ELECTRICAL REVIEW

FOUNDED 1872

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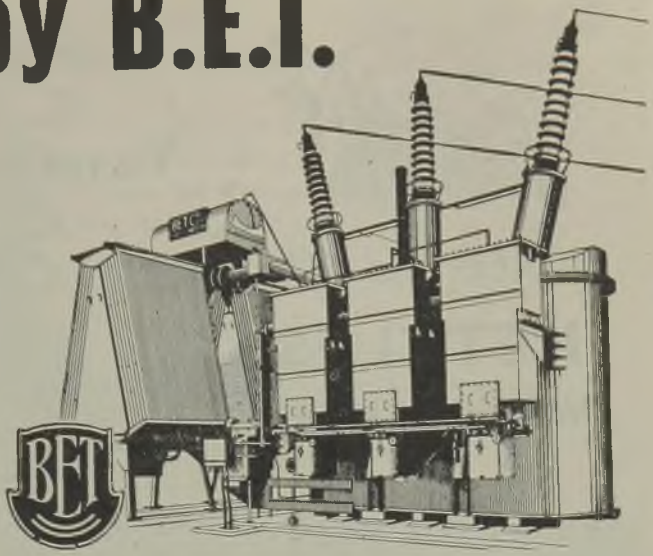

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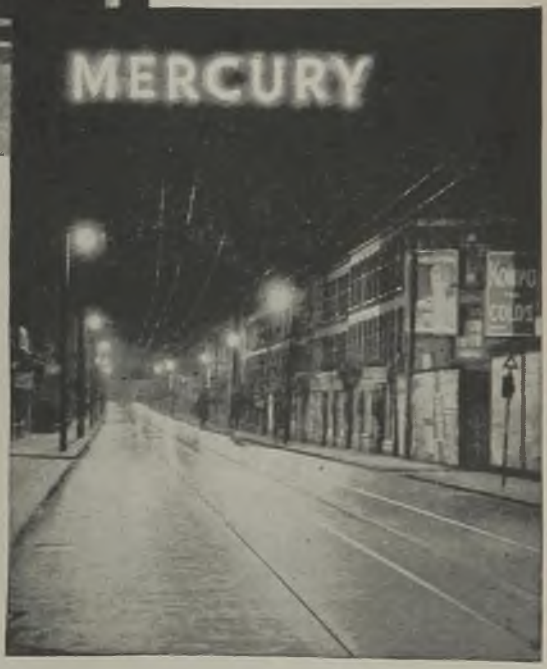

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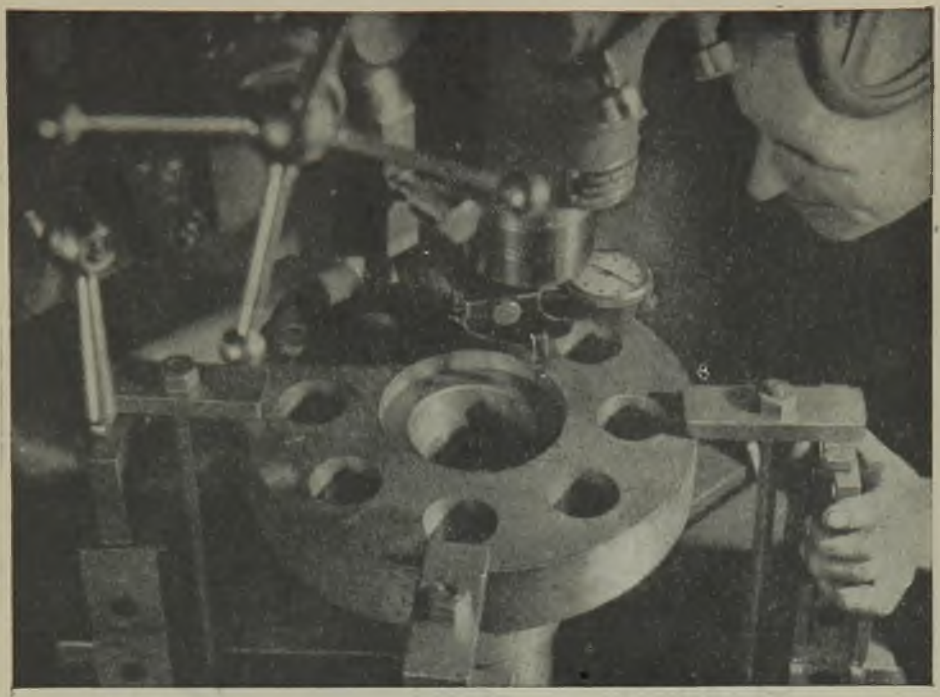

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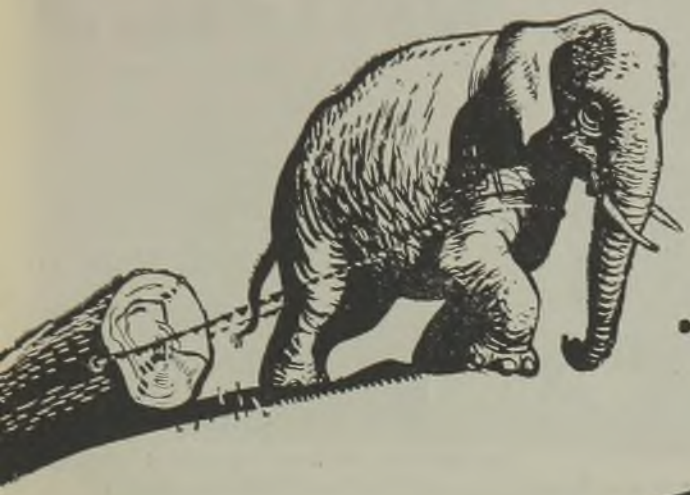
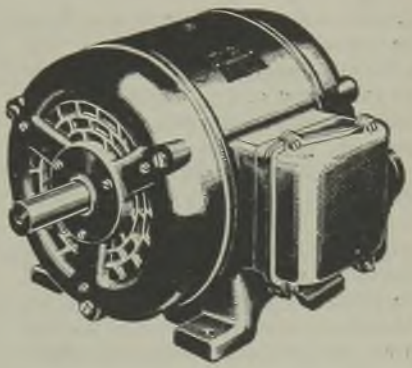


. . . Here is your motor.



Where you have a drive demanding extra starting effort, you may think it difficult to obtain a suitable motor. That is until you look into the Parkinson standard range of A.C. motors. There you will find the Parkinson "Tork"—a motor with just that extra starting torque required. It would be the same if you required other special characteristics. Parkinson Flow Production has made it possible to offer a standard range of over 2,000 types which includes many that you usually expect to have specially made. The Parkinson A.C. Motor Service can save you a great deal of time and money.

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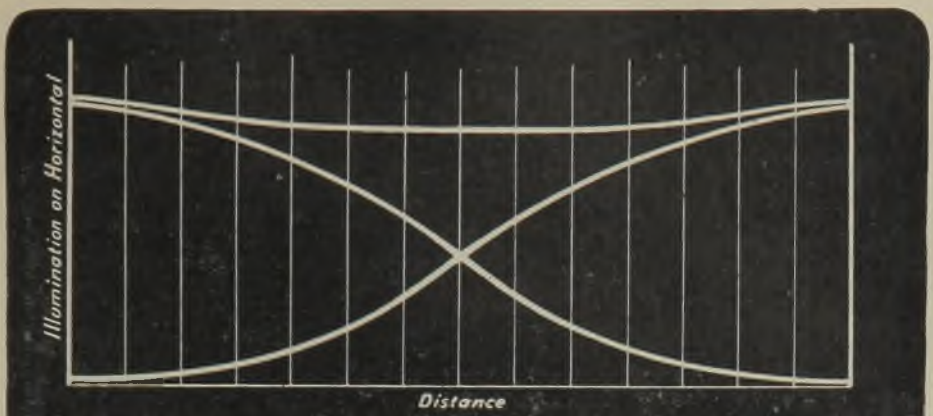

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ALLEN

WATERWORKS PUMPING PLANT

The illustration shows a part of an installation at the Cosford Pumping Station of the Wolverhampton Corporation. In the foreground will be seen one of the two vertical well pumps installed, each designed to deliver water from a well at a rate of discharge varying from 2·0 to 2·65 m.g.p.d. and from a depth varying from 111 to 142 feet below the top water level of the mixed water sump. The two pumps are installed in a 12 feet diameter well and are suspended from the well head by 144 feet of 16½ in. internal diameter rising main, the underside of the suction strainer being approximately 156 feet from the motor base.

Each well pump is a two-stage turbine pump driven by a B.T.H. vertical commutator motor, operated on a 3-phase, 50-cycles, 400-volt supply and having a continuous rating of 115 b.h.p. at 970 r.p.m. Speed control is provided over a range of from 970 to 740 r.p.m. The drive is transmitted from the motor to the pump by an internal transmission shaft, supported in lignum vitæ water-lubricated bearings, and the thrust bearing is a Michell bearing of the self-lubricating type. Automatic devices are fitted to shut down the pumps in the event of failure of the lubricating water supply to the bearings.

In the background will be seen two vertical river water pumping sets each capable of delivering from 0·5 to 2·0 m.g.p.d. from a raw river water sump to the sedimentation tanks of the filtration plant against pressure heads ranging from 26 to 30 feet above the level of the sump. The pumps are 8 in. vertical double-suction pumps, each driven by a B.T.H. vertical slip-ring motor operating on a 3-phase, 50-cycle, 400-volt supply and continuously rated at 26 b.h.p. at 970 r.p.m. A speed range of from 970 to 740 r.p.m. is obtained by rotor resistance to suit the range of quantity and head.

The plant is housed in a building formerly equipped with machinery of another type. A neat and pleasing arrangement has been secured and the plant is highly efficient.

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ANALYSES OF WATER BEFORE AND AFTER TREATMENT BY PERMUTIT 'DEMINROLIT' PLANTS IN COMMERCIAL USE.

(Note - All figures in parts per 100,000.)

Plant		No. 1		No. 2		No. 3	
Water		Crude	Treated	Crude	Treated	Crude	Treated
Cations							
Calcium	Ca	3.2	-	9.4	-	10.7	-
Magnesium	Mg	0.8	-	0.36	-	1.09	-
Sodium	Na	0.46	0.23	1.0	0.31	1.66	0.44
Total		4.46	0.23	10.76	0.31	13.45	0.44
Anions							
Carbonate	CO_3	4.2	0.24	12.4	0.29	10.5	0.57
Chloride	Cl	1.8	0.06	2.5	0.12	2.84	0.30
Sulphate	SO_4	1.35	-	3.48	0.03	11.95	-
Nitrate	NO_3	-	-	-	-	1.15	-
Total		7.35	0.30	18.38	0.44	26.44	0.87
Total ions in solution		11.81	0.53	29.14	0.75	39.89	1.31
COST per 1000 gallons		5.22d		9.83d		16.5d	

The table shows the composition of some types of water before and after treatment by Permutit's " Deminrolit " Process. Water similar to a distillate is produced by this process at a fraction of the cost. Where distilled water was too expensive you can afford " Deminrolit " water. The process has been in practical use in Great Britain for over 7 years. Write for technical publication " Distilled Water without Distillation " to

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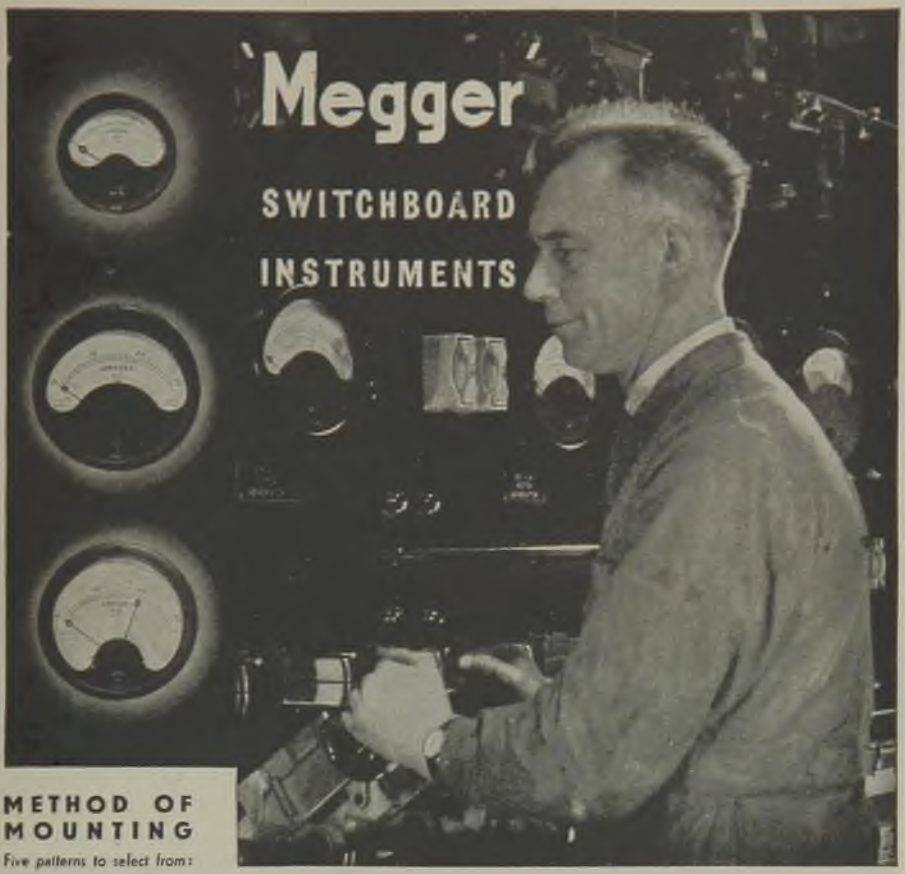

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ELECTRICAL REVIEW

July 13, 1945

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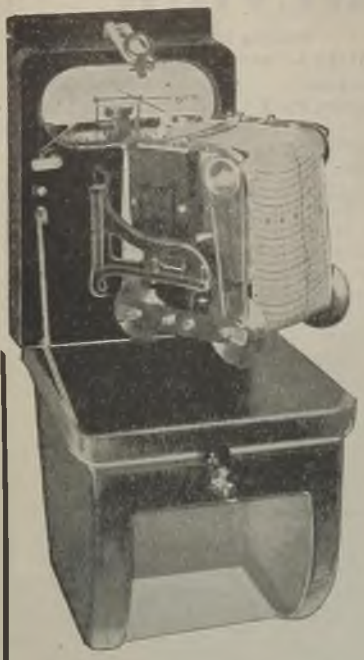

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER — ESTABLISHED 1872

Vol. CXXXVII. No. 3529. JULY 13, 1945 9d. WEEKLY

Provision of Appliances

Post-War Hire and Hire-Purchase

WHEN the Electricity Commissioners' Committee on the subject of hire and hire-purchase reported in 1930 it said it had found that only half of the authorised electricity undertakings had made schemes available to their consumers. There were, however, other organisations which enabled consumers to acquire appliances by hire-purchase methods. The Committee thought that all undertakings should provide on hire or hire-purchase heavy-current equipment, such as cookers, water heaters, fires and wash-boilers, and that other appliances should be available on hire-purchase. It pointed out the importance of this in increasing output and improving load factor.

Another very relevant consideration, although the Committee did not mention it, was the fact that most gas undertakings had adopted hire and hire-purchase methods and the electricity supply industry could therefore not afford to neglect the subject.

Wartime Handicaps

By the outbreak of the war the situation had improved considerably and most undertakings had schemes of some kind. The war brought a drastic curtailment of appliance production and movement of population which virtually put an end to a large number of schemes, although some of them continued to run on the stocks of equipment left in hand. Some undertakings, faced with this situation and finding it increasingly difficult to repair and maintain appliances, sold them at attractive prices to the holders. Moreover in 1942 the Electricity Commissioners, among other restrictions, announced that they would not sanction further loans or expenditure from revenue for hire and hire-purchase schemes.

Now there is a possibility of an early return to normal development it becomes necessary for supply authorities to give serious consideration to the revival of their hire and hire-purchase schemes, loans for which the Commissioners will now approve, as mentioned in last week's *Electrical Review*. They find themselves up against a dual cost problem. Not only will the prices of appliances be generally higher on account of rises in the cost of labour and materials, the increase will be accentuated by the existence of the purchase tax—33⅓ on the wholesale price for cooking and heating equipment.

Revision of Charges

This will involve a revision of charges, but while these must be economic they must still be low enough to attract the public. The position would be greatly eased by the lifting of the tax and essential household appliances should surely be one of the first classes to be relieved. In the meantime many undertakings are unable definitely to determine their policy in this matter, although as a recent E.D.A. questionnaire (dealt with on another page) has revealed, many others are going ahead, purchase tax or no purchase tax. It is noted that 190 of the 349 undertakings which replied to the questions stated their

intention to institute (or resume) both hire and hire-purchase schemes, 26 hire schemes and 95 hire-purchase. Only two have decided to adopt neither, while 36 have not yet arrived at any decision.

Quarries

THE revised General Regulations (S.R. & O. 1233) governing the use of electricity in quarries made in 1938 did not immediately apply to the construction of cables and apparatus in use before July 1st of that year, if they complied with earlier requirements. This exemption was to hold good until July 1st, 1945, but it has now been made permanent in respect of such installations by S.R. & O. 1945 No. 767. The exemption related to constructions (or adaptations) that conformed to prior regulations. It contained no reference to regulations relating to operation and maintenance, which have in all cases to be observed.

Fluorescent Lamps

IT is constantly being asked why only one size of fluorescent tube is available in this country, and that too large for domestic use, while in the United States a fair range can be obtained. The answer, of course, is that the war has held up development here and the manufacturers have had to concentrate on the one size which is suitable for the lighting of factories. Nevertheless the members of E.L.M.A. have experimentally produced a variety of new lamps, although they are not yet able to say when they will be available or at what prices. These new lamps range from a 4-ft. 40-W size down to a $1\frac{1}{2}$-ft. 15-W tube; the latter, and a 2-ft. 20-W tube, are intended for operation in series pairs on 200-250-V supplies.

Ring Circuits

FOR providing an adequate number of socket-outlets to meet the needs of the modern home and for making good use of the diversity of the demands of individual items of equipment, the ring circuit has numerous advocates. It represents, however, a departure from existing practice and is not at present catered for by the I.E.E. Regulations. The announcement in the foreword to the *I.E.E. Journal* for June that appropriate clauses are being drafted is of great importance, as it indicates that this system of wiring can be adopted forthwith in confidence that it will meet requirements. In view of the urgency, it seems probable that the new clauses will be issued as interim amendments to the Eleventh Edition.

Safety and Excellence

A KINDRED present activity referred to in the foreword is the drawing up of basic safety regulations of a kind that could be made mandatory if such a course were later considered to be in the public interest. For this the existing I.E.E. Wiring Regulations would be unsuitable as they go a good way beyond prescribing minimum safety requirements. The level of attainment they enjoin is probably comparable with that which will be found in the projected Code of Practice for the Electrical Equipment of Buildings, which is intended to be a guide to installation work on a higher plane than is required for bare safety. At the same time the need to take account of possible changes in installation practice as time goes on has evidently been borne in mind by the responsible committee.

Sterilising Charts

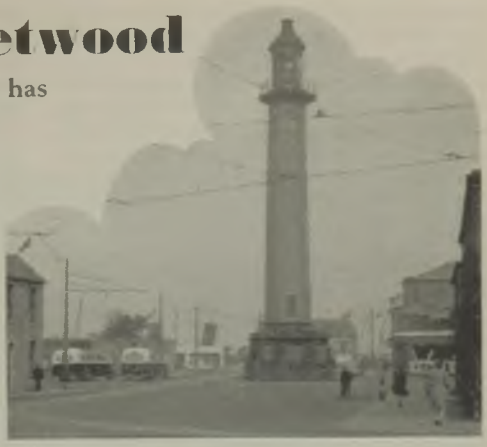
STEAM pressures of from 5 to 15 lb. per sq. in. are ample for sterilising purposes in a dairy. Appreciable savings in capital expenditure and advantages in operation are to be obtained through not going up to the 40 to 60 lb. that is generally employed with solid-fuel installations with a view to keeping up a satisfactory head of steam throughout without continual attention to the boiler. The constant evaporation attainable with an electric boiler, Mr. W. Cover pointed out in the course of an address to the Norwich and District E.D.A. circle recently makes the use of higher pressures quite unnecessary.

Tropical Packaging

AN Anglo-American Services Exhibition in Tropical Preservation and Packaging was opened at Feltham, Middlesex, last October and since then the display has been seen by 20,000 people, mainly from industrial concerns. The exhibition continues and it should have accomplished much valuable work; the packaging of goods for tropical and other markets with detrimental climates is an extremely important matter as was shown in the article on "Export Delivery Details" by Mr. F. G. Copland which was published in the *Electrical Review* of May 18th.

Success at Fleetwood

How a Small Undertaking has Popularised Electricity



One of the lighthouses served by the undertaking

FLEETWOOD, which is probably as nearly all-electric as any town in the country, exemplifies the fallacy of the contention that because an electricity undertaking is small it must inevitably be inefficient. Mains have been laid in every street in its 6,147-acre area and virtually every building, domestic, commercial and industrial, takes a supply, consumers now numbering 7,100. Domestic uses of electricity are both varied and extensive, while electrical energy has now completely replaced other sources of power for industrial purposes. Sales of electricity—last year about 20 million kWh—show a 25 per cent. increase over the pre-war figure, while the maximum demand has increased from 3,808 to 6,500 kW. A still more striking indication of the growth of the undertaking is the fact that when Mr. W. P. Lilwall, the present borough electrical engineer and manager (last year's president of the I.M.E.A.), went to Fleetwood in 1919 sales of electricity amounted to only 1 million kWh a year.

