitting. The F.207 fitting, designed to re-direct with maximum efficiency the light output in a downward direction with a small percentage of upward light, has an angle of cut-off, which ensures freedom of glare from all normal view points. For the local lighting of machinery, work benches, etc., this is an ideal fitting, and it can also be used as part of a symmetrically planned general lighting installation. The Mazdalux flameproof unit has been tested and approved by the Mines Department of the Board of Trade (Buxton Testing Station) in respect of Group II gases (petroleum and acetone vapours). Also on the stand are photographic examples of B.T.H. industrial lighting installations.

Company News

BRITISH XYLONITE LTD.—Intm. div. 2½% on ord. (same).

BROWN BROTHERS.—Intm. on ord. 2½% (same), payable Oct. 1.

WALSALL CONDUIITS Co., LTD.—Intm. div. 20%, less tax, on ord. (same).

BRITISH OXYGEN Co., LTD.—Intm. div. on ord. 8% (same), less tax.

BRITISH POWER AND LIGHT CORPORATION.—Intm. div. 2% (same).

WISBECH LIGHTING.—Fin. div. on ord. 11%, and on ord. £5 shs. 10%.

UNITED FLEXIBLE METALLIC TUBING Co. LTD.—Intm. on ord. 6% (same).

ARON ELECTRICITY METER, LTD.—Fst. and fin. div. 15% (same). Net pft. to Mar. 31, £19 266 (£10 065).

NIGERIAN ELECTRICITY SUPPLY CORPORATION LTD.—Fin. div. 5%, plus bonus 2%, less tax, mkg. 10% for yr. ended Feb. 28 (same).

BRITISH COLUMBIA POWER.—Qrtly. 40 cents on class "A" for 3 mos. to Sept. 30 payable Oct. 15 to holders of record of Sept. 29.

ALLIANCE ALUMINIUM HOLDINGS.—After taxn., int. on loans and dirs.' fee, pit. to June 30 £6 702 (£16 156), increasg. cred. blee. brot. in from £72 341 to £79 043.

RHEOSTATIC Co., LTD.—Of the offer of 70 000 4s. ord. shs., existing ord. holders subscribed for 95%, and of the 40 000 10s. 6% cum. pref. offered pref. holders took up 97%.

STAVELEY COAL AND IRON Co., LTD.—Fin. div. on ord. 4½% (same), mkg. 7% tax free (same) for yr. ended June 30. After deductg. taxatn. and defd. repairs, net pft. £302 535 (£299 405).

ALUMINIUM CORPN. (controlled by Alliance Aluminium Holdgs.)—Pft. 1944, after deprecn. and E.P.T., £40 648 (£44 703). To loan int. £4 000 (same), deb. int. £5 250 (£15 750 for 3 yrs. to 1943), dirs.' fees £2 400 (same), prov. for inc. tax £25 000 (£27 000), fwd. £6 143 (£2 145).

INTERNATIONAL ALUMINIUM Co., LTD.—Pft. for 1944, after prov. for amortn. and N.D.C., £12 681 (£33 941), plus inc. tax and stk. res. released £15 384 (nil), and £28 574 (£17 663) brot. in. To dirs.' fees £1 800 (£2 400), taxn. £1 750 (£7 600), contings. res. £15 000 (nil), pref. div. £8 687. after tax (same), fwd. £29 402.

DAVY AND UNITED ENGINEERING Co., LTD.—Tradg. pft. for yr. to Mar. 31 last, £276 934 (£28 660 increase). With sundry income £5 139 (£6 455), total pft. £282 073 (£27 344 increase). Fees, depreciatn. and defd. repairs amount to £50 967 (£54 279), and taxatn. £182 304, leavg. net pft. £3 983 lower at £48 802. Carry fwd. £101 000.

VACTRIC LTD.—It is announced that the Co. has disposed of its principal London factory at a very substantial capital profit, and negotiations are well advanced for the sale of other redundant properties. The chairman, Sir Frederick Whyte, states that this will in all probability make unnecessary the cap. issue foreshadowed at the last annual mtg. (which approved the creatn. of 600 000 ord. 5s. shs.).