Domestic type cookers are used to good effect in the all-electric canteen of the North Western Engineering Co.

Roughly two-thirds of the consumption is for domestic and commercial purposes and the fact that Fleetwood is a popular seaside resort has resulted in an exceptionally large number of commercial heating and cooking installations. With connected loads averaging nearly 40 kW each, these together account for 1,150 kW and include hotels, catering establishments, fish and chip shops and bakeries. For this class of consumer a special off-peak tariff is available of ½d. per kWh (with a wartime increase of 0·012d. for every shilling by which the average price of coal exceeds 17s. a ton, plus 5 per cent.).

One of the most extensive cooking installations at present is at the Marine Hall, where, to cater for 450 persons, there are a double oven, roaster, steamer, hotplates, boiler, grill, three bains marie, café set, toaster, dish washer, water heaters, etc., representing a total load of 116 kW. A further 190 kW is required for heating the Hall, utilising a plenum system supplemented by 24 kW of ceiling and wall panels. Stage and other

lighting, etc., brings the total connected load up to 430 kW, the whole installation taking a quarter of a million kWh a year.

A still more extensive cooking installation with a total load of 216 kW is just being completed for a new canteen at the Fish Dock, where two canteens catering for 250 persons and taking 112 kW have already been provided. The new plant there will comprise a double roasting oven, double pastry oven, fish and chip fryers, two steamers, two vegetable boilers, potato peeler, mixer, refrigerator and a 40-gallon water heater, in addition to water heaters for wash basins in the lavatories. Radiant heaters (25 kW), supplemented by 10 kW of tubular heaters, will warm the canteen, which will also have fans for ventilation purposes. Among other large canteens are those of the North Western Engineering Co. (100 kW). The Cinderella Holiday Homes also take 60 kW for cooking. A considerable number of steam raising plants have been installed, their latest use being for sterilising ice-cream making apparatus. The largest heating load is to be found in one of the county schools where 450 kW of tubular heaters has been installed.

Panel heaters and cafe equipment installed in the restaurant at the Marine Hall

The twenty thousand inhabitants of Fleetwood live in 6,300 dwellings having an average rateable value of £17. All these take supplies, the last 1,800 or so of the smaller properties having been connected under an assisted wiring scheme. About 2,700 domestic electric cookers are in use and three out of four of the last 400 houses to be erected now have them. All of the hundred new temporary houses will be electrically equipped. There are about 1,650 water heaters installed, principally of the 2-kW circulating immersion type, for which the water is very suitable. Washboilers connected number about 680, kettles 2,560, and grillers 100.

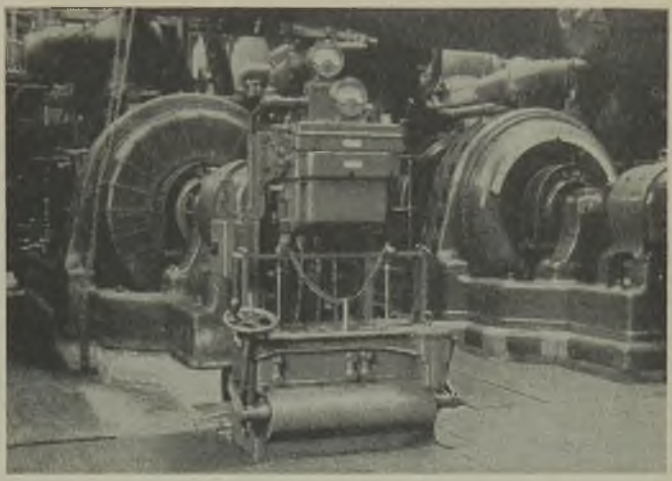
Hire terms were available for all these appliances before the war at the following quarterly rates : Cookers, from 3s. 9d. to 9s. 6d. ; grillers, 1s. 6d. ; washboilers, 2s. 6d. ; kettles, 1s. 6d. ; immersion heaters, 2s. Encouragement is given to builders to install water heaters by providing free services. A considerable number of refrigerators have been installed. No special facilities for acquiring them have been provided, but since the beginning of the war the undertaking has carried out their maintenance.

Tariffs for domestic purposes are exceptionally low, the "all-in" rateable-value tariff comprising a standing charge of 10 per cent. per annum on the first £20 of the net assessment and 7½ per cent. above, plus ½d. per kWh consumed. The alternative flat rates are : Heating and cooking ¾d. per kWh ; lighting, sliding scale from 4¼d. to 3¼d. All these charges are subject to a 15 per cent. war increase, with a discount of 5 per cent. where accounts are paid quarterly. Lighting through prepayment meters is 8½d. per kWh less 4d. in the shilling discount.

Fleetwood is, of course, famous as a fishing port and practically all its industries are dependent on the fishing industry. The war has increased the importance of this industry to the town, and at one period 80 per cent. of the fish entering this country passed through it. When fishing in the North Sea was curtailed many of the fishermen from the East Coast, Grimsby and Hull in particular, went to Fleetwood and swelled the population to a considerable extent, but

most of them are now returning to their homes if they have not already done so.

By far the largest of the Corporation's consumers is the ice works of the Fylde Ice & Cold Storage Co., which serves the fishing industry, producing 600 tons of ice a day. It consumes 3¼ million kWh a year for refrigeration, crushing and grinding. The Docks account for 1¼ million kWh and power loads are provided by the L.M.S. Railway,



Two of the compressor units (the one on the left is new and is just being installed) at the works of Fylde Ice & Cold Storage Co.

traction (the portion of the Blackpool tramway system in the Fleetwood area is supplied), a number of small engineering works, fish curers, and various concerns dealing with fish meal, boiler making, sail making, ship repairing, belting, box making, stone masonry, etc.

Industrial power is obtainable either under a flat rate (ranging from 1·2d. for 2,000 to 5,000 kWh a quarter to 0·7d. for over 125,000 kWh, subject to the coal clause already detailed) or at £4 per HP installed per annum plus ½d. per kWh consumed (all energy over 10,000 a quarter being subject to coal clause), both tariffs being subject to prompt payment discounts.

All the street lighting in the town is electric and on the main roads has been brought up to the standards recommended by the Ministry of Transport before the war by the use of a fitting designed by Mr. Lilwall. Mounted on an attractive concrete standard, which is found to be more robust than metal, there is a cast metal unit fitted with Holophane glassware. No reflectors are provided since it is found that they deteriorate quickly in the salt atmosphere. Normally 500-W lamps are used but for "moonlighting" 40-W lamps have sufficed. While on the subject of lighting, it is worth mentioning that the undertaking serves two lighthouses, one in the town and the other two miles out at sea : both are fully automatic, the latter also being equipped with electric fog-horns.

As a result of the alterations in the load during the war the load factor has fallen from 45 to 38 per cent. and the maximum demand now occurs on a Sunday in the summer, instead of on a weekday. The difference between the Sunday and weekday loads is not, however, large (about 5 to 7½ per cent.) and it is expected that there will be a reversion to the weekday peak as soon as the wartime loads decline.

A very strong feature is made of service and the undertaking goes to an extraordinary amount of trouble not only to provide solutions for any specific problems which consumers may have, but also for seeing that apparatus continues to give satisfaction, the undertaking in fact acting as consultant. As Mr. Lilwall says, no one wants electricity for itself but for what it will do and he considers service the finest form of advertising the electricity supply undertaking in a small town such as Fleetwood.

Repairs of apparatus are carried out in the Department's own workshops and for the convenience of consumers a small showroom and office have been opened, where advice can be obtained and accounts paid. It is hoped before long to build additional office accommodation on a site in front of the works and to utilise the old boilerhouse (which is at present being used for the purpose of repairing aircraft) to house the repairing department.

We wish to express our thanks to Mr. Lilwall for his assistance in the preparation of this article.

Electricity in Queensland

Establishment of Regional Boards

REFERENCE has already been made to the proposal to set up Regional Electricity Boards in Queensland. We have now received from the State Electricity Commission a copy of the Regional Electric Authorities Act, 1945, which gives effect to this proposal. The Act received Royal Assent on April 12th; its aim is " to provide for the extension and co-ordination of the supply of electricity throughout Queensland in the manner best calculated to promote and serve the population, development and industries of the State and to secure its economic well-being."

The Act empowers the Governor in Council to constitute any part of the State as a region for electricity supply and to constitute a Regional Board to become the electricity authority for the region from a specified date. It excludes from such regions the area of the City Electric Light Co., Ltd., Brisbane, or any area in which an electricity authority other than a local authority is for the time being authorised to supply electricity under the Electric Light and Power Acts, and the State Electricity Commission Acts. Provision is made, however, for such areas or parts of them to be included in regions upon the sale to any Regional Board of an undertaking or part of an undertaking. Additions may be made to regions or they may be joined or altered.

The Governor in Council may make regulations in respect of a number of matters, including the management and carrying out of contracts, and he may, upon the recommendation of the Electricity Commission, suspend or rescind any resolution or order of a Board. It is provided that a Regional Board shall become responsible for all contracts and debts, etc., of a local authority undertaking acquired by it. It will also take over any purchase rights vested in a local authority.

One member of a Regional Board is to be nominated by the Electricity Commission and the others by the local authorities whose districts are included in the region. The maximum tenure of office will be three years but the chairman and members may be re-nominated.

The powers and duties of the Boards comprise " (*a*) The construction, extension, protection, maintenance, control and management of works for the supply of electricity; (*b*) the supply, installation, trading in and the sale or hire of electrical fittings, apparatus and appliances within the region." A Board may in any year expend for the purpose of the promotion of electrical development any sum not exceeding one pound per cent. of its revenue for the preceding year. It may make by-laws for, *inter alia*, securing the safety of the public and may impose penalties for the breach of these by-laws. Each Board will appoint a manager " chosen solely on the basis of his executive, technical and administrative experience and qualifications." There will also be a secretary.

The Governor in Council may authorise a Board to borrow money from the State Treasurer or by the sale of debentures. There will be an annual budget and any surplus or deficit will be transferred to a prescribed fund. A Board may be authorised to borrow money for the purpose of funding any deficit.

Hydro-Electric Expansion in New Zealand

THE New Zealand Minister of Works, Mr. Semple, in a recent statement on projected hydro-electric developments, said that the plans covered the construction of ten power stations on the Waikato along a stretch of 115 miles which would develop 800,000 kW. The plans for these stations formed the biggest scheme of its kind for one river in the Southern Hemisphere. The water would be used ten times over, and will be brought down in stages, creating ten lakes in the river. The scheme was identical with the Tennessee Valley project although on a much smaller scale. The Waikato scheme would also reduce the velocity of the river and prevent erosion. The plan was ready to go ahead as soon as material and manpower became available.

The construction of the Karapiro station was well in hand. This would have a preliminary capacity of 60,000 kW, and an ultimate rating of 90,000 kW. Another Waikato project, the Maraetai station (immediately above the Arapuni station) was in the embryonic stage. The higher development scheme at Lake Waikaremoana was also going ahead as rapidly as possible.

Reviewing the provision of power in the South Island, the Minister said that the Cobb scheme was completed last year; the Highbank plant, near Methven, would begin generation very shortly; and work had been started on the Tekapo scheme. Preliminary investigations and surveys were being made in the South Island for further projects. The potentialities in Central Otago were great; there a twofold purpose would be served—the provision of power and irrigation. Mr. Semple said his aim was that hydro-electric works should be developed in the North Island to the maximum, as he visualised that one day it would be possible to electrify the main lines of the railway system.

Electricity in Agriculture

Improved Prospects

By F. E. Rowland, M.I.E.E., M.I.B.A.E.

AFTER many years of criticisms and disparagement—except for occasional bursts of activity of a few enthusiasts and pioneers and the little acknowledged labours of those who were fashioning a foundation for the future—the prospects of electricity in agriculture are now distinctly promising. During the 1914–18 war the nation had realised its dependence on a stable agricultural industry, but this was quickly forgotten when the danger had passed and there was a return to the importation of cheap food. The neglect of agriculture by the community was reflected in its treatment by the electrical industry. With all its energies directed to equipping other industries and the home, it left agriculture, with few exceptions, to its own meagre resources, and apart from some districts in which more accessible outlets for electrical developments were not available, little progress was made.

Increased Activity

As a result of enterprise in some sections of the electrical industry, increased activity was noticeable in the period immediately before 1939. Developments in the dairy industry, arising from the Government's sponsoring increased output of milk and a higher standard of hygiene in its production, also stimulated electrical methods. On account of changed conditions due to the war and natural development through the passage of time, the position has now greatly improved. Having been on the threshold of starvation twice in a generation through neglecting its home food resources, the country is now faced with seriously curtailed finances with which to purchase imported foodstuffs and the necessity to expand the home market for manufactured goods. A policy to place the agricultural industry on a sound basis is therefore likely to gain more general acceptance. A prosperous and well founded agricultural industry demands the widest possible use of electricity to ensure maximum efficiency in production and the utilisation of labour, as well as to provide attractive and amenable conditions for those employed in rural pursuits. There also promises to be a reaction against the concentration of large aggregates of the population in densely crowded urban districts spread over large areas. This tendency is already manifest in proposals for restricting the growth of large centres of population and to accommodate their inhabitants in scattered satellite towns. This decentralisation entails the widest employment of electricity for transport, communications, industry, entertainment and in the home. Looking further afield, there is a similar tendency in more remote rural areas with the purpose of spreading various activities over a wider area, depending on electricity to provide the means for linking up the various entities, and for supplying them with up-to-date amenities.

Efficient Use of Labour

Amongst the principal inducements towards the wider employment of electricity in agriculture is the necessity for a more efficient use of labour. During the war the cost of agricultural labour has greatly increased and methods of using it more efficiently are readily adopted. Through wartime conditions as well as their contacts with War Agricultural Executive Committees and institutions which furnish them with technical information, farmers who by their calling are naturally conservative, have become acquainted with the benefits which are to be derived from more up-to-date processes, and are more ready to adopt new methods. Many of the younger generation will return to farming with first-hand experience of mechanised warfare, and eager to adopt new mechanical methods.

Technical Representation

In the electricity supply industry there is a widespread impression that one of the most important developments in the post-war era will be the rapid and extensive electrification of agriculture, and supply undertakings in rural areas are devoting infinitely more attention to this field than formerly. They are developing their farming load as energetically as possible in existing circumstances, and are making plans for expansion as opportunity offers, particularly as wartime restrictions are relaxed. A problem calling for solution is that of adequate technical representation. The correct approach to farmers is of paramount importance. It is desirable that agricultural representatives should have a

farming background with a knowledge of agricultural processes, coupled with the requisite electrical training. The combination is probably best obtained from a farming upbringing with electrical training, although very satisfactory results have been achieved with electrical engineers who have made a specialised study of agriculture. Individual ability is of course of first importance, and to attract the requisite talent adequate remuneration, status and prospects are essential.

Although the once thorny problem of wayleaves is now less acute, it still requires careful and tactful approach. The same applies to tariffs, particularly as regards the standing charge of a two-part system. It is well established that to encourage the widest use of electricity a low running charge is essential, and it is important that the fixed component should be calculated in a manner that is easy for the lay mind to comprehend, and one which will avoid arousing a sense of grievance in the consumer. For instance, if the floor area of farm buildings is used as a basis for calculation, it may be advisable to make some concession for rambling premises which are only partially used. Development is undoubtedly hampered in England and Wales by the inability of an outgoing tenant to claim compensation from the landlord for certain improvements such as an electrical installation which he has carried out during his tenancy. Farmers therefore hesitate to make costly improvements which they may have to relinquish without payment. In Scotland, a tenant enjoys this right of compensation and it is one which could be introduced with advantage in England and Wales.

Approach to the Farmer

The farmer has been accustomed to having new implements and processes brought to his notice through the farming press, at agricultural shows and by demonstration. These channels give ample opportunity to the electrical industry to bring its products before him. Another very fruitful channel is through the various branches of the Young Farmers' Club throughout the country. This organisation is doing invaluable work in educating the farmer of the future and instructing him in the latest methods. Electrical engineers in rural areas should support the local clubs for by so doing they will become associated with one of the most virile farming institutions in their district. Any co-operation they can render will be welcomed, and they will make personal contacts with influential and progressive members of the agricultural industry which will be of great value. There will be opportunities for imparting electrical knowledge by lecture and demonstration, whilst incidentally they will obtain an insight into agricultural matters and local affairs.

The local branches of the N.F.U. are also valuable means for maintaining contact with farmers, whilst by regular attendance at markets close relations may be maintained. To gain the confidence of farmers it is necessary to approach them patiently and persistently. They are not a class which can be carried by assault, and high-pressure methods will not succeed. An important occasion in the year is the country or district show at which electricity should be prominently represented by working displays and educational exhibits. Provision should be made to ensure that as many exhibits as possible employ electricity for driving machinery and similar purposes, whilst there will be opportunities for incorporating electrical equipment in such exhibits as working dairies and cooking demonstrations.

I.E.E. Notes

Western Centre

THE annual general meeting of the Western Centre of the Institution of Electrical Engineers was combined with a summer outing to the site of an underground aeroplane factory. Members and guests, numbering over 600, travelled to the factory in private buses from Bath station.

Following a short committee meeting the annual general meeting was held at which the chairman, Mr. J. Morgan, reported on the past session's work. He said tha the membership was 1,800 and both the new Students' Section at Cardiff (chairman, Mr. T. B. Rolls) and the Installations Group (chairman, Mr. A. N. Irens) were flourishing and well supported.

The meeting was followed by luncheon, after which there were some twenty conducted tours. At tea, the chairman took the opportunity of thanking Mr. Tucker, the manager, and his staff for making the visit such a success.

North-Eastern Centre

The annual report of the I.E.E. North-Eastern Centre for the year ended April, 1945, shows that the attendance at ordinary meetings averaged 88 and the membership increased by 88 to a total of 988. The Tees-side Sub-Centre membership (176) was 17·8 per cent. of the total and that of the Students' Section (412) 42 per cent.

Manufacturers' War Work-VIII

Standard and Special Products of Many Kinds

Veritys, Ltd.

IN spite of a decrease of 20 per cent. in the number of employees available the output of Veritys, Ltd., has been considerably expanded. Its main contribution to the war effort comprises electric motors and control gear for ships' auxiliaries and lighting fittings. Almost every British naval vessel and a very large number of Mercantile Marine ships have some of the company's products installed. In all, the company has produced 40,000 marine motors for auxiliaries and 70,000 electric fans (oscillating, non-oscillating and ceiling types). One of the special orders was for flameproof motors for exhausting petrol fumes from aircraft carriers. Many of the motors were of shockproof construction.

In the early days of the war Veritys manufactured for the Admiralty a large number of low-power motor generators for gun firing circuits as well as complete bollard

Testing complete fan units for naval vessels at Veritys' factory

type ammunition hoists, but owing to the importance of accelerating production these machines eventually made way for motors required in connection with ventilating units, not only for warships but for the engine-room ventilation of M.T.B.'s, rescue launches, etc. All the control gear required in connection with the above plant was manufactured by the company together with various special panels and starting switches.

On the lighting side, the equipment supplied to the Admiralty and Air Ministry has been special signal lamps for H.M. ships, floodlights, all types of Admiralty pattern ships fittings and special electric radiators for gun turrets, etc., and also bulkhead fittings and special flameproof fittings for sea-going transport and tankers for the Ministry of War Transport.

The company's achievements are all the more praiseworthy when it is appreciated that through enemy action certain of the shops suffered badly through incendiaries and were out of use for the best part of a year.

Lancashire Dynamo & Crypto, Ltd.

The wartime activities of the Lancashire Dynamo & Crypto group of companies have covered a very large range of electrical and other products. The Manchester and Willesden factories, in addition to their normal output of electrical power plant (including AC and DC machines up to 2,500 HP), produced for the various Ministries a large number of equipments for planing armour-plate, etc., Ward-Leonard equipments for cartridge presses and certain special motors for use on dock cranes in connection with overseas invasions, re-equipping of damaged harbours, etc.; for the equipping of food cold storage plants and for shell lathe equipments. During the period when Russia was in urgent need of electrical plant a special effort resulted in the supplying of thousands of motors in record time.

A vast number of electrically driven food preparing machines of various types were supplied to cater for the needs of the Services, hospitals, Government factory canteens, British Restaurants, emergency feeding centres, etc. Electrical plant was also supplied in connection with air-conditioning in submarines, welding sets for ships' plates, generators for mobile battery charging units and searchlights, together with fre-

quency changer sets for American repair shops in this country. A special factory was equipped for the production of small DC generating sets supplied in tens of thousands for use in all parts of the world for the M.A.P. Another separate factory turned out over one million component parts for the anti-aircraft rocket projectile. Parts for Crusader tanks were also manufactured.