LIMA LIGHT AND POWER.—Trdg. blee. 1944 was S/o11 095 469 (S/o10 551 051), and other receipts S/o105 245 (S/o11 464 241), mkg. S/o11 200 715 (S/o12 015 292). To bond int., taxes, etc., S/o2 927 152 (S/o3 730 300), amortisatns. and deprecns. S/o4 100 000 (S/o4 500 000 deprecn. of plant), exch. diff. on mort. debts. S/o750 000 (S/o600 000), leavg. net blee. of S/o3 423 563 (S/o3 184 992). Add S/o38 190 (S/o6 714) brot. in, mkg. S/o3 461 753 (S/o3 191 705), of which S/o700 000 (S/o500 000) was set aside for taxes, leavg. S/o2 761 753 (S/o2 691 705), of which S/o136 178 (S/o134 249) transferred to statu. res. Div. on ord. S/o2 400 000 (S/o2 145 016), to dirs. S/o136 178 (S/o134 249), fwd. S/o89 397 (S/o38 190).

NEWTON BROTHERS (DERBY) LTD.—The annual meeting was held at Derby on Aug. 22. In the course of his address the chair-

(Continued on page 256.)

Metal Prices

	Monday Price.	Sept. 3. Inc. Dec.
Copper—		
Best Selected (nom.) per ton	£60 10 0	—
Electro Wirebars	£62 0 0	—
H.O. Wires, basis ... per lb.	9 ⁷ / ₁₆ d.	—
Sheet	11 ⁷ / ₁₆ d.	—
Phosphor Bronze—		
Wire(Telephone)basis	1s. 0 ⁷ / ₁₆ d.	—
Brass (60/40)—		
Rod, basis	—	—
Sheet	—	—
Wire	11 ¹ / ₁₆ d.	—
Iron and Steel—		
Pig Iron (E. Coast Hematite No. 1)... per ton	£7 13 6	—
Galvanised Steel Wire (Cable Armouring) basis 0.104 in.	£28 5 0	—
Mild Steel Tape (Cable Armouring) basis 0.04 in.	£20 0 0	—
Galvanised Steel Wire No. 8 S.W.G.	£26 0 0	—
Lead Pig—		
English	£31 10 0	—
Foreign or Colonial	£30 0 0	—
Tin—		
Ingot (minimum of 99.9% purity)	£303 10 0	—
Wire, basis... .. per lb.	3s. 10d.	—
Aluminium Ingots ... per ton	£85 0 0	—
Spelter... ..	£31 5 0	—
Mercury (spot) Ware-house per bott.	£69 15 0	—

Prices of galvanised steel wire and steel tape supplied by the C.M.A. Other metal prices by B.I. Callender's Cables Ltd.

man, Col. P. C. Cooper Parry, said there were many peace-time uses for which the company's equipment was particularly suitable. There should be a wide field for the application of the voltage regulator and their other specialised equipment for

commercial electrical uses. Thus, whilst post-war demands could not be expected to approach war-time needs, they had good reason to expect to be profitably engaged during the period of transition and afterwards.

Commercial Information

Satisfaction

PIONEER PRIVATE TELEPHONE CO., LTD.
—Satisfaction July 11, £2 700, reg. Oct. 27, 1942.

County Court Judgments

NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be actions. But the Registry makes no distinction. Judgments are not returned to the Registry if satisfied in the Court books within 21 days.

GRINT, Jno. A., 23, Aldessey Gardens, Barking, electrical engineer. £22 0s. 4d. May 29.

HARDING, E. E. (male), 14, Waterloo Rd., Aldershot, dealer in radio goods. £12 6s. July 16.

COX, Wm., 315, Manchester Rd., Droylsden, electrical engineer. £11 8s. 6d. July 12.