One of the associated companies, Crypton

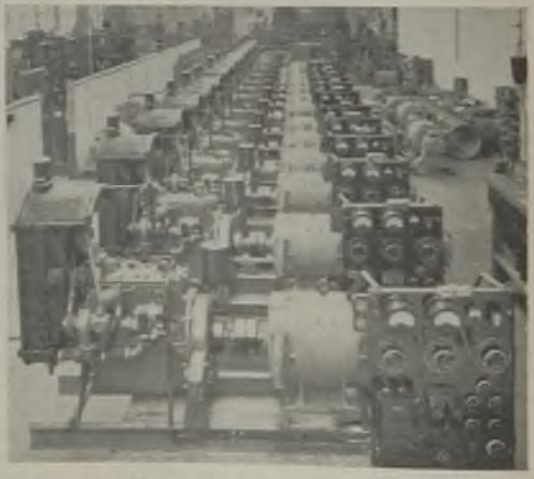
Lancashire Dynamo aircraft battery charger

Equipment, Ltd., suffered severe damage during the early part of the war, but by strenuous effort a factory at Bridgwater, Somerset, was equipped within six weeks and commenced full production of rectifier equipments of all types. Constant potential battery charging sets, complete with switchboards, component parts for tank landing craft, ships' lighting installations, etc., were also produced in large quantities.

The Wimbledon factory of Foster Transformers & Switchgear, Ltd., produced many types of special switchboards including central control panels for the C.E.B., the N.F.S., and Fighter Command and main switchboards for H.M. destroyers. Many thousands of small parts included components for radar and de-gaussing equipment together with complete small assemblies for Wellington bombers. Other equipment included voltage stabilisers, television control apparatus, aircraft battery charging switchboards and lighting equipment for aircraft carriers and aeronautical flarepaths. Numerous power switchboards were dispatched to Russia and about 50,000 power transformers were supplied for the Navy.

In the early part of the war the Nevelin Electric Co., Ltd., was engaged mainly on large power rectifier equipment for ordnance and munition factories, for giving DC supply to cranes and other specialised plant. At extremely short notice rectifier equipments were developed for charging the batteries of the midget submarines, the equipment actually being delivered by the company in six weeks.

Another important development was the design and construction of special rectifiers for use in conjunction with light alloy spot welding. This process uses a condenser type spot welder and the rectifier had to be capable of charging a 50,000 mF electrolytic condenser. Considerable research work had to be carried out in order that the rectifier should withstand a peak load of 900 A, a load which is reached from zero 60 times a minute during the welding process. The majority of the many hundreds of these equipments supplied have been in operation continuously for 24 hours a day. Other rectifiers supplied include heavy-duty equipment for charging batteries on aircraft and rectifiers for cinema arcs at camp theatres. In addition to their many and varied wartime activities, all the L.D.C. factories continued to meet the very large demand for standard equipment required by the various Government Departments at home and overseas.



Lancashire Dynamo 6·1-kV petrol-driven alternator sets for R.A.F. mobile photographic stations

At the main factories a record production of electrical machinery for the Russian Government was superimposed on the existing factory load.

Export Market Control

Co-operation Between Manufacturers and Agents

By "Sala"

UNSUCCESSFUL attempts to secure and establish export markets have led some manufacturers to form the conclusion that export trade is a gamble, that whether or not their products find a ready sale overseas is just the luck of the draw, or, that they have been fortunate or unfortunate, as the case may be, in having appointed a good or a poor agent to represent them. The proper choice of an agent depends on the manufacturer's judgment and the manner in which he supports him; whether or not the product finds a ready sale in the overseas market is, in the main, the responsibility of the manufacturer.

Assuming that a reputable agent has been appointed—one with a knowledge of the industries to which the manufacturer's product will appeal, and with an adequate selling and distributive organisation—the control of the market development can, and should, be in the hands of the manufacturer to mould and adapt to meet his own particular circumstances.

Planning Expenditure

Barring any uneconomical rival price competition, a suitable product, justly priced, should find ready acceptance in overseas countries. From what knowledge the manufacturer has been able to glean of the possible volume of business he might secure from the overseas market he bases his plan of expenses of introducing his product accordingly. What the total sum shall be rests with the manufacturer, who obviously realises that his object is to popularise his product as widely as possible in the shortest possible time. His experience of the requirements of the trades at home to which his product appeals, his knowledge of what volume of sales he might expect from this or that industry, his long experience of adapting and overcoming sales resistance to his product to create for it an established market; all these things are carefully considered by the manufacturer in formulating the very necessary plan of campaign by which he can obtain that degree of control over his export markets that he has over his home market.

Control then, means that among other things the manufacturer must plan and guide his own advertising and be quick enough and wise enough to adapt it if and when it is found necessary. The object of his advertising is to make contact with the prospective users and care and good judgment must be exercised in choosing the media through which to achieve this. Experiments may be necessary, but the main thing is that the manufacturer should control his advertising in such a manner as to satisfy himself that he has done everything possible to create a market for his product, and ensure that the demands forthcoming are maintained and further developed by the personal contacts and efficient distribution organisation of his agent.

If the product justifies its selling price to the consumer, the manufacturer's methods and manner of educating prospective users by his advertisements must control the price. In other words, if his product is good, suitably priced, known to be sold quite competitively in the home market and suitable for use in the overseas country, then demands for reduction in price by the agent can be offset by the manner in which the manufacturer educates the prospective user to the quality advantages of his product to justify its price.

First-hand Reports

The agent will be only too willing to co-operate to the full with the manufacturer in giving him regular, first-hand reports of the success or failure of the manufacturer's efforts to create the demand. He will advise him which industries are responding well and which are not, so enabling the manufacturer to judge whether or not some different angle of approach or some different medium of advertising would bring the desired results. These regular reports will be invaluable in that they will also give the manufacturer the verbal opinions of those prospective users with whom the agent has made personal contact and who have had the opportunity of actually examining the product. From the reports the manufacturer can distinguish the kind of sales resistance which he has to overcome. He will be quick to pick on those

points and develop his sales arguments against them, perhaps to the extent of adapting his advertisements.

The agent cannot know too much about the manufacturer's product and the more points that are raised between them to be considered, understood and agreed upon will lead to a better agency, to the satisfaction of both parties. Quite obviously, the agent has enough work to do to stock and distribute the manufacturer's goods through conveniently dispersed depots and make those very necessary personal contacts with the prospective buyers of the product in his country. With the full support and co-operation of the manufacturer he should be left to organise and carry out these vital functions in the manufacturer's interests. He knows the particular trade customs and any special peculiarities which exist in his own country far better than does the manufacturer, and he can give much valuable guidance on the manner of making contact with prospective users, particularly in the larger overseas countries where the population and industries are far more scattered.

As compared with creating a demand for his product in the home market the manufacturer must be prepared to appreciate certain circumstances which may seem trivial and unworthy of note. Let him be guided, however, by his agent, for the more the manufacturer can learn of the conditions, the customs and the scope in every overseas country in which he is interested, the better will he control his export markets.

East African Trade

APART from an increase of 25 per cent. in imports of electrical machinery and parts, there was little change in 1943 in the electrical trade of Kenya and Uganda. The values of the principal items, with a note of increase or decrease compared with 1942, are shown below. Great Britain did the bulk of the business.

Class	1943 £000	Inc. or dec. on 1942 £000
Electric light bulbs	4	— 5
Lighting accessories and fittings	12*	+ 1
Electric wires and cables	66*	— 8
Telegraph and telephone instruments and apparatus	19*	+ 6
Radio sets	8	— 1
From United Kingdom	6	— 2
,, United States	1	—
Other radio apparatus	8*	+ 2
Electrical goods and apparatus not elsewhere specified	7*	— 5
Electrical machinery and parts	50	+ 10
From United Kingdom	46	+ 18
,, United States	3	— 8

* Mainly from U.K.

According to a report issued recently by the Department of Overseas Trade the erection of generating plant designed to augment the power supply in the Nairobi area, at a cost of between £200,000 and £300,000 has been postponed. In general, it would appear that considerable development and plant replacement in British East Africa will be urgently required as soon as possible after the war. Owing to unfavourable weather in the Kenya Highlands the outlook this season for coffee planters, dairy farmers and agriculturalists generally is unsatisfactory.

Trinidad Electrical Imports

LAST year petroleum remained the most active of Trinidad's industries. Agriculture as a whole declined although the production of food crops showed some increase. The completion of the United States bases did not affect general business. While there were no particular shortages, the market was not oversupplied with imported goods.

In 1943 Canada's share of the import trade declined nearly all round, outstanding decreases occurring in wire and cable, batteries and machinery. Values according to returns issued in Port of Spain are shown below, with a note of increase or decrease compared with 1922 added. In the restricted business done the United Kingdom, the United States and Canada all took a share.

Class	1943 $(000)	Inc. or dec. on 1942 $(000)
Insulated wires and cables—	117	— 183
From United Kingdom	48	— 82
,, United States	57	— 43
,, Canada	12	— 52
Primary batteries—	13	— 47
From United Kingdom	2	— 8
,, United States	10	— 34
,, Canada	1	— 3
Cooking and heating appliances (from United States)—	1	— 11
Electric stoves (from Canada)	4	— 5
Electric refrigerators and parts	8	— 16
From United States	7	+ 2
,, Canada	1	— 18
Goods and apparatus, n.o.p.—	157	— 157
From United Kingdom	51	— 29
,, United States	85	— 99
,, Canada	21	— 29
Electrical machinery—	178	— 452
From United Kingdom	75	— 265
,, United States	102	— 174
,, Canada	1	— 9
Radio apparatus—	83	— 32
From United Kingdom	42	— 18
,, United States	40	— 4
,, Canada	1	— 10
Other telegraph and telephone apparatus—	28	— 55
From United Kingdom	21	— 50
,, United States	6	— 3
Lamps under 20 V—	12	—
From United Kingdom	3	— 1
,, United States	5	+ 3
,, Canada	4	— 1
Lamps over 20 V—	39	— 21
From United Kingdom	20	— 27
,, United States	2	— 5
,, Canada	17	+ 11
Other lighting appliances—	22	— 22
From United Kingdom	10	— 5
,, United States	6	— 13
Accumulators and parts—	34	— 4
From Canada	22	— 4

RECENT INTRODUCTIONS

Notes on New Electrical and Allied Products

Cartridge Fuses

THE first post-war development to be announced by the MIDLAND ELECTRIC MANUFACTURING CO., LTD., Reddings Lane, Birmingham, is the addition to its products of a range of "Kantark" h.r.c. cartridge fuses, which are available in ratings of from 5 to

Adaptor link fuse carriers

200 A. They are stated to have been independently proved to comply fully with B.S. 88.

A range of fuse handles is also introduced to carry the cartridges, designed to be interchangeable with M.E.M. standard handles without modification to the bases, so that the change-over from rewirable to h.r.c. fusing can be made merely by withdrawing the existing handle and inserting a new carrier with the appropriate size of cartridge.

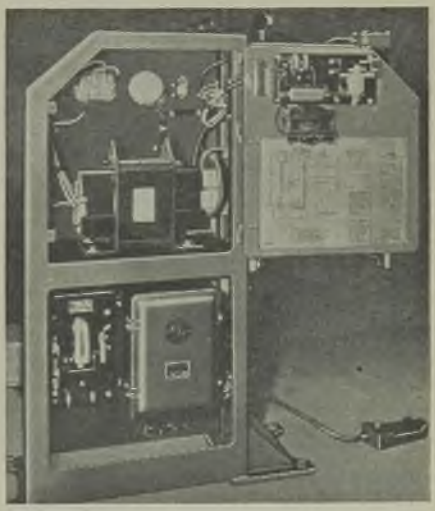
Adaptor links are available to permit low-rated cartridges to be inserted into large carriers where necessary; for example, the 100-A carrier will accommodate 100- and 60-A cartridges by direct fixing, while the 30- and 15-A cartridges can be fitted into the same size carrier by the use of two adaptor links.

Spot Welder

A smaller model of its well-known air-operated spot-welding machine has been developed by the METROPOLITAN-VICKERS ELECTRICAL CO., LTD., Trafford Park, Manchester, for dealing with 10 to 22 SWG mild steel plate.

This Type AS.25/24 has a throat depth of 24 in. and the electrodes can be separated to a maximum distance of 2 in. Stitch or continuous spot welding is carried out automatically, after the preliminary setting up, by merely keeping the foot switch depressed. The machine can also be used for individual spot welds. The electrodes are water cooled and with compressed air at 80 lb. per sq. in. the air cylinder will provide a welding thrust at the electrode tip of up to 600 lb., being adjusted by a reducing valve to suit requirements and read on the gauge at the top. Two timers are electrically interlocked to maintain the correct sequence. One is of the Thyratron type and, operating in conjunction with a high-speed contactor, gives precise control of the welding period ranging from 0·1 to 10 seconds. The second timer controls the forging or "dwell" time and is set at approximately 10 cycles. A pressure switch on the welding head prevents welding current being switched on until the requisite mechanical pressure has been reached. A limit switch with an adjustable operating cam enables the length of travel of the upper electrode to be varied.

In the lower compartment are the high-speed contactor and Thyratron timer: the upper chamber contains the transformer, the tapping switch and the welding-time selector. Mounted on the inner face of the door are the small transformer for the control circuit, the rectifier, the sequencing relay and the forge timer. The electrodes and their mounting can be varied to some extent; *e.g.*, reversed so that the electrode may be inclined, to facilitate working at difficult angles. It is important that the flow of cooling water through the electrodes should be continuous and, accordingly, a sight drain is included.



Spot welder with access doors open

Vapour from Cooling Towers

Experiments at Bradford

ALTHOUGH precautions are taken in the design and construction of cooling towers for electric power stations with a view to minimising the emission of vapour, there is an appreciable discharge from the tower exits. In order to determine the practicability of applying the principle of electrostatic precipitation, as used for flue-gas cleaning, to reducing this discharge to negligible proportions, Mr. T. H. Carr, city electrical engineer and manager, Bradford, has carried out experiments with the 40-kV testing equipment normally used for pressure testing in his undertaking, together with a small chimney having a sheet-tin lining in its upper end, in the centre of which an electrode is inserted. The promising results achieved have suggested the adoption of the method for full-scale working. In that case electrodes charged at 40 kV, DC, within earthed metal cages would be supported within the upper part of the tower and would thus condense about 90 per cent. of the vapour within the shell. The arrangement would be applicable to both reinforced-concrete or wooden towers.

The cost of the apparatus, though somewhat heavy, might be economically justified by saving in cooling-water make-up and prevention of vapour nuisance (under certain atmospheric conditions) to adjacent property and, during the winter, of accidents due to ice formation on public roads. Where make-up water is taken from the town's mains, the yearly charges on that account for a station generating 300 million kWh per annum would probably approach £10,000.

Public Transport

Association's Annual Report

THE report of the Public Transport Association Inc. prepared for submission at the third annual meeting of the Association yesterday (Thursday) records the negotiations conducted during the year with Government Departments on various matters. One of the most important concerned the "box" dimensions of vehicles. A further twelve months of negotiation by the entire road passenger transport industry failed to secure from the Ministry of War Transport a concession in regard either to an increase in the overall width from 7 ft. 6 in. to 8 ft. or a relaxation of the regulations governing the number of axles, but representations are being continued.

For nearly four years negotiations with the Treasury have been in progress regarding war damage contributions and compensation as far as tramway and trolley vehicle undertakings are concerned. At the end of the year a reply to a letter sent to the Treasury in April, 1944, was still awaited.

Future taxation of road transport has also been discussed, the Council of the Association maintaining that the overall burden must be reduced but being strongly opposed to any suggestion that all taxation of road transport should be levied by a tax on fuel. Representations regarding the rehabilitation of vehicles were, with one minor exception, accepted by the Ministries of War Transport and Supply. Other questions dealt with have included the supply of new vehicles, the man-power situation and vehicle lighting.

Fluorescent Tubes

New Sizes Being Developed

IT is justly claimed by the Electric Lamp Manufacturers' Association that the fluorescent lamp has been very largely responsible for the achievement of the higher standard of lighting in wartime factories which has contributed to efficiency and speed of production. The 5-ft. 80-W tube has proved excellent for this work and in consequence the manufacturers have been confined to the making of this size and the development of other types has been held up.

This is stressed in a statement issued by E.L.M.A. which goes on to deal with the future of the fluorescent tube, which is expected to revolutionise both lighting standards and lighting methods in every field of artificial illumination. It says that it is obvious that the single size which satisfied the needs of wartime industry will by no means suffice for the thousand and one decorative and utilitarian requirements of peacetime lighting. But wartime limitations in materials, machinery and labour still remain and although E.L.M.A. members are fully alive to the future possibilities of fluorescent lighting and have, in fact, developed and produced experimentally a variety of new lamps, they are not yet in a position to make any definite statement on marketing dates and prices. To indicate, however, what is being done the Association has announced that the future range of fluorescent lamps will include the following types:—

Length ft.	Diameter in.	Voltage	Nominal watts	Cap
4	1½	200/250	40	Bi-Pin
3	1	200/250	30	"
2*	1½	100/130	20	"
2	1	200/250	20	"
1½*	1	100/130	15	"

* These lamps operate two in series on 200/250-V AC mains, or singly on 100/130-V.

All these lamps will be available in both "daylight" and "warm-white." The warm-white was introduced in December last as an alternative colour, giving a light more acceptable for many non-industrial purposes. All the new lamps will be fitted with bi-pin caps of American type and will be interchangeable with their American counterparts—a fact of the utmost importance in connection with export business. 80-W lamps will continue to have b.c. caps for the present, but they will be made in due course with bi-pin caps.

PERSONAL and SOCIAL

News of Men and Women of the Industry

CONSEQUENT upon the death of Mr. W. A. Pearman, general manager and secretary of the London Power Co., Ltd., **Sir Leonard Pearce,** the engineer-in-chief, will for the time being undertake the managerial duties of the company and become chief executive officer. **Mr. Bernard Higgins,** formerly assistant secretary, has been appointed secretary of the company, with **Miss Janet E. Hocking** as assistant secretary.

On Thursday last week at the head office of the London Power Co. Sir Leonard Pearce made a presentation to **Mr. C. Mancha Bennett** on the occasion of his retirement. Mr. Mancha Bennett was appointed chief control engineer to the company nineteen years ago when the Wood Lane works of the Kensington & Knightsbridge and Notting Hill Electric Lighting Companies, of which he was chief engineer, were closed down. For many years he has represented the London Electricity Supply Association on the Council of the British Electrical and Allied Industries Research Association. Mr. C. Mancha Bennett, who has been in the supply industry for forty-nine years, received his engineering training at the Thames Iron Works & Shipbuilding Co., Blackwall, under Arnold Hills.

Mr. Ernest Stroud has resigned from Holophane, Ltd., and has joined the board of the Brighton Lighting and Electrical Engineering Co., Ltd., as technical director to form an Illuminating Engineering Department to deal with public lighting problems. Mr. Stroud has for many years been actively engaged in street lighting technique and is a member of the B.S.I. Committee on Street Lighting and Photometry. He is the 1944-45 president of the Illuminating Engineering Society, an associate member of the Association of Public Lighting Engineers and chairman of the Street Lighting Section of the Electric Light Fittings Association.

Mr. E. Stroud

Mr. Ian M. Cameron, who for the past eight years has been with the Domestic Sales Department of the English Electric Co., has relinquished his post to become sales and development manager with Clifton Aircraft, Ltd., Appliance Division. Mr. Cameron has been associated with the sales and development of domestic appliances in the Northern Counties for the last fifteen years. He was formerly with the Simplex Electric Co. and Wakefield Corporation. For the time being he will make his headquarters at the company's Lytham works.

Mr. Duncan W. Low, B.Sc., M.I.E.E., has resigned his position as director of British National Electrics, Ltd., the J.P. Tubular Heater Co., Ltd., and Archibald Low Electrics, Ltd. He has formed a new company, Duncan Low, Ltd., whose registration is recorded in our "Financial Section." This company will confine its activities to the manufacture of electric water and oil heaters and does not expect to be in production until the late autumn.

Mr. G. Griffin Smith has joined Crompton Parkinson, Ltd., as meter and instrument specialist for Southern England and Eastern Counties.

Mr. G. Griffin Smith

Miss E. E. Verity, of Verity's Garage, has been elected chairman of the Manchester Branch of the Women's Engineering Society for the ensuing session, with **Miss I. H. Cox,** B.A., Graduate I.E.E. (Metropolitan-Vickers) as vice-chairman.

It was reported in our issue of June 29th that, subject to confirmation, **Mr. F. Barrell,** deputy borough electrical engineer of Blackburn, had been appointed to the newly-created post of deputy city electrical engineer of Leeds. Mr. Barrell's resignation was discussed at a meeting of the Blackburn Electricity Committee last week, when it was decided that in view of the difficulties of obtaining replacements of staff the Ministry of Labour and the Electricity Commissioners should be informed that Mr. Barrell's release could only be agreed to if a satisfactory substitute could be found.

Mr. S. A. Russell, generation engineer, Manchester Corporation Electricity Department, has been temporarily released to take up important technical and administrative duties in Germany with the Allied Control Commission.

Sir John M. Duncanson was released on June 30th from his duties as Controller of the Iron and Steel Control of the Ministry of Supply. He will be succeeded by **Mr. C. R. Wheeler.**

Mr. J. C. Colquhoun, M.B.E., chairman and joint managing director of the Manganese Bronze & Brass Co., Ltd., has joined the board of Lightalloys, Ltd., and has been elected chairman, and **Mr. W. S. Knight** has been

appointed managing director. These appointments follow the recent death of **Mr. W. H. Grieve,** chairman and managing director of the company.

Mr. D. E. Wootton, chief electrical engineer to the Malvern U.D.C., has resigned after twenty-two years' service with the Council. He is succeeded by **Mr. G. A. Paisley,** the assistant electrical engineer.

Mr. D. B. Hoseason has been appointed assistant managing director of the Brush Electrical Engineering Co., Ltd.

The accompanying photograph was taken at the opening on July 2nd of the E.D.A. Kitchens Exhibition at Edinburgh which remains open until the 28th of this month. It shows the presentation to the Lady Provost of Edinburgh (Miss Diana Falconer) of souvenirs in the form of a "Creda" electric kettle and automatic electric iron. In the picture, from left to right,

Presentation to the Edinburgh Lady Provost at the E.D.A. Kitchens Exhibition

are Bailie T. Sawers, O.B.E., chairman of the Public Utilities Committee; the Lady Provost; Mr. A. E. Roots, chairman of the Scottish Committee of E.D.A.; and Councillor W. Gerrard, D.S.O., convener of the Electricity Committee, who is making the presentation.

Mr. R. A. Blakeborough, managing director of J. Blakeborough & Sons, Ltd., has been appointed chairman of the company.

Mr. Walter H. Swain, a director of Hirst, Ibbetson & Taylor, Ltd., Manchester, has been elected president of the Electrical Wholesalers' Federation.

Mr. Frederick Grainger, who has been with Titanine, Ltd., manufacturers of paints, varnishes, lacquers, etc., for over twenty years, has resigned his directorship and is no longer associated with the company.

Mr. E. Hall, constructional assistant with Grimsby Corporation Electricity Department, whose services were lent to the Blackburn Corporation in 1940, is resuming his duties at Grimsby in September.

Mr. R. H. Watts is retiring on July 31st from the position of meter superintendent of Hammersmith Electricity Department after twenty-nine years' service with the Council. The Electricity Committee recommends the promotion of Mr. G. C. Riley, assistant meter superintendent for the past thirteen years, to the position at a commencing salary of £602.

Mr. A. B. Winterbottom has been appointed lecturer in electro-metallurgy in the University of Manchester.

Mr. C. G. Le Feuvre, A.M.I.E.E., district superintendent of the Northmet Power Company, has been installed as president of the Southgate Rotary Club.

Mr. Robert Bruce, managing director of the Saxonia Electrical Wire Co., Ltd., has been invested president of the Greenwich Rotary Club, of which he is a founder member.

Mr. D. J. Nolan, general manager of the Sydney County Council Electricity Department, and **Mr. H. W. Duncan,** power superintendent, are visiting the United States and Great Britain to make a survey of steam power station practice. They will also discuss with manufacturers details of the design of the steam-raising plant and turbo-alternators ordered for the Pyrmont power station. The *Electrical Engineer and Merchandiser* states that they expect to return to Australia in September.

Mr. J. R. Hawes, power station superintendent at Rotherham, is retiring in August.

Mr. W. E. Arnold, A.M.I.E.E., has been appointed general manager of the Watliff Co., Ltd. Mr. Arnold, who was the second Silvanus Thompson scholar of the Institution of Electrical Engineers, was educated at the Imperial College of Science and Technology, City and Guilds (Engineering) College. He has had wide managerial experience in the engineering industry.

After giving its employees a week's holiday with pay for victory celebrations, the Watliff Co., Ltd., also held a works dance on June 25th at the Wimbledon Town Hall, about 800 employees and friends attending.

Mr. W. H. Gatty Saunt, Mr. M. A. Hassid and **Mr. A. F. Gregg** have been appointed directors of the Rothermel Corporation, Ltd.

Mr. Jas. Wood has resumed his duties at the main factory of Bakelite, Ltd.

On Saturday the first Apprentices' Parents' Day since 1939 was held at the Willesden Works of the British Thomson-Houston Co., Ltd. After touring the factory, the visitors were entertained to tea, when they were welcomed by Mr. T. Hands, manager of the

Willesden Works, who explained various matters affecting the apprenticeship schemes. Mr. H. Trencham gave a review of the annual essay competition, the prize winners being as follows:—1st year, V. G. Johnston; 3rd year, D. L. Harris; 4th year, P. A. Johnson; and 5th year, J. L. W. Hope, who received the medal for the best essay of the year. Mr. R. C. Snewing, apprentice supervisor, referred to many items affecting the apprenticeship schemes and gave details of the drawing office examination results, under which scheme trade apprentices can transfer to the drawing office course. Mr. C. Grad, chairman of the B.T.H. Apprenticeship Committee, spoke on the general policy of the company on apprentices.

Obituary

Mr. J. D. Lindsay.—We regret to announce the death on July 5th, at the age of sixty-six, following an operation, of Mr. James Douglas Lindsay, who was very well known in electrical and mining circles in the north-eastern district. He had represented Bruce Peebles & Co., Ltd., as their agent in that area since 1912, assisted for the last twelve and a half years by Mr. Peter Burns. Mr. Lindsay had also represented Switchgear & Cowans, Ltd. In the mining machinery sphere he represented Walker Bros. and Wilson Forge. He traded under the title of Lindsay & Ward.

Mr. V. C. Hughes.—The death is reported of Mr. Vincent C. Hughes, A.M.I.E.E., district manager in Armagh for the Northern Ireland Electricity Board. Mr. Hughes was manager of the Portadown undertaking until its acquisition by the Board. During the 1914-18 war he was with the Admiralty as a consulting engineer.

Mr. A. B. Aspinall, for many years a technical representative of Carron Company for the sale of domestic electrical appliances, died suddenly on June 21st. Mr. Aspinall's ground covered the London, Eastern and Southern Counties. Until a successor has been appointed, inquiries will be dealt with from Carron Works.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for correspondents' opinions.

Availability of Equipment

I WOULD have liked you to have emphasised not only the scarcity of electric cookers in your editorial last week, but also the present serious position with regard to house-service meters.

The temporary houses are already being built and wired, but the meters, especially the two-part tariff prepayment types, will not be available. Dare we postpone for months the connection of an already wired prefabricated house, occupied by say an ex-Service man, simply because we cannot get a meter?

It may appear to some only a small item in an installation, but it is so essential to have one available as soon as the house is erected as to merit a very high priority immediately.

Bedford. S. A. DAINES.

Electrical Education of Girls

IN your issue of July 6th (page 24), you report fatal accidents to two young girls, resulting from the use of electrical apparatus. The first of these may have been truly in the category of an accident, but the second was a case of misguided ingenuity on the part of a highly intelligent but ignorant child, who, if she had not died at the age of nine, might conceivably have grown into one of those women who put electric irons into cold beds, or wrap up light-bulbs with pretty Christmas decorations, only to wonder afterwards why the result should be a conflagration.

The moral of these disasters is that girls should be given more encouragement and more opportunity to acquaint themselves with things mechanical and electrical. My impression is that girls turn from useful studies at a very early age, dismissing them contemptuously as boyish, because they are left so much to the tender mercies of women to bring them up. It is, I think, incumbent on every properly educated man, who has opportunities to influence young children, to take as much interest in the girls as in the boys, and resist the lax modern tendency of putting all the responsibility for girls upon women.

Brighton. STUART MIALL, B.Sc.(Eng.)

Street Lighting Restoration

EARLIER in the year local authorities were notified that it was considered likely that the restoration of street lighting on the peacetime scale would become possible by the end of Double Summer Time, *i.e.* by July 15th. The Government asks local authorities who are not in a position to ensure that their street lighting will be kept extinguished during daylight hours to defer the restoration of full-scale street lighting until the necessary labour and materials for that purpose are available.

Views on the News

Reflections on Current Topics

THE *Electrical Review* of June 29th contained a summary of a notice issued by the Ministry of Works purporting to set out the position with regard to the supply of materials and equipment for houses. As regards electrical appliances and accessories the notice was somewhat optimistic, except with respect to cookers, meters and conduits. Labour and materials for the production of water heaters were said to be available in sufficient quantity to meet all probable requirements, but from what I am told this is not the case. I have seen a copy of a letter sent by a manufacturer to a customer who, having read the Ministry's statement could not understand why there should have been delay in the delivery of water heaters which he had ordered. The letter says:—"Whether deliberately misleading, or whether it is that somebody in Government authority likes to look big by making such statements, I cannot say, but such utterances are most unsatisfactory. . . . At this moment we have in hand a far greater bulk of orders than it is possible for us to quickly cope with, because the supply of labour is completely inadequate for our requirements."

* * *

The writer of the letter goes on to say that many of the hundreds of men which his company released to the Forces are roaming about the district on leave, anxious to return but unable to secure their discharge. Young men whom the company has carefully trained are being directed to the mines or to the Forces; Government demands for deliveries are almost up to wartime level; women who were willing enough to work while the European war was on are leaving, while others are taking extended holidays to join their husbands who are on leave; older men are giving way under strain; and there is no intake of labour at all in spite of the company's unceasing endeavour to secure it.

* * *

The entnusiastic reception of the members of the Royal Society who attended the jubilee celebrations of the Academy of Sciences of the U.S.S.R. was more than typical of Russian hospitality. It symbolised, I gathered from listening to the accounts given by some of the delegation, the enormous prestige attached to science by our Ally, as attested by the seeming disregard of expense in providing facilities for its pursuit. There was an obviously frank eagerness to co-operate with British scientists which augurs well for the future, especially as Sir Robert Robinson has found the Russian sense of humour to be closely akin to the British. Prof. E. N. DaC. Andrade added that English is the most widely spoken foreign language there. The Academy, which might be described as a sort of hybrid of the Royal Society and the Department of Scientific and Industrial Research, itself does the bulk of research, though outstanding work is being done at a few of the universities. The Academy is far from being hidebound and shows a tendency towards decentralisation geographically with smaller and more highly trained staffs in its well-equipped laboratories. As a further stage of development I should expect to see closer physical association between applied research and industrial work, such as is so prominent a feature in Great Britain. The visit seems to have been exceedingly worth while and it is most unfortunate that several distinguished physicists were prevented from joining the party.

* * *

One way of mitigating the effects of purchase tax upon domestic electrical appliances has been approved by the Cheltenham Electricity Committee, upon the recommendation of the borough electrical engineer (Mr. R. W. Steel). The idea is to prevent hire charges from rising to a prohibitive level. The proposal is that the purchase tax on appliances and costs exceeding 50 per cent. above pre-war prices shall be written off out of revenue and hire charges for new apparatus fixed at 50 per cent. above the pre-war rates. Mr. Steel also recommended that for the present the scheme should apply only to new or converted houses, it being extended to other premises at "a more appropriate date."

* * *

The Peterborough U.D.C. is having an argument with the Peterborough City Electricity Committee on this subject. The R.D.C. has chosen a site for twenty temporary houses which is three-quarters of a mile from the nearest 6,600-V supply point. Consequently the R.D.C. has been asked to contribute £1,061 towards the cost of running a high-voltage extension and providing a transformer station. Although it has been hinted that the site will be used for permanent houses eventually, the Committee has not had a definite assurance on the point. The Committee says that its tariff is based on a 25-year loan repayment period and it would be faced with loan charges for fifteen years after the ten-year life of the houses without compensating revenue.

—REFLECTOR.

NEW BOOKS

Solving Electrical Problems : Reference Manual

Worked Examples in Electrotechnology. By W. T. Pratt, B.Sc. Pp. 262; figs. 158. Hutchinson's Scientific & Technical Publications, 47, Princes Gate, London, S.W.7. Price 12s. 6d.

A book devoted to the solving of problems in electrotechnology will be useful to many, but particularly to those engaged in private study and in preparing for examinations. In the preface, syllabuses of various examinations are mentioned, though not all sections of these are evenly or adequately covered. It is also unfortunate that the new and wider syllabuses of Joint Section A of the Institution of Electrical Engineers are not followed instead of the old Part I.

One of the chief omissions is AC machinery, the principles of which hold an important place in electrotechnology. In this section, transformers only are dealt with. Measuring instruments and thermionics are also omitted. The student would also welcome a few problems on uniformly distributed loads and more lighting problems involving lumens.

The type is good and so are the diagrams. Answers are underlined—this we do not like. Underlining may be resorted to when the pen is used, but it looks bad in a book, where bold or italic type would be better employed. Apart from these minor criticisms, the book can be thoroughly recommended. Numerous students will bless the author for his painstaking and conscientious work.—S.P.S.

"Electrical Engineer" Reference Book. Edited by E. Molloy. 1,757 pages; illus. George Newnes, Ltd., Tower House, Southampton Street, W.C.2. Price £2 2s.

This manual aims at providing under one cover a summary of latest practice in all branches of electrical engineering. Having regard to the feat of compression and selection this implies, the result is remarkably successful. The general plan is logically carried through from fundamental theory, including modern conceptions of the nature of electricity, which forms the first section of 102 pages, to the most representative means of its utilisation.

Salient particulars of plant and practice for transmission and distribution are given in a number of sections occupying about 380 pages, and electric motors and control gear are given 108 more. Heating and ventilation, illumination, transport, ship-propulsion, welding, measurements, automatic control, mining, agriculture, industrial heating are among the subjects individually covered in the thirty-two sections into which the book is divided, while numerous other applications are dealt with in an omnibus section. In the longest section (128 pages) is presented a resume of most recent developments in many fields. An unusual but acceptable feature in a work of this nature is provided by notes on the educational facilities which are available.

There is an extensive bibliography, which includes references to recent institution papers and articles in the technical Press. The index is well arranged for ready reference to subsidiary subjects. The initials of the fifty or so specialist contributors, which appear at the end of articles, are themselves a guarantee that the information given is accurate and up to date.—C. O. B

Cutting Tool Practice. By H. C. Town and D. Potter. Pp. 131; figs. 124. Paul Elek (Publishers), Ltd., Africa House, Kingsway, W.C.2. Price, 13s. 6d.

Increased speeds in metal cutting, coupled with the development of new materials (both for work and tool) and processes, require a revision of accepted ideas regarding the use of cutting tools. Besides presenting the latest practice in high-production tools and recognised methods of metal cutting, this book introduces new processes such as down-cut and negative rake-cut milling and boring cutters. Wartime substitutes for tungsten are detailed, and sections deal with heat treatment, tool design, shapes, cutting action, speeds and feeds, form tools and calculations. Some of the lesser-known operations dealt with in the book are the drilling of square and hexagon holes, a special chapter indicating the possibilities of broaching.—W. R. C.

Coal : Facts About an Unknown Industry. By a Colliery Manager (100 pp.). Chapman & Hall, Ltd., 37, Essex Street, Strand, W.C.2. Price 2s. 6d.

The author of this little book claims that the voice of the colliery manager, who is unknown to the public, is seldom heard, although all kinds of people have expressed their views on the coal industry. It is useful to have a first-hand account of mining conditions from one of the men actually responsible for the day-to-day operation of the industry. The author refuses to believe that the present state of the industry is to be blamed on to private enterprise or that nationalisation would remedy it; he thinks that some incentive other than nationalisation is needed to induce miners to increase their output but does not propound a solution of this very pressing problem.—J. H. C.

Prefabricated Homes. By Bernard H. Cox, F.S.I., L.R.I.B.A. Pp. 36; figs. 28. Price 2s. Paul Elek (Publishers), Ltd.

This book is devoted almost entirely to the consideration of building materials and constructional methods. Little is said of interior equipment.

Induction-Motor Protection

Development of a New Type of Relay

By D. E. Bird, M.I.E.E., and L. B. S. Golds, M.I.E.E.

IN this article it is proposed to review briefly the protection of polyphase induction motors used for power station and industrial drives of, say, 10 HP or over, which are normally of the direct-started squirrel-cage type.* Also it is proposed to suggest a solution to the problem.

It is essential to provide protection against short-circuits. This may take the form of either high-rupturing-capacity fuses or circuit-breakers with instantaneous release and in either case they must be capable of dealing with short-circuits or earth faults occurring on cables either between the control gear and the motor or in the motor itself. In addition, protection is necessary against overloading, whether due to lack of lubrication or to the application of a load in excess of that for which the motor was designed. The permitted overload and its duration may vary greatly with the design of the motor. It is determined mainly by the allowable temperature rise of the hottest part of the motor winding.

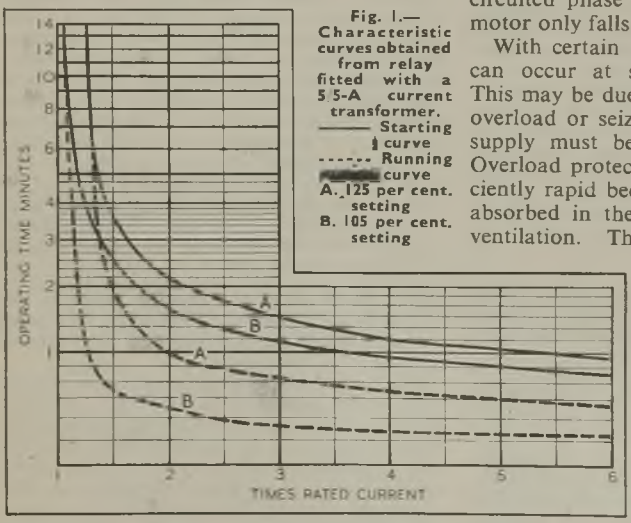


Fig. 1.—Characteristic curves obtained from relay fitted with a 5/5-A current transformer.
——— Starting curve
- - - - - Running curve
A. 125 per cent. setting
B. 105 per cent. setting

Further, protection should be provided against single-phasing, as this is one of the most prolific causes of motor breakdown. Failure of one phase may be due to a bad contact on the switch, mechanical breakage or the blowing of a fuse. When single-phasing occurs on a delta-wound motor, the current in the winding directly connected across the healthy phases is over 60 per cent. above full-load current when the motor is loaded up to only 70 per cent. of full load. Furthermore, the voltage across the open-circuited phase and a healthy phase of the motor only falls by about 20 per cent.

With certain drives, stalling of the motor can occur at starting or whilst running. This may be due to a very heavy mechanical overload or seizure of the bearings and the supply must be disconnected immediately. Overload protection is not, in general, sufficiently rapid because all the energy is being absorbed in the motor with practically no ventilation. This is a very frequent cause of failure of motor driving crushers, grabs, rolling mills and similar loads.

Up to the present, motor protective gear has been divided into two types. For very large motors it comprises induction over-current, negative-phase-sequence and earth-fault relays; in the case of smaller motors, for which the initial cost of such relays is not justified, the gear takes the form of a thermal element or solenoid with oil dash-pot built into the starter equipment. The former type of protection is costly and is not in all cases very satisfactory. The overload element is not capable of any exact degree of calibration and the negative-phase-sequence element, while giving protection against single-phasing at values of load which might be dangerous to the motor, does not give high-speed clearance of single-phase short-circuits.

In the latter type the lowest overload

* See also references to the protection of induction motors in I.E.E. Installations Section papers, "The Development of Motor Control Gear," by D. Rudd (*Electrical Review*, February 9th and 16th) and "Excess-Current Protection by Overcurrent Relays on Medium-Voltage Circuits" by A. G. Shreeve and P. J. Shipton, (*Electrical Review*, May 4th).

setting is almost invariably in the neighbourhood of 30 per cent. which for modern totally-enclosed motors is much too high. A figure of 5 or 10 per cent. is of the order required. If settings of this value are given, motors cannot be started against full-load current unless the motor and the load have a very small inertia. It is therefore essential to match the thermal characteristic of the motor with that of the protective devices. This is, however, difficult on account of the wide range of designs of motors on the market to deal with an infinite variety of loads. A serious disadvantage of the solenoid and oil dash-pot time lag is that the time varies naturally with ambient temperature and it is difficult to ensure that sticking does not occur at low ambient temperatures when the oil becomes contaminated.

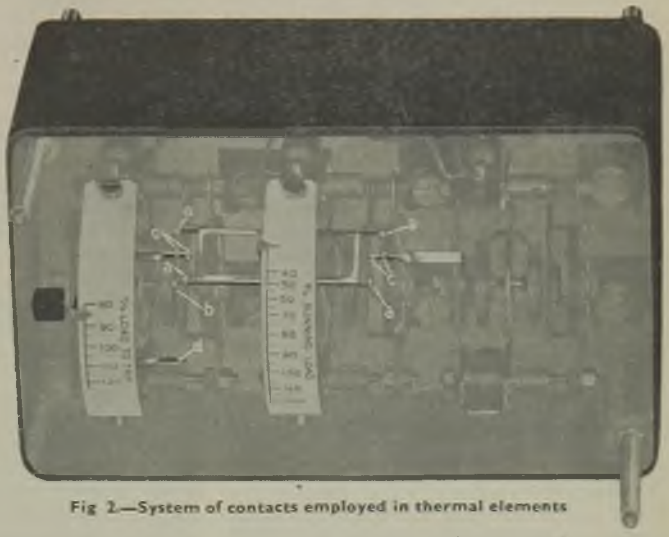


Fig 2.—System of contacts employed in thermal elements

Phase-failure protection of small motors is not very common. Protective relays, which depend for their operation on the relative movement of three bi-metallic strips are effective only within certain limits of settings and loads. Relays which depend upon the fall of voltage in the open-circuited phase will only protect a motor which is working above, say, 70 per cent. load, and a delta-wound motor may be damaged at this or less load owing to the open-phase voltage remaining sufficiently high to prevent operation of the relay when one phase is open-circuited. In any case it is undesirable that a motor should operate on two phases for any length of time.

When considering protection against overload and phase failure of boiler-house medium-voltage auxiliary motors, an entirely new relay was developed making use of "P & B" thermal maximum-demand indicator elements which employ a coiled bi-metallic strip with an independent heater, the time lag of which can be changed within limits to deal with certain motor characteristics. The actuating bi-metallic coil is compensated by an exactly similar element for a range of ambient temperature from — 10 to + 60 deg. C. This element has proved very stable over a period of more than eleven years when used as an indicating instrument. Owing to the long starting time of some motors, amounting at times to 40 sec., and the high starting current, of the order of eight times full load, it was decided to supply the heater of the relay through a special 5/5-A current transformer, the core of which would start to saturate at a current in excess of 100 per cent. overload. By this means the characteristic curve in Fig. 1 was obtained. Three of these current transformers are small enough to be mounted on the back of the case containing three of the thermal elements, that is one for each phase.