ROWLAND, Eric, 26, Maddison St., Abbey Hey, Lancs., electrical engineer. £13 9s. 5d. July 12.

CHADWICK, A. R. (male), 469, Oxford St., London, W.1, electrician. £18 6s. June 12.

ELECTRIC REFRIGERATING CO., 53, Thornby Rd., Clapton, refrigerating engineers and dealers. £80 13s. 1d. July 9.

NEWBERY, R. S. (male), 59, Wilford Rd., Nottingham, radio engineer. £29 6s. 3d. July 9.

ELECTRICAL INSTALLATION (BIRMINGHAM), LTD., R/O., 46, Leahall Rd., Stechford. £27 14s. 10d. July 3.

BROOK, Alan, Garth House, Maltby, welder. £12 12s. 6d. July 19.

Application for Discharge

LAWRENCE, Louis Haydn (in the Petition and Receiving Order described as Henry Frederick Lawrence) residing at 14, Alexandra Road, and carrying on business at 43, Canterbury Road, Margate, under the name or style of "Henry F. Lawrence," electrical engineer. Date of hearing: Oct. 16, 1945, 11 a.m., The Guildhall, Canterbury.

Notice of Dividends

RALPHS, William B., now residing at 30, Ayresome Street, Middlesbrough, lately residing and carrying on business at 2, Mulgrave Road, Middlesbrough, as an electrical contractor. Supplemental dividend 9s. 2½d. per £ payable Sept. 17, 1945, at 80, High Street, Stockton-on-Tees.

HOLMES, Richard John Montague (deceased), 17, Buston Terrace, Newcastle-upon-Tyne, electrical engineer. First and final dividend 4s. 5d. per £ payable Sept. 12, 1945, at the Official Receiver's Office, Gibb Chambers, Westgate Road, Newcastle-upon-Tyne.

SUMNER, William, residing at 45, Litherland Park, Litherland, near Liverpool, formerly residing at 1, Hyde Road, Waterloo, near Liverpool, and Sumner, Edward, residing at 45, Litherland Park, Litherland, formerly residing at 9, Grange Road, West Kirby, and formerly trading in co-partnership at 65, Victoria Street, and 108 St. Mary's Road, Garston, and 9, Grange Road, West Kirby, under the style of "W. and E. Sumner," as electrical and mechanical engineers. 3 per cent. on account of 4 per cent. statutory interest, payable Sept. 14, 1945, at the Official Receiver's Offices, Hunter Street (Friends' Meeting House), Liverpool 3.

COMING EVENTS

Saturday, September 8.

A.M.E. AND M.E. (YORKSHIRE N.W. BRANCH).—Presidential Address, J. M. Langley.

ASSOCIATION OF SUPERVISING ELECTRICAL ENGINEERS (CREWE AND DISTRICT BRANCH).—North Stafford Hotel, Stoke-on-Trent. "Switchgear Protection," A. Lightbourne.

Sunday, September 9.

INSTITUTE OF ECONOMIC ENGINEERING, LONDON SECTION.—Waldorf Hotel, Aldwych, London. "An Outlook on the Rehabilitation of British Industry," J. A. Smythe. 2.30 p.m.

Tuesday, September 11.

I.E.E., BRISTOL STUDENTS' SECTION.—Visit to the Central Electricity Board's control room, Bristol. Meet at 26, Oakfield Road, Clifton. 6.55 p.m.

Tuesday, September 11-13.

ASSOCIATION OF PUBLIC LIGHTING ENGINEERS.—Royal Technical College, Glasgow. North British Station Hotel (Headquarters Hotel). Annual conference. Subject, "The Future of Street Lighting."

Wednesday, September 12.

INSTITUTE OF METALS.—Institution of Mechanical Engineers, Storey's Gate, London, S.W.1. Annual autumn meeting. Sessions commence at 10 a.m. and 2.15 p.m.

Saturday, September 15.