In order to provide for phase-failure protection, three of the standard thermal elements are mounted co-axially on insulated supports and each element is fitted with a system of contacts shown in Fig. 2. The two outer movements are connected together to form one pole of the trip circuit, whilst the centre movement forms the other pole. Under normal conditions all three arms are deflected through the same angle, but in the event of one phase of the supply failing the arm of the movement on the open phase tends to move back towards zero, whilst the deflection of the other two arms increases until the contacts "a" or "c" close, thus completing the trip circuit. This same contact arrangement will also provide protection against an earth fault on the winding which is insufficient to operate the short-circuit

protection but which causes a current in the faulty phase of, say, 10 per cent. in excess of that in the healthy phases.

In the event of an overload the deflection of the three arms increases by the same amount until the contacts "b" and "d" close, again completing the trip circuit. The contact "d" can be fixed at a pre-determined setting shown on the left hand scale. The pointer attached to the centre arm gives an indication on the "running load" scale of the approximate average load on the motor during the preceding ten minutes.

The special current transformers also serve several other useful purposes. In many cases the main current transformers supplying the instruments and protective gear may not have a current rating of the same value as the full-load current of the motor. The transformers are therefore provided with tappings at 80, 90 and 100 per cent. so that, by using the appropriate tapping, the 100 per cent. mark on the "overload" and "running load" scales on the relay corresponds very closely to the full load of the protected motor.

On medium-voltage motors, short-circuit protection is often provided by h.r.c. fuses of appropriate capacity, and in this case the special current transformers protect the heaters against damage by heavy short-circuit currents. They also enable the relay to be operated from 1-A secondary main current transformers when wound for a ratio of 1/5, as a 1-A rated heater cannot be designed of sufficient size to carry any appreciable over-current.

On high-voltage and larger medium-voltage motors, where the circuit-breakers can break the full short-circuit current, the special current transformers are housed inside a larger case along with the thermal elements. Advantage is taken of the leakage flux from the transformers under heavy short-circuit current conditions to attract a spring-loaded armature and close the trip circuit, thereby rapidly isolating the apparatus for currents ranging from six to fourteen times the rated current. Two flag indicators are provided in this relay to indicate the operation of the overload and phase failure elements or of the short-circuit protective device.

Operating experience with this relay has shown that close and very accurate settings of overload can be obtained with good stability and that its thermal characteristics are such that if a motor is stopped after a full-load run it can be restarted after a short time interval. It nevertheless prevents frequent starting and stopping of the motor without any pause to allow of the machine's cooling between successive starts.

The authors express their thanks to the P. & B. Engineering Co., Ltd., and Edmundsons Electricity Corporation, Ltd., for permission to publish the details in this article and for assistance in collecting the necessary information.

Hire and Hire Purchase

Supply Authorities and Purchase Tax

RECENTLY the British Electrical Development Association sent a circular to its members asking them (1) if they intended to promote or re-establish hire or hire-purchase schemes for cookers and (2) whether a decision in this matter was delayed on account of uncertainty with regard to purchase tax. Replies were received from 349 undertakings and these have now been analysed.

As many as 209 of the replies indicated that uncertainty about purchase tax was a hindrance in the formulation of a policy; thirty of the undertakings in this category have not yet made any decision, even provisional, while the policy of the others is subject to alteration or modification according to the future of the purchase tax and such other factors as post-war models and total price. Another 30 propose to institute hire-purchase in any case but their decision as regards hiring will depend on purchase tax and other factors. Both hire and hire-purchase will be employed by another 115 but their policy may be affected by purchase tax considerations. Of the remainder some are proposing to offer one or the other system; only two have decided to employ neither. In six cases it has been decided to confine hiring to the existing stock; nothing had been settled with regard to new cookers.

The undertakings who state that purchase tax was not causing deferment of the consideration of hire and hire-purchase schemes number 117, but a large proportion of them stress the need for the early removal of the tax. A further 23 did not answer the question and it is assumed that they are in the same position. Of these 140 undertakings whose policy will not be affected by purchase tax 75 intend to offer both hire and hire-purchase schemes. 47 will offer hire-purchase only, 12 will offer hire only and the remaining six have either not yet discussed the matter or have indicated that their policy will be affected by factors other than purchase tax.

COMMERCE and INDUSTRY

Cheaper Filament Lamps. Service Electricians' Position.

Lamp Prices Reduced

REDUCTIONS in the prices of standard-voltage single-coil and coiled-coil tungsten filament lamps are announced by the Electric Lamp Manufacturers' Association to take effect as from July 16th. In the case of coiled-coil lamps it is stated that these will be available as soon as possible. It may be remembered that the Electric Incandescent Lamps (Control) Order, 1942 (S.R. & O. 1942 No. 2621) prohibited the production, save under licence, of all lamps of this type except the 40-W size (200-260 V), projector lamps and lamps for a special purpose requiring a concentrated light source.

Thorn Electrical Industries, Ltd., also announce a reduction in the prices of their "Atlas" lamps.

Control of German Electrical Industry

Mr. Charles H. Powell, President of the American Institute of Electrical Engineers, and an official of the Westinghouse Electric & Manufacturing Co., will be chief of the electrical and radio branch of the United States Group Control Council for Germany, it is announced by the U.S. War Department. Control will be established under which German industries will be permitted to resume, or convert to, the manufacture of civilian goods. It will also be the task of the Control to see that the German electrical and radio producers do not manufacture war material or contribute to the production of armaments.—*Reuter* (Washington).

Licensing of Building Work

In referring last week to the relaxation of restrictions upon electrical development we stated that there was a £10 per annum limit upon the amount of building and civil engineering work which could be carried out without a licence. It should have been mentioned that the Ministry of Works recently decided that during the six months from August 1st work to the extent of £10 may be carried out and in addition £2 per month may be expended in connection with repairs and maintenance. This new arrangement applies throughout the country.

Tenders for Syrian Contract

Several British and American tenders have been submitted to the Syrian authorities for the erection of a wireless station in Damascus and for the conversion of the Syrian telephone system to automatic working.—*Reuter* (Damascus).

French B.T.H. Company

The Paris correspondent of the *Financial Times* states that the Compagnie Française Thomson-Houston reports that the earnings during last year were affected by interruption of activity and unremunerative prices. The profit of fr. 16,038,000 (against fr. 32,813,000 for 1943) has been allocated to depreciation and raw material reserves. For 1943 a dividend of fr. 16·25 was paid. In January working capital was increased by the issue of 3½ per cent. debentures to a total of fr. 100 million. It is understood that production is at present irregular owing to the lack of raw materials and fuel. The company is continuing research work and is stated to have produced an up-to-date television set. Technical co-operation with the G.E.C. and E.M.I. has been resumed.

Power Engineers' Salaries

As there was no significant rise in the cost-of-living index during the first six months of the year there will be no revision of the schedule of the National Joint Board of Employers and Members of Staff (Electricity Supply Industry). Consequently for the six months from July 1st power engineers' salaries will remain as shown in the last printed schedule which was reproduced in the *Electrical Review* of January 12th last (p. 53).

Wages in the Contracting Industry

The Joint Industrial Council for the Electrical Contracting Industry announces that the cost-of-living (war) addition to employees' wages will remain at the same level as from the third pay-day in July to the second pay-day in October. The amounts per hour are as follows:—Labour over 21 years of age, 6d.; labour between 18 and 21, 4d.; labour under 18, 2d. These amounts include the extra 1d. per hour awarded under the agreement of September 6th, 1944, the operation of which has been extended for six months.

The hourly rates of pay for adult journeymen electricians are as follows (including the war addition):—Grade A, 2s. 5½d.; Mersey District, 2s. 3½d.; Grade B, 2s. 2½d.; Grade C, 2s. 1½d.

Release of Electricians

In a letter to members of the National Federated Electrical Association, the Director (Mr. L. C. Penwill) sets out the considerations which apply to the release of "Class B" men from the Services and says that it has been officially intimated that while a certain number of operatives in the electrical contracting industry will qualify for release they will be subject to direction by the Ministry of Labour and National Service to work where their services are most needed. There is no guarantee that they will be returned to work for their former employers and there is no provision whereby employers may "claim" them.

If an employer can prove that a man is required for work that is vital to the national interest; that he is unable to fill the post from available civilian sources; and that the man is of the "deferment" age, application may be made for his release to the Government Department principally concerned with the employer's activities—not to the Service Departments or to the Ministry of Labour.

Compassionate releases can be granted on grounds of "domestic distress" or "business interests." In the latter case it must be proved

that the man concerned is personally and financially interested in the business; that the business is in danger of being lost; and that there is no other suitable person who is capable of running the business or of making alternative arrangements for it to be carried on. In such cases application must be made by the man concerned or the interested party on his behalf to the man's commanding officer.

M.E.M. Electric Fire Factory

Shortly before the war the Midland Electric Manufacturing Co., Ltd., commenced the construction of a new three-storey factory block adjoining the existing works in Reddings Lane, Birmingham. It was intended especially for the manufacture of electric fires, but on its completion late in 1939 it was taken over by the Admiralty for the production of a special type of sea-mine designed for laying by means of

M.E.M. Company's new extension

submarines. The premises have now been freed for the company's own use, and they are being re-equipped for their original purpose. It is hoped to get into production as soon as the existing impediments to manufacture are removed and the shortage of labour becomes less acute. Pre-war designs will be offered, and it is intended that at least one new type, designed by an eminent industrial artist, will be available.

Chrome Control Removed

The Minister of Supply has made the Control of Chrome, Magnesite and Wolfram (No. 4) (Revocation) Order, 1945, revoking the Control of Chrome, Magnesite and Wolfram Orders (No. 1) of 1940, (No. 2) of 1941, and (No. 3) of 1942, by which the disposal and acquisition of chromium, chromium compounds, magnesite, wolfram and certain basic or neutral refractory materials were made subject to licence. The Order removes all existing restrictions on sales and purchases of these materials in the United Kingdom. Imports will remain for the present subject to licence.

Inquiries in regard to wolfram should be addressed to the Adviser on Wolfram, Iron and Steel Control, Steel House, Tothill Street, S.W.1, and in regard to the other materials to the Chrome Ore, Magnesite and Wolfram Control, Broadway Court, Broadway, Westminster, S.W.1. Copies of the Order (S.R. & O. 1945 No. 792) which came into force on July 4th may be obtained from H.M. Stationery Office, price 1d.

Stafford Society Restarted

The annual general meeting of the English Electric (Stafford Works) Engineering Society for the 1939-40 session, delayed through the war, was held recently, Mr. A. D. Sloan, chief engineer, occupying the chair. With him was Mr. J. Rogers, general manager of works. The chairman read a message from Sir George Nelson, chairman and managing director of the company, expressing his pleasure at the society's activities being restarted after the lapse of five years. Before the business of the meeting was begun Mr. Sloan asked that those present should pause for a moment to think of the members who had given their lives in the service of their country.

The hon. secretary (Mr. H. Stanier) reported that the actual paid up membership had reached the satisfactory figure of 920. Mr. K. Love, treasurer, presented the balance sheet, which was approved, and Mr. F. L. Smith, the Society's librarian, gave his report which dealt with the use of the library during the war period. A resumé of the ensuing session's programme showed that the past high standards achieved would be maintained. Sir George Nelson was elected president.

E.I.B.A. Contributions

We have received from Mr. H. S. Fothergill, secretary of the Electrical Industries Benevolent Association, a list of contributions made to the Association's funds during the first six months of the year. The names are included of companies in all branches of the electrical industry as well as associations and other organisations, the principal one being the Central Electricity Board with a donation of £500.

Export Credits Insurance

At a meeting of the Midlands Branch of the Institute of Export recently Mr. E. Edwards, Midlands manager of the Export Credits Guarantee Department, gave an address on the facilities which his Department afforded exporters. In the course of this he said that the Export Guarantees Act, 1945, widened the Department's activities and authorised the incurring of liability up to £200,000,000 at any one time. Capital equipment projects were now considered with greater flexibility and the shipment of primary produce and raw materials direct between overseas countries could be facilitated.

Consumer goods were protected by the new "V" guarantees, operative either from the time of booking an order or from shipment. The cover included up to 85 per cent. for insolvency or protracted default and up to 90 per cent. for political or economic troubles which might interfere with the transfer of sterling. The system operated flexibly and met the needs of exporters with varying problems.

The improvement in the foreign service

announced by the Foreign Secretary included Departmental representation overseas which would help exporters with up-to-date advice and information on the standing of buyers and trends in the markets. Guidance on terms of payment was given and a reasonable latitude for buyers would help to build a goodwill which would withstand the change when the present sellers' market became a normally competitive one. The close liaison established with the banks would assist in the provision of accommodation on favourable terms to exporters.

During the war, guarantees had been issued for over £400 millions and claims by exporters had been paid to the extent of over £4¼ millions. The charges for the facilities were reasonable and would be reconsidered as conditions further improved.

At a meeting of the Institute of Export on Monday, July 16th (1.15 p.m.) at the Assembly Hall of the Royal Empire Society, London, Mr. A. J. Broughton is to speak on "Anglo-Irish Trade Relations."

Busbar Chambers

In the *Electrical Review* of June 22nd (p. 897) Mr. P. Ridler (Sunderland) described a form of busbar chamber designed to provide an inexpensive means for future extensions while complying with I.E.E. Regulation No. 104. The Simplex Electric Co., Ltd., tells us that its standard busbar chambers are suitable for this purpose as they can be supplied with the standard Simplex sliding terminals for from 15 to 100 A; they may be removed from the bar or added at any time without the need for the drilling of extra holes. They can also be changed from bar to bar if it should be necessary to alter the balancing of the circuits. The standard Simplex busbar carries 630 A.

Exhibition at Chester

The Chester Electricity Department, the Mersey Power Co., the Mid-Cheshire Electric Supply Co., the Electricity Distribution of North Wales & District, Ltd., and the Mold and Oswestry undertakings have combined in the organisation of an "Electricity Looks Forward" exhibition which was to be opened at the Town Hall, Chester, on July 12th by the Bishop of Chester. The display, which includes model kitchens, and equipment for the home, farm and factory, will remain open until July 21st.

Rebuilding Switchgear Works

Erskine, Heap & Co., Ltd., inform us that they have now received an official licence for the immediate rebuilding of the main part of their works which was destroyed by enemy action.

E.T.U. Expansion

The report of the Electrical Trades Union for 1944 shows that the membership increased by 7,542 and reached the record figure of 132,484; the number of branches has grown from 429 to 442. The contribution income was £205,057, against £200,910 in 1943 and the total income £247,285, as compared with £240,723. The general funds of the Union have now reached £634,865, representing a sum of £4·79 per member.

The war distress grants paid out by the Union rose from £1,009 in 1943 to £6,983 in 1944. The Union secured lump sum settlements in accident and workmen's compensation cases for 221 of its members, totalling £90,972, apart from hundreds of cases of weekly compensation payments. Two new area offices, one in Bristol the other in Cambridge, have recently been opened.

London Metal Exchange

At the monthly meeting of the London Metal Exchange last week the chairman, Mr. J. D. Wolff, reported on recent conversations with the Ministry of Supply which, he said, gave reason to hope for an early resumption of trading in copper and zinc on the Exchange which ceased to function at an early stage of the war, except for tin transactions. The operation of the Exchange is aimed largely at the avoidance of large fluctuations in the prices of the metals with which it is concerned.

American War Contract Cancellations

War contract cancellations of the American General Electric Company in the first five months of this year are reported to average approximately $23 million monthly, compared with average monthly cancellations in 1944 of about $32 million. The company still has over $1,000 million worth of orders on its books.—*Reuter.*

Factory Managers

The Council of the Institution of Factory Managers is meeting at the North British Hotel, Edinburgh, to-morrow (Saturday).

In the competition for the Sir Henry Fildes Medal, essays, not exceeding 5,000 words, are invited by the Institution on "Training for Factory Managers: Practical, Administrative, which should be first and why?"

Discussions are proceeding with the Co-ordinating Committee of the Supervisors' Discussion Groups and the Institution. It is hoped to make an announcement shortly.

Brush Company's Acquisition

The Brush Electrical Engineering Co., Ltd., has acquired the business of Oil Engines (Coventry), Ltd.

Rubber Products Exhibition

A display of wartime products of the Dunlop factories (July 2nd to 13th) at the Royal Empire Society in Northumberland Avenue, London, which was opened by Sir George Beharrell, is representative of some 400 different products of 30 factories in Great Britain, some of them also having been made in Dunlop factories in Australia, Canada, India, South Africa and the U.S.A.

Among the exhibits are samples of trip-electric and electro-pneumatic cannon firing valves for aircraft, the latter being of Dunlop design and development throughout. More than 2,000 complete sets of this equipment were made at the Coventry factory. By pressing his thumb on the selective gun-firing button in the control ring handle the pilot can either use his whole armament of cannons and Browning guns or any combination he may desire.

There are also samples of protective treatment for de-gaussing cables, floats and sleeving used in equipment for sweeping magnetic mines,

"Spotter" electric vulcanisers for repairing vehicle tyres, anti-static rubber boots for use in explosives factories, and "Ecta" conducting rubber tyres for the tail wheel of aircraft whereby static charge is instantly earthed. Other exhibits include battery boxes and electrical components made of ebonite as well as anti-vibration mountings for aircraft instrument panels.

Philips Patents in America

The Radio Corporation of America and the National Bank and Trust Co., trustee for Philips Gloeilampenfabrieken, formerly of Eindhoven, Holland, have announced an agreement granting the Radio Corporation non-exclusive rights to continue the licensing of other manufacturers under United States patents held by Philips. The agreement became effective on July 1st and remains in force until December 31st, 1954.

The Radio Corporation has also been granted similar rights to license the United States Government directly for the duration of hostilities and the six months following. No details are available in connection with the financial arrangements provided for under the new agreement.—*Reuter's Trade Service* (New York).

Fatalities

Shock from Kettle.—At an inquest at Ellesmere Port on Mrs. M. L. Lucas (48), an employee of the Mersey Power Co. stated that he examined the electrical connections and earth of the kettle from which she apparently received a shock and found everything in order. The coroner said that Mrs. Lucas must have taken hold of the connector of the switched-on kettle with wet hands and received a fatal shock.

Wire along Garden Fence.—Through taking hold of an electric wire which ran along the fence from the kitchen to a shed at the bottom of the garden, Mrs. L. E. Rodd (24), of Thornton Heath, received a fatal shock.

Tinfoil from Aeroplane.—Mrs. M. Cuthbertson, of Holmpton, East Yorkshire, was killed when she took hold of a piece of tinfoil dropped by a training aircraft which had become entangled with overhead electric lines.

Trade Publications

British Thomson-Houston Co., Ltd., Bridle Path, Watford Junction, Watford, Herts.—Illustrated brochure (No. L.765/M) specifying standard types of vitreous enamelled reflectors now commercially available for industrial lighting with tungsten and mercury discharge lamps, their optical as well as mechanical and electrical designs being described.

Wild-Barfield Electric Furnaces, Ltd., Watford By-pass Road, Watford, Herts.—Technical brochure (M.645/WBR) describing a portable 1·5-kW testing furnace for determining the accuracy of pyrometers of the thermo-couple type.

Birlec, Ltd., Tyburn Road, Erdington, Birmingham, 24.—Illustrated booklet (No. 61) briefly describing various applications of "Lectrodryers" for air and other gases, single and dual adsorption models utilising granulated activated alumina, including air conditioning types incorporating reactivating air heating coils and inlet and outlet blowers suitable for telephone exchanges and high-voltage chambers or storage of electrical goods and other commodities; also "Lectrofilters" for removing oil vapour as well as "Lectro-breathers" for transformers and storage tanks incorporating a colour-changing device for visually indicating when reactivation is required.

United Steel Companies, Ltd., 17, Westbourne Road, Sheffield, 10.—List of products (A-Z No. USC 231) with sizes, reference numbers and remarks, arranged alphabetically to indicate from which branches of the eight constituent manufacturers they may be obtained, including iron and steel parts of many kinds as well as coal, coke and chemical derivatives.

Macrome, Ltd., Alcester, Warwickshire.—Folder on reorganised and co-ordinated transport explaining how and where cutting machine tools may be sent for treatment by the company's process at branches in Great Britain and Northern Ireland. Charges and some examples of actual cost are mentioned and an outline of the treatment is included.

Applicants for copies of these publications should write on business letter headings.

Annual Holidays

The works of B. Kimber, Allen & Co., Myron Place, London, S.E.13, will be closed from July 27th to August 13th for the annual holidays.

Erskine, Heap & Co., Ltd., are closing their works from July 27th until August 7th.

Trade Announcement

The new telephone number of S. D. Sullam, Ltd., is Gerrard 9372.3.

TRADE MARKS

THE following are among recent applications for the registration of trade marks. Objections to any of them may be entered within one month from July 4th:—

DIAMOND. No. 634,173, Class 1. Preparations in liquid form for use in low-voltage electric accumulators.—Diamond Accumulator Co., Ltd., 24, High Street, Southend-on-Sea.

FLEXTOL. No. 628,695, Class 7. Portable power-driven tools; flexible shaft driven tools; flexible power transmission apparatus (not for land vehicle propulsion systems); and parts (not included in other classes) of such tools and apparatus; motors (not for land vehicles).—Flextol Engineering Co., Ltd., Flextol Works, The Green, Ealing, W.5. To be associated with No. 447,542 (2412) vi.

ATOMIXE. No. B632,813, Class 7. Air compressors and air condensers; compressed air motors; electric motors (not for land vehicles); hydraulic machinery; spraying machines; and parts of such goods, not included in other classes.—Atomixe, Ltd., 3, Bridge Road, Sutton, Surrey.

SKIPPA. No. 634,699, Class 11. Electric lighting installations, electric lighting fittings, electric domestic apparatus for heating, cooking and refrigerating. — R. S. Antrobus, 60, Meadway, Southgate, N.14. To be associated with No. 628,689 (3460) xi and another.

ELECTRICITY SUPPLY

Leicester Extension. Northern Ireland Inquiry.

Barrow-in-Furness.—PROPOSED BUSINESS TWO-PART TARIFF.—At a meeting of the Electricity Committee the electrical engineer suggested the introduction of a two-part tariff for cinemas, shops and business premises. After discussion the committee adjourned consideration of the matter until the next meeting.

APPARATUS FOR HIRE.—The Committee has obtained sanction to borrow £1,500 for hired apparatus.

EXTENSIONS.—A supply is to be provided to Monk Coniston Hall, Coniston, etc. (£3,220); Scales Park Farm, Aldingham (£1,362), and Tummerhill housing estate (£3,800).

Billingham-on-Tees.—ELECTRICITY FOR TEMPORARY HOUSES.—Following a questionnaire submitted to housing applicants, the Urban Council has decided to install electricity for all purposes in 300 temporary houses.

Birkenhead. — CONSULTANTS' FEES. — With regard to the decision to extend the generating station by the provision of a third 50,000-kW set to be commissioned in the autumn of 1949, and appropriate boilers of the same manufacture as the first two equipments, Merz & McLellan, the consultants, have informed the Electricity Committee that they are unable to reduce the percentage of their fees to the extent suggested by the Committee. The Committee has decided to refer the question of the consultants' fees to the Electricity Commissioners.

Birmingham.—WARTIME ACTIVITIES OF UNDERTAKING.—At last week's meeting of the City Council Alderman H. A. Sale, dealing with the accounts of the Electric Supply Department, said during the war more than £5,000,000 capital money had been spent and more than £4,250,000 had been provided for the redemption of debt. The revenue of the Department had risen from £3,200,000 in 1939 to £4,700,000 in 1945 without any increase in tariffs except for the operation of the normal coal clauses in the case of large consumers. Every effort was being made to avoid tariff increases. During the war nearly 5,000 million kWh had been supplied to war factories. The new power station extensions at Hams Hall "B," costing more than £5,000,000, had been carried out during the war notwithstanding the difficulties in obtaining sufficient labour and materials.

Blackpool.—FARM SUPPLIES.—The Electricity Committee has asked the electrical engineer to report on the provision of an electricity supply to farm premises at Peel.

Cardiff.—CONVERSION OF STREET LIGHTING.—The Corporation is considering reports on the conversion of gas street lamps to electricity. The city engineer is to make a survey so that any gas lamps in a state of disrepair may be converted to electric lighting immediately.

COLLEGE BAKERIES.—Having considered a suggestion by the electrical engineer that up-to-date equipment should be provided for the bakeries at the Technical College, the Electricity Committee has decided to ask the College Committee to specify the requirements so that the matter can be further considered.

DISTRIBUTION EXTENSIONS.—A supply is to be given to the Fairwater housing estate at a cost of £3,761, and substations, mains, etc., are to be provided at Pearl Street (£4,500) and Cowbridge Road (£2,450).

Chesterfield.—COMMISSIONERS' INQUIRY.—The Derbyshire & Nottinghamshire Power Co. has promoted a Bill for the extension of its area and opposition has been entered by the Chesterfield and Mansfield Corporations, the Bolsover and Staveley Urban District Councils and the Chesterfield R.D.C. An inquiry into the matter was held by Mr. H. Nimmo, Electricity Commissioner, at the Chesterfield Town Hall on Tuesday last.

Darlington.—SUPPLY TO TEMPORARY HOUSES.—Electricity services are to be provided by the Town Council for temporary houses to be built at East Cemetery at a cost of about £4,000.

LOAN FOR METERS.—The Town Council is seeking loan sanction for £1,020 for electricity meters for new houses.

Hammersmith.—SUPPLY TO L.C.C. ESTATE.—The Electricity Committee has reported that the London County Council requires a supply for forty-four temporary houses on its White City estate. The L.C.C. has agreed to bear the cost of the distribution mains and services but has suggested that as the houses will be "all-electric" no charge should be made for the necessary l.v. mains which will be required later for the supply to the permanent buildings. The Committee has agreed and says that the cost of l.v. mains required for a permanent supply to the estate will be £1,000 and additional distribution mains and services for the supply to the temporary houses will be £680, and it is recommended that the work should be approved. The existing substations on the estate are already fully loaded in the winter and larger transformers will have to be installed.

NEW SHOWROOMS.—In May the Council approved the proposal of the Electricity Committee to acquire, for £7,500, a site for the erection of new showrooms and offices, with workshops, stores, garage, etc. The Finance Committee has now recommended that the money shall not be borrowed but provided from the current year's revenue of the undertaking.

SUPPLY TO "OLYMPIA."—Owing to the requisitioning of "Olympia" by the War Department the 1935 agreement with the company lapsed. The Electricity Committee has now agreed that the supply shall be resumed on the same terms and conditions subject to the appropriate "war-costs" surcharge and adjustment of price for any e.h.v. supply.

Leicester. — EXTENSIONS AT FREEMAN'S MEADOW STATION.—A scheme for the extension and large scale reorganisation of the generating station at Freeman's Meadow, costing £1,300,000 has been recommended to the City Council. It provides for a new 31,500-kW turbo-generator and two boilers. Three new cooling towers are needed and these are to be erected on the Leicestershire county cricket ground. It is expected that in a few years

the Leicester City football ground will be acquired for further extensions. In addition to the new cooling towers, there will be a 350-ft. chimney stack which will replace three existing 250-ft. stacks.

London.—NEW TRANSMISSION LINE.—The London Power Co. has applied to the Electricity Commissioners for approval of the installation of a 66-kV main transmission line from the Battersea station to Gipsy Corner, Acton, at a cost of £120,000 to meet the increased load in the western area of the Metropolitan E.S. Co.

Middlesex.—FOOD CONVEYORS.—A number of electrically preheated conveyors for serving food are being provided by the County Council at the North Middlesex Hospital at a cost of £1,645. The action follows complaints concerning the arrangements for conveying meals from the kitchen to the wards.

Northern Ireland.—INQUIRY INTO DEVELOPMENT SCHEME.—The Northern Ireland Electricity Board's application for confirmation of its No. 8 Development Scheme, which covers parts of the counties of Antrim and Londonderry, was the subject of an inquiry opened by Judge Sheil in Belfast last week. On the first day Mr. Wynn Parry, K.C., opened the case for the Board.

Objections were lodged by the Antrim Electricity Supply Co. and the Antrim Electricity Distribution Co., subsidiaries of the British Electric Traction Co. They stated that they were willing and able to extend their systems when new demands arose. The compulsory acquisition of any or all the undertakings was not justifiable and would be unfair to those upon whom had fallen the burden of developing supplies in their areas during the pioneering period. Similar objections were read from the Limavady Electric Supply Co., Leithwood, Ltd., Antrim Light & Power Co., Glenarm & District Electricity Supply Co., Antrim Town Commissioners and Antrim Rural Council. Judge Sheil stated that Ballyclare Urban Council had also objected. Carrickfergus Council had offered no objection, subject to certain provisions.

Mr. A. W. Ferguson, chief administrative officer of the Board, said that the Board could give a cheap and adequate supply and consumers would benefit. Cross-examined, he stated that in the event of the scheme being approved some of the undertakings might not be taken over for some time.

On Saturday Mr. Arthur Collins, financial adviser to local governments, gave evidence. He said he had been asked to advise the Antrim Electricity Supply Co., and the Antrim Electricity Distribution Co. of the effect on them if the development scheme were approved. One effect would be to place the Electricity Board in the position of being able to acquire compulsorily the undertakings of the two companies. His view was that the companies should not be deprived of their rights unless there was evidence of disregard on their part of the public interest. They certainly could not be dismissed on the ground of bad conduct. If the whole area were taken over by the Board there would be no incentive to healthy competition. He expressed the opinion that the financial undertaking of the Board was not successful until 1938 or possibly early in 1939. Until 1935 the Board was being " nursed " by legislation. In nine years the sum of £216,901 management expenses had been charged to capital. The investor who put his £100 into the Board got his 3 per cent. whether or not the undertaking earned it, whereas the investor who put his money into a company had to depend upon the ability of the company.

Stockton-on-Tees.—SUBSTATION CONSTRUCTION.—The Electricity Commissioners have suggested to the Town Council that substations to be built in the immediate future should be steel-framed with duro-steel or corrugated iron covering owing to labour shortage which prevents the erection of the usual type of substation. The Council is to press the Commissioners to agree to brick substations.

West Hartlepool.—SUPPLY EXTENSIONS.—The Town Council is to spend over £14,000 on the distribution of electricity to the Challoner Road and Jesmond Gardens Estate, Stockton Road-Caledonian Road area, and the Park Square area.

Woking. — EXTENSION APPLICATION. — The Woking Electric Supply Co., Ltd., has applied to the Electricity Commissioners for a further extension of time under the Special Enactments (Extension of Time) Act, 1940, in respect of that part of its area of supply authorised by the Woking Electric Supply Company Lighting Order, 1900.

Woolwich.—EXPEDITION OF EXTENSION.—In 1943 the Council was directed by the Central Electricity Board to install a new 30,000-kW generating set with the necessary boiler plant, etc., to be ready by the winter of 1947-48. The Board has now directed that the work shall be expedited so that the new set may be in commercial operation by September, 1946. The cost of the work is estimated at £636,455.

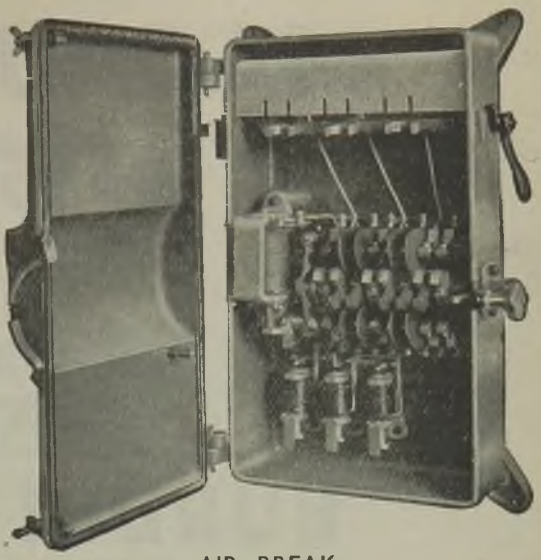
Workington.—HEATING INSTALLATION.—The Health Committee is to invite the Electricity and Gas Departments to submit tenders for heating the ambulance station.

TRANSPORT

Cardiff.—TROLLEY-BUS PLANS.—The Transport Committee recommends that powers should be obtained to run trolley-buses on various routes.

Leicester.—SUPERSESSION OF TRAMS.—A six-year plan for the abolition of the city trams and their replacement by motor-buses is expected to be complete by 1952. A report presented to the Transport Committee by Mr. C. H. Stafford, the general manager, indicates that on the basis of present costs, replacement of obsolete buses and purchases of new buses to facilitate the change-over will cost £701,950. The future requirements of the Department are 106 buses to replace obsolete vehicles, 19 for improvement of service, and 132 to carry out the replacement of the tramways.

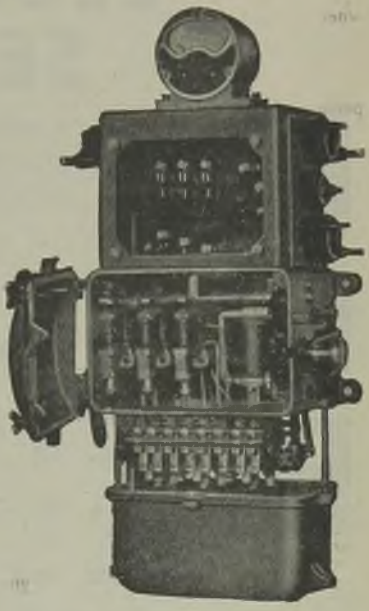
Manchester.—PROPOSED JOINT COMMITTEE.—At a conference held on June 20th a resolution was passed expressing the view that, in the public interest, a Joint Transport Advisory Committee was desirable. The Committee should, it was considered, be constituted by the following transport undertakings:—the Corporations of Ashton-under-Lyne, Bolton, Bury, Manchester, Oldham, Rochdale, Salford and Stockport, and the Stalybridge, Hyde, Mossley and Dukinfield Transport and Electricity Board.



AIR BREAK

THE VERITY RANGE

for control of squirrel-cage motors



OIL-IMMERSED

WORKS: ASTON, BIRMINGHAM 6

Sales Headquarters : BRETTENHAM HOUSE, LANCASTER PLACE, W.C.2

FINANCIAL SECTION

Company News. Stock Exchange Activities.

Reports and Dividends

The Isle of Thanet Electric Supply Co., Ltd., reports a profit of £34,209 for 1944 and the total available with other income is £36,551. After meeting debenture interest and sinking fund a balance of £13,806 is set against the loss of £35,872 brought forward, reducing it to £22,066. The report records the death of the chairman Mr. A. R. Hoare; he has been succeeded by Colonel N. R. Elliott. Reference is made in the report and in the chairman's speech circulated with it to the proposal of the Margate and Broadstair's Councils to acquire the company's undertaking. (See *Electrical Review*, July 6th, page 18.) It is stated that it is not yet possible to estimate accurately the result of a sale.

The Watford Electric & Manufacturing Co., Ltd., reports a trading profit for 1944 of £50,130 (against £65,719), together with other income of £194 (£331). There is also £3,393 (nil) from tax provision not now required. Taxation absorbs £37,643 (£58,297). £1,000 (same) goes to building reserve and £5,000 (nil) to post-war change-over reserve. Interim ordinary dividends totalling 15 per cent. (same) were paid on larger capital; there is no final dividend. A sum of £25,470 (£21,546) is carried forward.

The Morgan Crucible Co., Ltd.—The accounts for the year to March 31st last show a profit of £488,391 (against £794,219), after providing for depreciation, and including profits of subsidiaries. To this are added £69,337 (£41,625) dividends and interest and £60,786 (£44,283) specific reserves no longer required. Taxation of profits to date is £274,757 (£652,112). The final ordinary dividend is 1s. 6d. per £1 stock, making 2s. 3d. (against 2s.), plus 6d. capital bonus (same). A sum of £147,000 is written off trade investment and £1,378 (£1,520) is carried forward.

Radio Rentals, Ltd., are offering 34,000 5s. ordinary shares of 22s. 6d. each in the proportion of one for every twelve ordinary shares held on June 27th. The new shares rank *pari passu* with existing ordinary shares. Permission to deal has been granted in the new ordinary and in 8,000 ordinary shares issued in January last, credited as fully paid in part payment of the purchase price of a business acquired by the company.

The Revo Electric Co., Ltd., announces a profit of £249,266, after providing for depreciation, against £201,446 for 1943-44. Taxation absorbs £164,045 (£125,586); £25,000 is again transferred to general reserve (making £150,000); and £10,000 is put to stock contingencies reserve. Last year £5,000 was placed to plant depreciation reserve. After paying a final dividend of 10 per cent. and a bonus of 2½ per cent., again making 17½ per cent. for the year, £83,166 (against £80,201) is carried forward.

The Telephone Manufacturing Co., Ltd.—Out of net profits of £217,719 for 1944 (against £274,083 for 1943), £33,599 (£43,081) is provided for income tax and £152,473 (£194,838) for E.P.T. A sum of £14,376 (£17,873) is transferred to general reserve and after maintaining the dividend for the year at 9 per cent., £10,010 (£10,065) is carried forward.

The Broadcast Relay Service, Ltd., in its accounts for the year ended March 31st last, shows a profit, including net dividends from subsidiaries and after provision for E.P.T., of £135,439, against £135,784 for 1943-44. Premium and redemption expenses of preference shares require £14,432 (£12,129) and £50,000 (same) is allocated to reserve for replacements and contingencies. A final ordinary dividend of 3½ per cent. maintains the distribution for the year at 7 per cent., free of tax, and £46,950 (£39,925) is carried forward. A staff pensions fund is to be established and an initial sum of £20,000 has been set aside.

At the meeting of the company on July 31st resolutions will be proposed to convert the whole of the unissued capital of £391,900 into ordinary shares of 5s. and to convert the 266,600 ordinary shares issued last October into stock. Another resolution proposes to increase the maximum number of directors from eight to ten.

Franco Signs, Ltd.—Combined trading profits of subsidiaries, after meeting all expenses, tax and depreciation, amounted to £30,970 (against £28,578) and a net dividend of £10,000 (same) has been received. The net premium of £20,955 received on the Franco Signs share issue in March has been transferred to reserve, together with £3,958 from revenue account. A dividend of 10 per cent. is paid on 400,000 old shares for the year ended March 31st last (same) and £7,570 (£11,467) is carried forward.

Ward & Goldstone, Ltd., are paying a special bonus of 5 per cent. as well as the usual dividend of 10 per cent., making a total of 25 per cent. (against 20 per cent.) for the year. The net profit is £38,939 (£28,330).

Western Telegraph Co., Ltd.—The excess of income over expenses and debenture interest for the past year amounted to £242,321 (against £242,708). The final dividend is again 4¼ per cent., making 7½ per cent. for the year.

Eastern Extension, Australasia & China Telegraph Co., Ltd.—From a net profit of £310,315 (against £301,349) a final dividend of 4¾ per cent. is being paid, again making 7½ per cent. for the year.

Christy Bros. & Co., Ltd., announce a net profit of £21,779 for 1944-45 (as compared with £22,536 for the preceding year). The dividend is maintained at 17½ per cent.

George Kent, Ltd., are again paying a final dividend of 7 per cent. and a bonus of 2½ per cent., making 12½ per cent. (same) for the year.

Hoover, Ltd., has declared an interim ordinary dividend of 3¼ per cent., as last year.

Bennis Combustion, Ltd., has announced a final dividend of 5 per cent. on the ordinary shares, maintaining the distribution for the year at 10 per cent.

New Companies

Duncan Low, Ltd.—Private company. Registered in Edinburgh June 28th. Capital, £20,000. Objects: To carry on the business of designers, manufacturers and factors of, and dealers in, electrical or other heaters, fires, radiators, stoves and allied appliances. Directors: Duncan Whyte Low, B.Sc., A.R.T.C., M.I.E.E., A.M.Inst.C.E., 18, Helensburgh Drive, Glasgow, W.3, and D'Arcy Ross, Lapthorn, Westburn, Cromlix Crescent, Dunblane, Perthshire.

Electric Contracts (London), Ltd.—Private company. Registered June 26th. Capital £3,000. Objects: To carry on the business of electrical engineers and contractors, etc. G. W. Sowdon, 31, Victoria Road, Mitcham, Surrey, engineer, is the first director. Secretary: D. I. Gerlis. Registered office: 6, Broad Street Place, E.C.2.

Kams Radio Electric, Ltd.—Private company. Registered June 25th. Capital, £100. Objects: To carry on the business of radio, electric and general manufacturers and dealers, etc. M. Kams, 18, Disraeli Gardens, S.W.15, is the first director. Registered office; 7, Putney High Street, S.W.15.

Theta Radio and Television Co., Ltd.—Private company. Registered June 23rd. Capital, £1,000. Objects: To carry on the business of manufacturers of, and dealers in, wireless, television and electrical apparatus, gramophones, etc. First directors: R. L. Carstairs, 73, Wood Ride, Petts Wood, Kent; and E. F. Flavin, 37, Wendover Way, Welling, Kent. Registered office: 233-235, High Street, Lewisham, S.W.13.

Meclec Manufacturing Co., Ltd.—Private company. Registered June 29th. Capital, £100. Objects: To carry on the business of manufacturers of, and dealers in, artificial lighting apparatus, electrical, gas and oil plant, fittings and accessories, gramophones, radio and television sets and components, etc. Directors: E. S. Russell, 206, Lichfield Court, Richmond, Surrey; J. Peace, Glenhaven, Gloucester Gate, N.W.1; and J. D. James, address not stated. Registered office: 5, Cheapside, E.C.2.

J. Newman & Co. (Electric), Ltd.—Private company. Registered June 26th. Capital, £100. Objects: To carry on the business of electricians, engineers, radio and gramophone dealers, etc. Subscribers: G. Perlmutter, 58, Lingwood Road, E.5, and Helen Horowitz, 31, Vallance Road, E.1. Secretary: Helen Horowitz. Registered office: 203, Regent Street, W.1.

J. & R. Weaver (Radio & Television), Ltd.—Private company. Registered June 22nd. Capital, £1,000. Objects: To carry on the business of manufacturers of, and dealers in, wireless, television and electrical goods, etc. Directors: J. R. Weaver and Mrs. Ellen Weaver, both of St. Ivanhoe, Harple Lane, Detling, near Maidstone. Registered office: 11, Market Buildings, Maidstone.

Sound Systems, Ltd.—Private company. Registered in Dublin on June 30th. Capital, £5,000. Objects: To manufacture and supply electric current and deal in electrical goods, apparatus, articles, appliances, etc. Subscribers: T. A. Clear, 3, Bayswater Terrace, Sandycove, Dublin, and S. J. Devlin, 50, Belgrave Square, N. Rathmines, near Dublin.