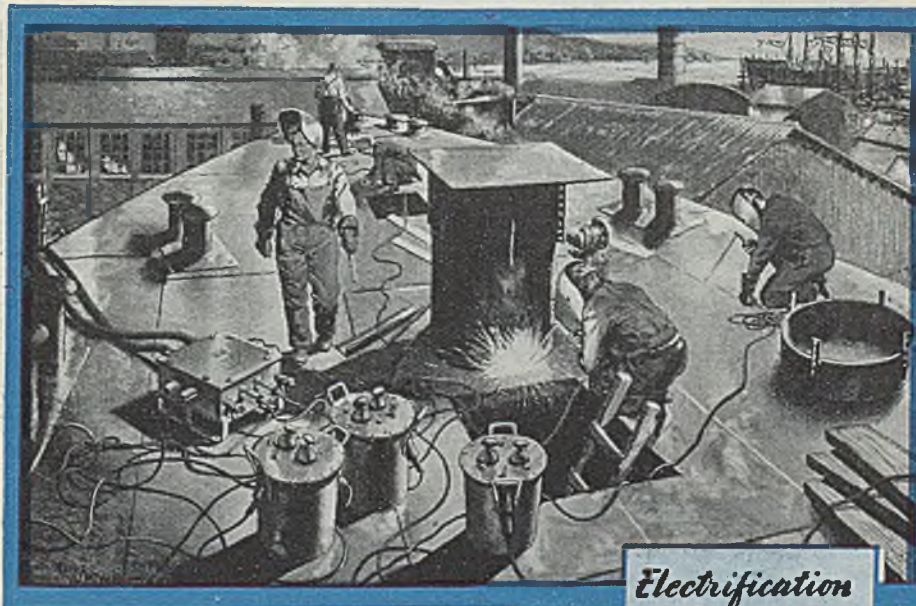
I.E.E., S. MID. STUDENTS' SECTION.—Botanical Gardens, Edgbaston, Birmingham. Victory Dance.

ASSOCIATION OF SUPERVISING ELECTRICAL ENGINEERS.—Engineers' Club, Manchester. "Motor Control Gear," Mr. Mathieson. 3 p.m.