Companies' Returns

Statements of Capital

Simplex Conduits, Ltd.—Capital, £100,000 in £1 shares. Return dated December 5th. 90,000 shares taken up. £50,000 paid. £40,000 considered as paid. Mortgages and charges: Nil.

Simplex Electric Co.—Capital, £500 in £1 shares. Return dated December 6th, 1944. All shares taken up. £500 paid. Mortgages and charges: Nil.

Radenite Batteries, Ltd.—Capital, £20,000 in £1 shares. Return dated December 28th. 16,885 shares taken up. £4,654 paid. £12,231 considered as paid. Mortgages and charges: Nil.

Waterloo Electric Supplies, Ltd.—Capital, £100 in 100 shares of £1 each. Return dated January 16th, 1945. 100 shares taken up. £98 paid. £2 considered as paid. Mortgages and charges: Nil.

Electro-Alloys, Ltd.—Capital, £10,000 in £1 shares. Return dated December 1st. 5,000 shares taken up. £2,000 paid. £3,000 considered as paid. Mortgages and charges: Nil.

Increases of Capital

S. Hathaway & Co., Ltd.—The nominal capital has been increased by the addition of £10,000 beyond the registered capital of £10,000. The additional capital is divided into 6,500 8 per cent. non-redeemable cumulative preference and 3,500 ordinary shares of £1 each.

Green & Faulconbridge, Ltd.—The nominal capital has been increased by the addition of £9,000 in 9,000 ordinary shares of £1, beyond the registered capital of £1,000.

Receiver Released

Block Batteries, Ltd.—J. S. Blyth of Ulster Chambers, 165, Regent Street, S.W.1, ceased to act as receiver and manager on June 5th, 1945.

Liquidations

Callender's Cable & Construction Co., Ltd.—Winding up voluntarily. Liquidator, Mr. Harold Hockley, 5, London Wall Buildings, E.C.2.

British Insulated Cables, Ltd.—Winding up voluntarily. Liquidator, Sir William McLintock Bt., Granite House, Cannon Street, E.C.4.

(These liquidations are consequent upon the merging of the two companies' businesses in British Insulated Callender's Cables, Ltd.)

Amesbury Electric Light & General Supply Co., Ltd., and **Downton Electric Light Co., Ltd.**—Winding up voluntarily. Liquidator, Mr. A. M. Scott, 24-30, Gillingham Street, S.W.1.

Bankruptcies

W. Sumner and E. Sumner, formerly trading as W. & E. Sumner, at 65, Victoria Street, Garston, Liverpool, and elsewhere, electrical and mechanical engineers. (Under order for consolidation of proceedings.)—First and final dividend of 20s. in the £ payable at the Official Receiver's Offices, Hunter Street (Friends' Meeting House), Liverpool, 3.

STOCKS AND SHARES

TUESDAY EVENING.

STOCK EXCHANGE markets regard with confidence the probable return to power of the Prime Minister and his party, when the results of the voting come to be published. An occasional note of hesitation crept into certain markets, but for a week or more there has been sufficient support available to bring about a steady improvement in quotations. If it should prove that the Socialists are in the majority, a fairly general fall is expected to take place. On the other hand, a Conservative victory and working majority are thought likely to encourage an influx of buyers who have been waiting in order to see how the election will go, before they invest money they have ready for employment.

Market Improvements

Southern Railway 5 per cent. preference and preferred stocks are up to 118½ and 75½ respectively. British Electric Traction deferred at 1,200 is 20 points better, and Thomas Tilling shares hardened to 58s. Home electricity shares are very firm: British Power & Light at 32s. and County of London at 42s. 6d. are higher. The Indian group holds its recent good gains. Calcutta Trams rose to 77s. 6d. Now that the company's new shares have secured more or less permanent homes, East African Power remain firm at 35s. 6d. the new shares, issued at 29s., being quoted 6s. premium. The bombing of Japanese cities led to selling of Tokyo Electric sixes, and the price fell back 2½ to 24½. Anglo-Portuguese Telephones have gained 1s. at 29s. Telephone Rentals put on 9d., to 12s. 6d.

The Rising Tide

Amongst the higher-priced shares, De la Rue have recovered to 11 $\frac{1}{16}$—nearly £1 above the "election" price. Metal Industries "B," with a gain of 1s. 6d. to 51s. 6d. are 6s. higher than they were a month ago. Crompton Parkinsons added a florin to their previous 32s. and English Electrics are equally harder at 55s. Henley's are a good spot at 28s. For Siemens, persistent demand raised the price to 38s. 6d. and Johnson & Phillips, also pressingly wanted, rose to 78s. 6d. Ward & Goldstone have increased their previous dividend of 20 per cent. to 25 per cent., of which 5 per cent. is declared as bonus, and the price advanced to 31s. 6d. Walsall Conduits rose 1s. to 54s. 6d. following upon the excellent report. Murex changed hands at the advanced price of £5. Hopkinsons at 86s. are $\frac{1}{16}$ up, Ransome & Marles at 4½ are similarly better. A shilling rise lifted Ever Ready to 42s. 6d. Allen Wests gained the pence at 8s. 3d.

British Insulated Callender's

Active dealings started last week in the shares of the British Insulated Callender's Cables, Ltd. The opening price of 41s. was quickly left behind, and the price rose to 44s. 6d. The amalgamated companies had both been paying 20 per cent. dividends, but it is difficult to forecast what distribution will be made under the new arrangements. Market estimates put the possible dividend at 7½ per cent. If this should be realised, the yield at 44s. 6d. would be a little under 3½ per cent. on the money. This is purely guesswork, though on the figures which are available, a 7½ per cent. dividend on the ordinary shares should be well within the new company's capacity.

Radio Shares

The strength of industrial shares as a whole has found reflection in the radio market. Cossor have risen 3s. to 42s. 6d. and E.M.I. are up 1s. 6d. to 35s. 6d. Active business continues to be done in J. & F. Stone around 12s. and Broadcast Relay, now at 22s. 6d. Buyers pay tribute to the television prospects of the companies, and the price of Cinema Television deferred has strengthened to 8s. 9d. After the proposed reorganisation of the capital, the present holder of one Cinema Television deferred will possess four shares under the new structure. Radio Rentals ordinary are 30s. ex the rights to new shares offered at 22s. 6d. in the proportion of one new for twelve old. The new shares are quoted at about 6s. premium. E. K. Cole at 41s. 3d. have regained their decline of last week.

General Electric

The report and accounts of the General Electric Co. are on the point of being published; last year, the report appeared on July 18th. The company then repeated, for the fourth consecutive year, the dividend of 17½ per cent. In the three previous years, 1938-1940 inclusive, the dividend and bonus together were 20 per cent., and last year there was some hope that this rate would be restored. The earnings, on the ordinary shares, however, were a trifle under 20 per cent. Anticipation looks for a repetition of the 17½ per cent. for the past year. The board has frequently been asked to pay dividends half yearly, instead of annually as at present.

New Preference Shares

It will be remembered that last November, 2,000,000 4½ per cent. "C" preference shares were created, for which Morgan Grenfell last December undertook to subscribe at par. The proceeds were to be applied to repay the loan shown in the balance sheet at March 31st, 1944, of practically the same amount. These, "C" preference shares are now marketable, and are changing hands on the basis of 22s. 6d. The price of the ordinary shares has risen to 98s. 6d. comparing with last year's highest of 99s. 6d. and a lowest of 52s. 6d. at the time of the fall of France in 1940. At the present price the yield, on a 17½ per cent. dividend basis, is £3 11s. 6d.; rather more, allowing for inclusion of the full year's dividend in the price.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (1s. each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

AIRCRAFT-MARINE Products, Inc. — "Electrical connectors." 2119/44. February 6th, 9143. (570064.)

Allmanna Svenska Elektriska Aktiebolaget. —"Voltage regulating switch for storage batteries." 13513/43. September 2nd, 1942. (570047.)

H. T. Bourne.—"Reversing gear for electrically driven rotary shafts and the like." 15697. September 24th, 1943. (570020.)

British Thomson-Houston Co., Ltd.— "Electron tube frequency converters." 15453/43. September 25th, 1942. (570008.) "High frequency transmission lines." 3200/41. March 8th, 1940. (570136.)

British Thomson-Houston Co., Ltd., and J. H. Walker.—"Heteropolar inductor alternators." 9753. June 17th, 1943. (570107.) "Inductor alternators." 15819. September 27th, 1943. (570125.)

British Thomson-Houston Co., Ltd., J. Moir and W. S. Graff-Baker.—"Thermionic valve voltage regulators." 21907. December 31st, 1943. (570162.)

Brush Development Co. — "Means for reducing surface leakage in high impedance alternating current generators." 429/43. January 8th, 1942. (570043.)

Carborundum Co.—"Electrical resistances." 15678/43. September 24th, 1942. (570049.)

C. J. Carter and Pye, Ltd.—"Arrangement for indicating standing electromagnetic waves in waveguides." 2961. February 23rd, 1943. (570080.)

Chloride Electrical Storage Co., Ltd. (C. C. White).—"Retainers or separators for electric accumulators." 18896. November 12th, 1943. (570055.)

J. D. Dean and J. H. Clarke.—"Electrical driving systems for ship propellers." 12160. July 26th, 1943. (570118.)

English Electric Co., Ltd., and R. D. Ball. "Heteropolar inductor alternators." 15513. September 22nd, 1943. (570014.)

J. L. French, J. R. Packman and Plessey Co., Ltd.—"Projection system for the inspection of internal surfaces." 15771. September 25th, 1943. (570022.)

General Electric Co., Ltd., and R. J. Clayton. —"Aerial feeders." 248. January 7th, 1942. (570038.)

General Electric Co., Ltd., and C. R. Dunham. —"Electrical transmission lines." 8451. May 26th, 1943. (570087.)

R. C. Graseby.—"Apparatus for measuring angular velocities." 12437. July 30th, 1943. (570146.)

F. M. Hills.—"Radio receivers." 18421. November 5th, 1943. (570092.)

A. Hobson and F. C. Smith & Co. (Transformers), Ltd.—"Current transformers." 21026. December 15th, 1943. (Addition to 555739.) (570059.)

H. Hughes & Son, Ltd., D. O. Sproule and A. J. Hughes.—"Echo sounding apparatus." 681. January 9th, 1939. (570133.)

Igranic Electric Co., Ltd., and J. V. Wredden. —"Manufacture of electrical components with moulded plastic coatings." 9741. June 17th, 1943. (570108.)

H. W. K. Jennings (Trans-Lux Corporation). —"Travelling message signs and control means for electrically energisable elements." 20632. December 9th, 1943. (570097.)

Johnson, Matthey & Co., Ltd., E. R. Box and E. J. Wyeth.—"Manufacture and production of electrical resistors with a low inductance." 20918. December 14th, 1943. (570026.)

Marconi's Wireless Telegraph Co., Ltd., and L. C. Styles.—"Thermionic valve switching circuit." 18708. November 10th, 1943. (570094.)

Okonite-Callender Cable Co., Inc. — "Apparatus for the drying of air." 8515/43. July 3rd, 1942. (570105.)

G. F. N. Oliver.—"Secondary electric batteries." 15690. September 24th, 1943. (570019.)

A. W. Pimm, C. Cutler and Metropolitan-Vickers Electrical Co., Ltd.—"Devices for drawing off samples of liquid from containers." 15487. September 21st, 1943. (570010.)

D. S. B. Shannon and H. Craske.—"Secret communication by means of electronic devices." 16293. December 17th, 1941. (570140.)

N. A. Tucker. — "Resistance welding machines." 20917. December 14th, 1943. (570025.)

Vickers-Armstrongs, Ltd., J. C. Clifton and F. W. Rabarts.—"Means for the control of photo-electric cells." Cognate applications. 2982/43 and 975/44. February 23rd, 1943. (570102.)

Westinghouse Brake & Signal Co., Ltd., A. G. Kershaw and A. W. Simmons.—"Electrically insulated pipe couplings or the like." 48. January 3rd, 1944. (570130.)

Westinghouse Electric International Co.— "Heat exchange apparatus." 11617/43. July 29th, 1942. (570115.)

W. Whiteley & Sons, Ltd., and H. Lumb.— "Electrical means for detecting the presence of metal bodies in textile fabrics." 21688. December 25th, 1943. (570063.)

Automatic Controlling and Recording

THE Institution of Chemical Engineers, the Institute of Physics and the Chemical Engineering Group of the Society of Chemical Industry announce that the one-day joint conference on "Instruments for the Automatic Controlling and Recording of Chemical and other Processes," which was postponed in September last, will take place at the Royal Institution, London, on Friday, October 19th next. Further particulars will be sent in September to those sending a request to the Organising Secretary, Joint Conference, c/o the Institution of Chemical Engineers, 56, Victoria Street, London, S.W.1.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Birkenhead.—July 16th. Electricity Department. Transformers. (July 6th.)

Birmingham.—July 20th. Electricity Department. Circulating water pipework, etc., for Hams Hall "B" power station extensions. (June 29th.)

Chichester.—August 17th. City Council. About 20 miles of 11 kV and control cables and accessories. (See this issue.)

Littleborough.—July 23rd. Electricity Department. 11-kV ring-main unit and l.v. switchgear. (July 6th.)

Manchester.—July 20th. Electricity Committee. 33-kV and auxiliary and telephone cables between Barton generating station and Benchill substation. (July 6th.)

July 30th. Electricity Department. Manufacture, testing and delivery at Stuart Street generating station of 33,000-V cable. (See this issue.)

New Zealand.—September 18th. Public Works Department. One 23,000-BHP turbine and 16,667-BHP generator for Waitaki power scheme.

Oulton, near Leeds.—July 16th. West Riding Mental Deficiency Act Committee. Rewiring of Oulton Hall Institution. Specifications, etc., from the county architect, County Hall, Wakefield.

Southampton.—August 1st. Electricity Department. Cables and domestic appliances. (See this issue.)

Whittingham, Preston.—August 3rd. Mental Hospital. Supply and erection of generating plant and other electrical gear. (See this issue.)

Willesden.—July 16th. Electricity Department. Street lighting columns and lanterns. (July 6th.)

Orders Placed

Barrow-in-Furness.—Electricity Committee. Accepted. Thirty-six lamp standards and lanterns (£341).—Edison Swan Electric Co. Two 500-kVA transformers (£866).—English Electric Co.

Birkdale.—Electricity Committee. Accepted. Mercury arc rectifier (£2,240).—Electric Construction Co.

Birkenhead.—Electricity Committee. Accepted. Paper-insulated cables.—Scottish Cables; Aberdare Cables; and Britannic Electric Cable & Construction Co. Rubber-insulated cables.—Scottish Cables; Mersey Cable Works; and Wm. Geipel. Meters.—British Electric Meters; Landys & Gyr; English Electric Co.; and Sangamo Weston.

Cardiff.—Electricity Committee. Accepted. Dust extraction plant (£2,050).—Sturtevant Engineering Co.

Cupar (Fife).—Town Council. Accepted. Electric street lighting (£4,226).—Metropolitan Vickers.

Manchester.—Health Committee. Accepted. Potato peeling machine.—Peerless Elec. Mfg. Co.

Education Committee. Accepted. Rectifier for College of Technology.—Hewittic Electric Co.

Wallasey.—Electricity Committee. Accepted for three years. Cables.—British Insulated Cables; Crompton Parkinson. 250 25-A house service meters (£441).—Sangamo Weston.

Worthing.—Electricity Committee. Accepted. Switchgear (£1,055).—Crompton Parkinson. Transformer (£750).—G.E.C.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Abernethy (Perthshire).—Houses (14) with electrical work; L. A. Rolland, quantity surveyor, 47, High Street, Leven, Fife.

Ashton-in-Makerfield.—Houses (30), Rectory Road site; surveyor, Town Hall.

Birkenhead.—Premises for pasteurising milk plant; Wirral Milk Supplies, Ltd.

Canteen kitchen for school meals; B. Robinson, borough engineer.

Bolsover.—Houses (50), Moor Lane estate; surveyor and architect, Council Offices, Bolsover, near Chesterfield.

Bootle.—Rebuilding 17 houses, Aintree Road, Williams Avenue, etc.; W. A. Harrison, borough engineer.

Bournemouth.—Printing works, Essex Terrace; Bournemouth Times, Ltd.

Home and school, The Broadway; Victoria Home for Crippled Children.

Offices and bottling premises, Palmerston Road; Malmesbury & Parsons Dairies, Ltd.

Burntisland (Fife).—Housing scheme; G. H. Rodger, burgh surveyor.

Bury.—Reconstruction of public swimming baths; J. Chadwick, borough engineer.

Caernarvonshire.—Proposed wiring of Capel Curig Council School, Capel Curig Old Schools and Beddegelert Council School; county architect, Caernarvon.

Cardiff.—Improvements, Sloper Road transport depot (£10,980); city engineer.

Caterham.—Rebuilding works of Caterham Motor Co., Ltd., Croydon Road; Rix & Rix, High Street, Burnham, Bucks.

Cheltenham.—Factory, Victoria Street; Victoria Cabinet Co.

Factory, Grove Street; Globe Shopfitting & Joinery Co.

Flats, The Priory, Lansdown Road; F. Bugbird & Sons, Ltd.

Cupar (Fife).—Housing scheme; R. W. Morrison, burgh surveyor.

Dalkeith.—Houses (20), with electrical work; R. K. M'Condochie, town clerk, Municipal Buildings.

Darlington.—Additions to "A" foundry, York Street; T. Summerson & Sons, Ltd.

Civic centre; E. Minors, borough engineer.

Derbyshire.—Kitchen and dining centre at Bradwell Council School; J. Harrison, county architect, St. Mary's Gate, Derby.

Essex.—Extensions, Broomfield County Hospital (£70,000); youth centre, Maldon (£3,080); and health centre, Witham; county architect, Chelmsford.

Hinckley.—Houses (47), Middlefield estate; J. S. Featherston, surveyor, Council Offices, Station Road.

Kingsclere and Whitchurch.—Houses (36), Burghclere and Overton, for R.D.C.; F. Henshaw, architect, Westminster Bank Chambers, Andover.

Kirkcudbright.—Permanent houses (26) at Lochfoot, with electrical work; county clerk, Kirkcudbright.

Liverpool.—Works, Stopgate Lane, Fazakerley; Beaver Paint Co., Ltd., 20, Tithebarn Street.

Works, Edwards Lane, Speke; MacCartney & Green, Ltd., leather goods manufacturers, 4-6, Great College Street.

London.—Huts at Briston School of Building (£5,100); Wm. Harbrow, Ltd.

STOKE NEWINGTON.—Flats, Milton Grove (£78,000); borough architect.

North Riding.—Five police stations, and 92 police houses, for Standing Joint Committee; county architect, County Hall, Northallerton.

Portishead.—Underground pumping station, Bristol Road, for U.D.C.; Alan S. Chubb, engineer, Council Offices.

Renfrewshire.—Sewage purification scheme and refuse destructor; county clerk, Paisley.

Richmond (Yorks).—Permanent houses, Eastfield Avenue; borough engineer.

Rotherham.—Office block, Eastwood trading estate; C. Walker & Co.

Houses (100), East Herringthorpe site; C. des Forges, town clerk, Municipal Offices.

Salford.—Remand home, George Street (£4,890); city engineer.

Sheffield.—New College of Technology; W. George Davies, city architect.

Southport.—School canteens (£43,052); borough engineer.

Stockton-on-Tees. — Preserves and mineral water factories; C.W.S., 1, Balloon Street, Manchester.

Factory for Kennedy & Co., Ltd.; F. W. Turnbull, architect, White House, Carlton.

Stretford.—Rebuilding 44 houses; borough engineer.

Tottenham.—Garden city for 3,000, Harlow, Essex; borough engineer.

Tynemouth.—Conversion of premises in Percy Gardens and Cleveland Terrace into flats; W. Stockdale, architect, 73, Howard Street, North Shields.

Flats (46), Bird Street and Front Street; borough engineer.

Rebuilding classrooms, Spring Gardens School (£1,420); J. H. Rogers, builder, North Shields.

Wakefield.—Houses (24), several sites, for R.D.C.; surveyor, Council Offices, 18, St. Johns North.

Wallsend.—Development of housing estate; W. Leech, builder, Clayton Street, Newcastle-on-Tyne.

Worthing.—Bungalows (107), Goring Way, etc.; West Sussex Coast Development Co., Ltd.

Soviet Power Stations

Capacity Soon at Pre-war Level

IN the summer and autumn of 1941 when the Germans were driving eastwards into the heart of the U.S.S.R., power stations and power distribution installations in the threatened areas were hastily dismantled and transferred to the eastern regions, where new power stations, mainly built of local materials and burning local fuel, were started in order to supply evacuated industries.

The Chelyabinsk heat and power station, which contains a 100,000-kW turbine is run entirely on low-grade fuel with high ash content. In Uzbek four hydro-electric stations were built on the River Chirchik to provide power for the Tashkent industrial region; a fifth station is nearing completion. On April 23rd of this year the Alapaevsk hydro-electric station, one of a series of three on the river Neva, was put into operation; despite the severe climatic conditions this station was erected in eighteen months. During the war the power resources of the Urals have been nearly doubled. New generators have been installed in power stations at Krasnogorsk, Kuibishev, Kazan, Omsk and other cities.