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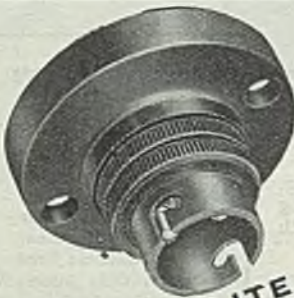
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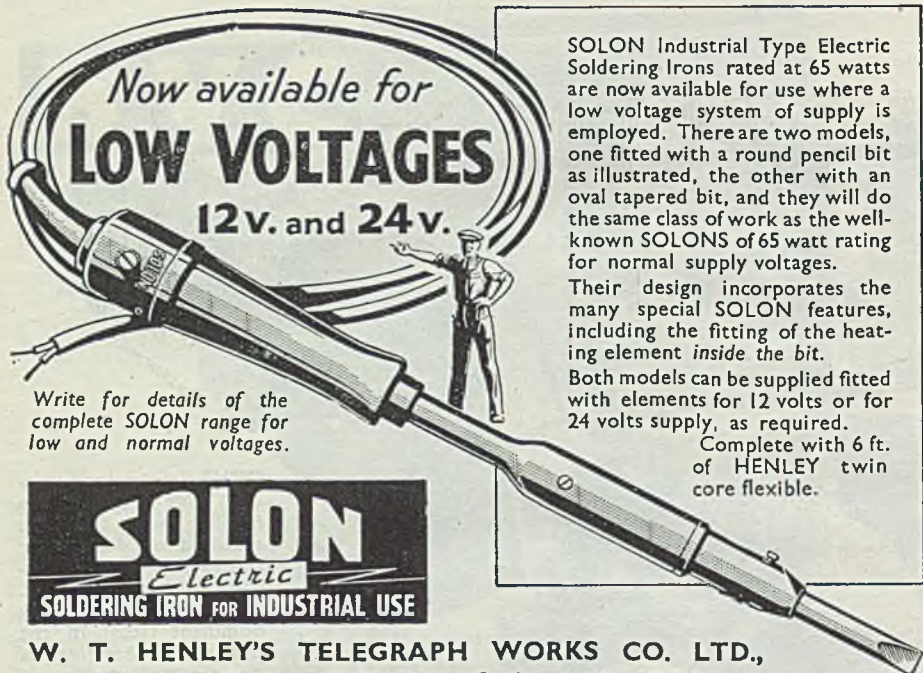
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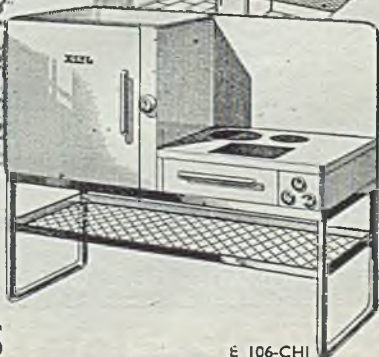
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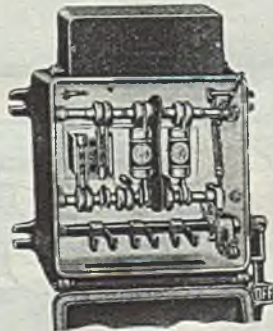
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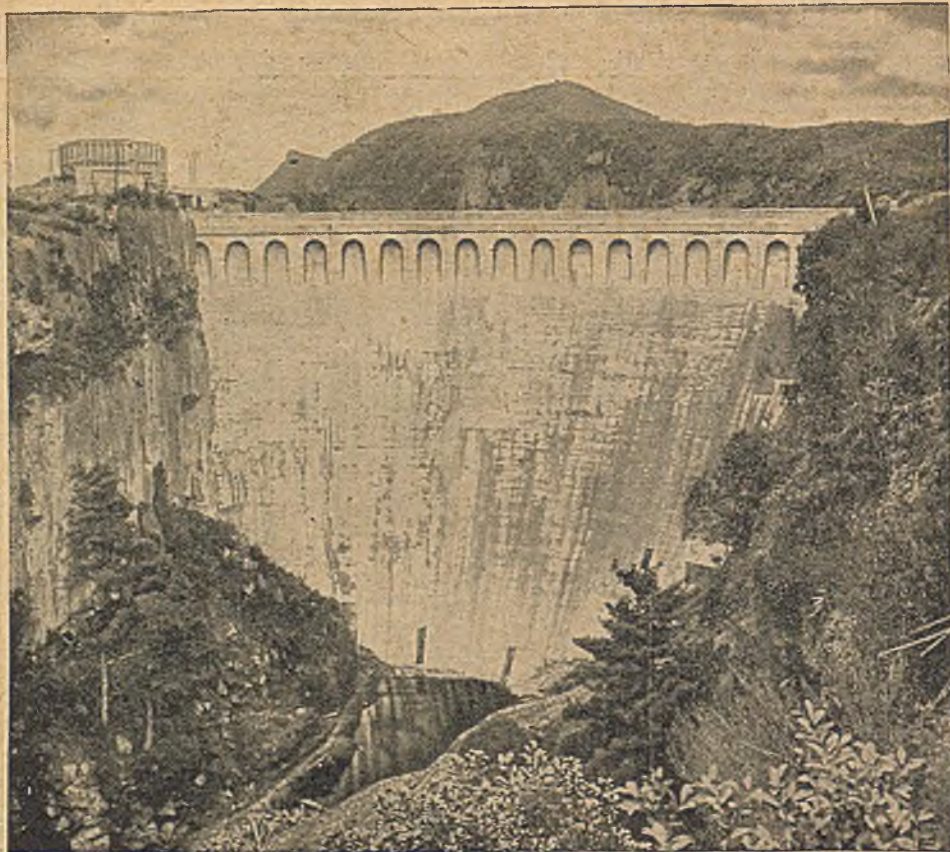
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