When Stalinogorsk, in Donbas, Smolensk, Minsk, Odessa and other occupied territories were liberated, all power stations were found in ruins. The Germans blew up 130 boiler drums, which were, however, repaired by welding. At Krasnogorsk Ramzin uniflow boilers were successfully fabricated on the station site.

Towards the end of 1944, thirty-five regional power stations were already providing electricity in liberated Stalinogorsk, Shterovka, Nikolayev, Odessa, Lvov and Rostov. The Dnieper hydro-electric station is being reconstructed. The aggregate capacity of power stations in the Soviet Union is expected to reach pre-war level by the end of this year. About forty new big hydro-electric stations and thirty steam stations are to be built as well as numerous small power units for collective farms.

FAMOUS HYDRO-ELECTRIC STATIONS.

A telephoto view of the downstream face of the Seminoe Dam, showing the power-house in the foreground. The dam forms part of the Kendirck Project (State of Wyoming, U.S.A.) Figures of the electrical power generated are, at present, not available.

ELECTRIC LAMPS
Price Reduction

With the ending of Double Summer Time the Members of the Electric Lamp Manufacturers' Association have pleasure in announcing important reductions in the prices of Tungsten Filament Electric Lamps

New Prices

Operative on and from July 16th

SINGLE COIL

In standard voltages, 100 to 130v. and 200 to 260v.

Watts.			REDUCED PRICE LIST	PURCHASE TAX
15, 25, 40 and 60	Pearl and Clear	... ...	1/3	*4d.*
75	,, ,,	... ...	1/7	*5d.*
100	,, ,,	... ...	1/9	*6d.*
150	,, ,,	... ...	2/9	*8d.*
200	Clear	—	4/6	*1/2*
300	,,	—	8/-	—
500	,,	—	10/6	—

COILED COIL

In standard voltages, 200 to 260v.

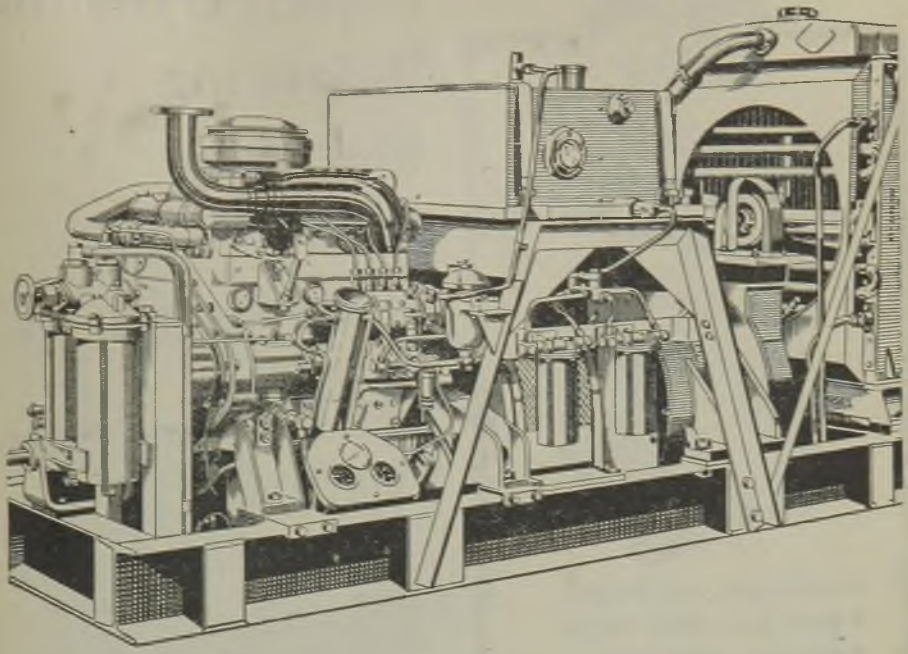
40	Pearl	... ...	1/6	*5d.*
60*	,,	... ...	1/6	*5d.*
75*	,,	... ...	1/8	*5d.*
100*	,,	... ...	1/10	*6d.*

*Available as soon as possible

Details of reduced prices of other types available on application to suppliers

Allowances due to re-sellers under ELMA Agreements will be made by your suppliers in due course

ELECTRIC LAMP MANUFACTURERS' ASSOCIATION
25 BEDFORD SQUARE, LONDON, W.C.1

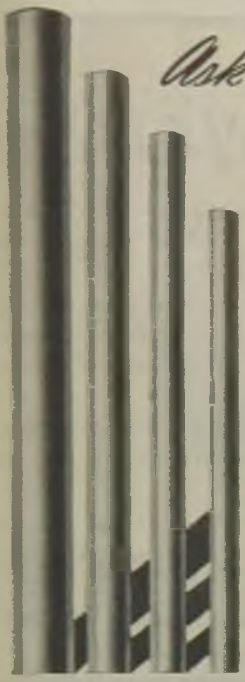


Light Afloat

Perkins Marine Diesels power motor launches of many types . . . but the Electrical Industry is naturally more interested in Perkins industrial engines which supply instantaneous and unfailing power at sea for lighting and auxiliary services. Compact, smooth running, quick starting and instantly responsive under all climatic conditions they have proved invaluable to the three fighting services throughout the world.

PERKINS DIESELS AND ELECTRIC PLANT

Telephone: Peterborough 3241.



Ask "ASTON" *about Brass Rods*

COPPER CONDUCTORS, COMMUTATORS AND PHOSPHOR BRONZE

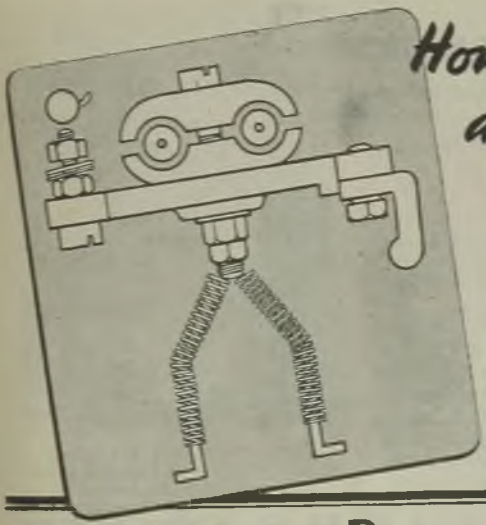
"Aston" has become a name in the non-ferrous metals industry. To the copper and bronze productions for gas, electrical, shipbuilding, aircraft and the various transportation industries, Aston now add brass rods, very round, very true to size and exceptionally free cutting; in every respect ideal for working at high machining speeds. Enquiries are invited for all non-ferrous metals with an assurance that the service Aston will give is as excellent as the products they will supply.

ASTON

CHAIN AND HOOK CO. LTD.

Manufacturers of NON-FERROUS METALS

Bromford Lane, Erdington, Birmingham, 24
Phone: ERDington 2235-6-7 Grams: Chainwork, Erdington



How to "SCARE-UP" a better Product

De Renzi, Holmes' designers and engineers are constantly at work improving a range of proven products . . . products that, incorporated in your equipment, may make an important contribution to its efficiency. If you would like us to co-operate with you in 'scaring-up' a mutually better product, our services are entirely at your disposal. By the way, just as a matter of interest the terrifying gentleman on the left is really some component parts of a de Renzi, Holmes' Cam-Operated Contactor Controller.

MANUFACTURERS OF CAM-OPERATED CONTACTOR CONTROLLERS · SLIDER RHEOSTATS · RUSTLESS UNBREAKABLE GRID RESISTANCES · WELDING RHEOSTATS

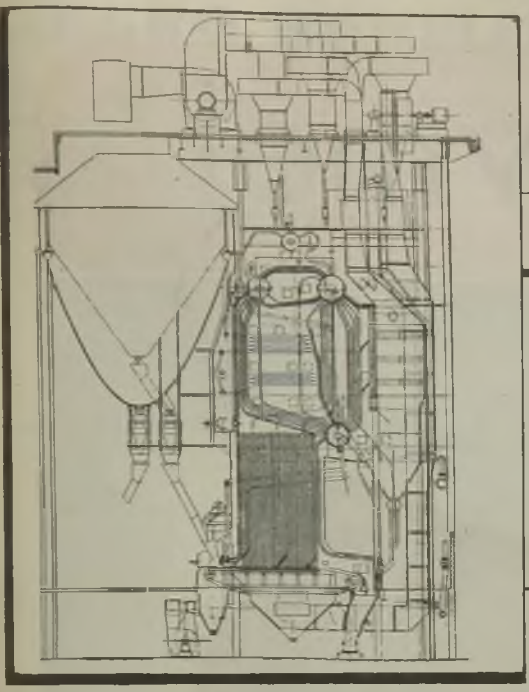
London Office:
Millard House, Wilton Road, S.W.1.
Telephone: VICtoria 3100

Scottish Representative:
John R. Scott, 89-91, York Street,
Glasgow, C.2. Tel: CITy 6677.

DE RENZI, HOLMES & CO. LTD

FOX'S LANE · WOLVERHAMPTON

TELEPHONE: WOLVERHAMPTON 21714



CLARKE, CHAPMAN

Watertube Boilers

Arrangement of Clarke, Chapman Tri-Drum Watertube Boiler as supplied to a large Yorkshire Power Station

Evaporation 190,000 lbs. per hr.
Pressure 400 lbs. per sq. in.
Heating Surface 16,300 sq. ft.

CLARKE, CHAPMAN & CO. LTD.
VICTORIA WORKS, GATESHEAD-on-TYNE
Tel.: 72271 (6 Lines). Telegrams: 'Cyclops,' Gateshead
London Office: 112/113 Fenchurch Street, London, E.C.3
Tel.: Royal 2737/8. Tel. Add.: 'Cyclops,' Fen, London

THE

E—Z

WIRE STRIPPER

Can be supplied with any of the following standard sizes of Blades:

No. 1 for 14's to 22's S.W.G.
„ 2 „ 12's „ 19's „
„ 3 „ 10's „ 13's „

or equivalent overall diameters of Stranded Wires.

Sole Distributors:

BUCK & HICKMAN LTD.
2, 4, 6 & 8 WHITECHAPEL RD.
LONDON, E.1

Advt. of J. B. Hyde & Co. Ltd.

JOHN ISMAY & SON LTD · ILFORD

CLASSIFIED ADVERTISEMENTS

ADVERTISEMENTS for insertion in the following Friday's issue are accepted up to **First Post on Monday**, at Dorset House, Stamford Street, London, S.E.1.

THE CHARGE for advertisements in this section is 2/- per line (approx. 8 words) per insertion, minimum 2 lines 4/-, or for display advertisements 30/- per inch, with a minimum of one inch. Where the advertisement includes a Box Number there is an additional charge of 6d. for postage of replies.

SITUATIONS WANTED.— Three insertions under this heading can be obtained for the price of two if ordered and prepaid with the first insertion.

REPLIES TO advertisements published under a Box Number if not to be delivered to any particular firm or individual should be accompanied by instructions to this effect, addressed to the Manager of the ELECTRICAL REVIEW. Letters of applicants in such cases cannot be returned to them. The name of an advertiser using a Box Number will not be disclosed. All replies to Box Numbers should be addressed to the Box Number in the advertisement, c/o ELECTRICAL REVIEW, Dorset House, Stamford Street, London, S.E.1. Cheques and Postal Orders should be made payable to ELECTRICAL REVIEW LTD. and crossed.

Original testimonials should not be sent with applications for employment.

OFFICIAL NOTICES, TENDERS, ETC.

CITY OF CHICHESTER

Contract No. 35 for Cables and Cable Laying

THE Council of the City of Chichester invite tenders from experienced contractors for the manufacture, supply and laying of approximately 20 miles of 11-kV and control cables and accessories. Specifications, plan and form of tender may be obtained on application in writing to the Consulting Engineers, Messrs. Mackness & Shipley, Parliament Mansions, Abbey Orchard Street, London, S.W.1. All applications must be accompanied by a deposit of two guineas, returnable on receipt of a bona-fide tender.

Tenders, in plain sealed envelopes, endorsed "Tender for Electrical Contract No. 35," must reach the undersigned at the Municipal Offices, North Street, Chichester, not later than noon on Friday, August 17th, 1945.

The Council do not bind themselves to accept the lowest or any tender.

ERIC BANKS, Town Clerk.
2302

CITY OF MANCHESTER

THE Electricity Committee invites tenders for the manufacture, testing and delivery at Stuart Street Generating Station, Bradford, Manchester, 11, of:—

33,000-VOLT CABLE (Specification No. 832).

Specification, etc., may be obtained from Mr. R. A. S. Thwaites, Chief Engineer and Manager, Electricity Department, Town Hall, Manchester, 2, on payment of a fee of one guinea which amount will be refunded on receipt of a bona fide tender.

Tenders, addressed to the Chairman of the Electricity Committee, to be delivered not later than 10 o'clock a.m. on Monday, 30th July, 1945.

PHILIP B. DINGLE,
Town Clerk.
Town Hall,
Manchester, 2.
5th July, 1945.
2326

WHITTINGHAM MENTAL HOSPITAL

THE Committee of Visitors of the Whittingham Mental Hospital, near Preston, Lancs., invites tenders for the supply and erection of a Generating Plant and other electrical gear. Form of tender, conditions of contract and specification may be obtained on application to the undersigned. Tenders must be returned not later than the 3rd August, 1945. Each tender must be enclosed in a plain sealed envelope addressed to the Clerk and Steward, County Mental Hospital, Whittingham, near Preston, and endorsed on the cover "Generating Plant and Apparatus," but not bearing any name or mark indicating the sender.

The Committee does not bind itself to accept the lowest or any tender, and any acceptance will be conditional on the obtaining of any necessary consent.

W. A. HIGGS, Clerk and Steward.
3rd July, 1945.
2314

COUNTY BOROUGH OF SOUTHAMPTON

Electricity Department

Cables and Domestic Apparatus

TENDERS are invited for the supply and delivery during the period ended 31st March, 1946, of the following:—

(a) PAPER INSULATED CABLES up to 11 kV.
(b) DOMESTIC ELECTRIC APPARATUS, including: COOKERS, KETTLES, THERMAL STORAGE TANKS, CIRCULATORS AND WASH BOILERS.

Conditions of Contract, Specification and Form of Tender for each of the above may be obtained from Mr. W. G. Turner, Borough Electrical Engineer, Civic Centre, Southampton, by application and on payment for each of a fee of one guinea, which will be refunded on receipt of a bona fide tender. Additional copies, 10s. 6d. each.

Sealed tenders in plain envelopes, marked as the case may be, "Cables" or "Domestic Apparatus," must be delivered to the undersigned not later than Wednesday, 1st August, 1945.

The Council does not bind itself to accept the lowest or any tender.

R. RONALD H. MEGGESON,
Town Clerk.
Town Clerk's Office,
Civic Centre,
Southampton
2338

SITUATIONS VACANT

None of the vacancies for women advertised in these columns relates to a woman between 18 and 40 unless such woman (a) has living with her a child of hers under the age of 14, or (b) is registered under the Blind Persons Acts, or (c) has a Ministry of Labour permit to allow her to obtain employment by individual effort.

COUNTY BOROUGH OF CROYDON

Electricity Department

Control Engineer

APPLICATIONS are invited for the appointment of Control Engineer from candidates who have taken a recognised Course in technical training and are experienced in the operation of the Control Room of a large Power Station.

The salary will be in accordance with Grade 9a, Class H, of the National Joint Board Schedule, at present £367 per annum, and is subject to deductions under the Local Government Superannuation Act, 1937.

The selected candidate will require to pass a medical examination and to reside within the Borough.

Applications, giving full particulars of age, training and experience, and accompanied by copies of recent testimonials, should be sent to me endorsed "Control Engineer," not later than noon on Monday, 16th July, 1945.

The Ministry of Labour and National Service have given permission under the Control of Engagement Order, 1945, for the advertisement of this vacancy.

E. TABERNER,
Town Clerk.
Town Hall,
Croydon.
2287

SENIOR ELECTRICAL ENGINEER FOR MIDDLE EAST

(In connection with oil pipe line construction and operation.)

APPLICANTS must have had wide experience of H.T. and L.T. transmission, H.T. and L.T. motors, switchgear, Diesel engine-driven generators, also lighting and domestic supplies. Selected candidate will have to advise the management on all electrical matters and supervise erection of electrical plant. He should not be over 45 years of age and if married must be prepared to go abroad without wife in first instance.

Employees pay their own income tax, which is markedly lower than in this country. The terms offered are:—

(a) Three years' contract, which is ordinarily renewable for further periods of 3 years.
(b) Salary £1,000-£1,100-£1,200 for the first 3 years, starting from date of engagement.
(c) A temporary war allowance of £17 per month, payable from date of landing in Middle East. The allowance is liable to be reduced or withdrawn if there is a marked fall in prices.
(d) Free quarters or an allowance in lieu thereof.
(e) Free medical attendance.
(f) Free passage out and home on termination of contract.
(g) Admission to the Company's Provident Fund, to which the employee contributes 10% of his salary and the company a like amount.

Write, quoting D.1292XA, to the Ministry of Labour and National Service, Appointments Department, A.9, Room 670, York House, Kingsway, London, W.C.2, for application form, which must be returned completed by 31st July, 1945. 2316

BOROUGH OF STOCKTON-ON-TEES

Electricity Department

Assistant Mains Engineer

APPLICATIONS are invited for the above appointment from qualified electrical engineers with sound technical training and experience in the Mains Department of an Electricity Supply Undertaking.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the selected candidate will be required to pass a medical examination.

The salary and conditions of employment will be in accordance with the N.J.B. Schedule, Class F, Grade 8a, at present commencing at £371 per annum.

Applications, stating age, marital state, training and qualifications, details of past experience, present appointment, etc., together with copy of testimonials, should be forwarded to Mr. N. Hunter, M.I.E.E., General Manager and Engineer, Corporation Electricity Offices, Bishopton Lane, Stockton-on-Tees, not later than the 30th July, 1945.

Permission has been obtained to advertise this vacancy which has been approved by Division A.9 (D) of the Appointments Department.

N. HUNTER, M.I.E.E.,
General Manager and Engineer.

Corporation Electricity Offices,
Bishopton Lane, Stockton-on-Tees.
4th July, 1945. 2312

COUNTY BOROUGH OF SOUTH SHIELDS

Social Welfare Committee

MAINTENANCE Engineer required for Harton Institution and General Hospital. Competent to take charge of Boilers, Machinery and Electrical Plant. Applicants with practical knowledge of building construction, preparation of plans, specifications, etc., preferred. Salary £375×£15—£420 p.a., plus cost of living bonus. Appointment subject to provisions of Local Government Superannuation Act, 1937. Medical examination of successful candidate required.

Applications, which must be in writing, stating date of birth, full details of qualifications and experience (including a list in chronological order of posts held), and quoting reference number 185M, should be addressed to the Ministry of Labour and National Service, Appointments Office, 153, Barras Bridge, Newcastle-upon-Tyne, 2. 2299

COUNTY BOROUGH OF ST. HELENS

Electricity Department

Appointment of Senior Demonstrator

APPLICATIONS are invited for the above appointment at a salary in accordance with the Lancashire and Cheshire Provincial Council Scale P.T.A., Grade B (Female), £214 per annum, rising by annual increments of £11 to £236 per annum, plus war bonus which is at present £48 2s. per annum.

Candidates must have had a good general education and hold a recognised Diploma in Domestic Science and Electrical Housecraft and possess a thorough knowledge of the use of electrical domestic appliances. They must be competent to conduct lecture demonstrations both in the Showrooms and on consumers' premises and to advise consumers on the selection and use of electrical apparatus. Experience of large-scale industrial Canteen Work and School Feeding will be an advantage.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Applications, accompanied by copies of not more than three testimonials, must be made on the form obtainable from the undersigned and be received by him not later than July 23rd, 1945, in an envelope endorsed "Senior Demonstrator."

P. BREGAZZI,
Borough Electrical Engineer.

Electricity Works,
Carlton Street,
St. Helens,
Lancs. 2272

BOROUGH OF DOVER

Electricity Department

Technical Assistant and Substation Engineer

APPLICATIONS are invited for the above appointment from Electrical Engineers who must be Corporate members of the I.E.E. or hold an equivalent qualification and have technical and practical experience in the development and layout of E.H.T. and L.T. overhead and underground distribution net-works including the design of substations.

The appointment is superannuable and the successful candidate may be required to pass a medical examination.

Salary and Conditions of employment will be in accordance with the N.J.B. Schedule, Class D, Grade 6, at present commencing at £411 p.a.

Applications, endorsed "Technical Assistant," stating age, training, qualifications, giving full details of experience and accompanied by copies of not more than three recent testimonials, should be forwarded to the Borough Electrical Engineer and Manager, Electricity Department, Ladywell, Dover, so as to reach him not later than Monday, the 30th instant.

This advertisement is issued with the consent of the Ministry of Labour and National Service.

JAMES A. JOHNSON,
Town Clerk.

Brook House,
Dover.
6th July, 1945. 2340

CORPORATION OF KIRKCALDY

Mains Assistant

APPLICATIONS are invited for the post of Mains Assistant, at a salary in accordance with Grade 8, Class E, of the N.J.B. Schedule, at present £371 per annum.

Candidates must not exceed 45 years of age, and must be Graduates or Associate Members of the Institute of Electrical Engineers. They should have experience in erection, commissioning and maintenance of substations, as well as laying, jointing and maintenance of E.H.T. and L.T. distribution systems. Candidates should also have had experience with a Public Supply Authority.

The appointment will be subject to the terms of the Town Council's conditions of service, and the selected candidate will require to pass a medical examination.

Applications, indicating age, experience and qualifications, together with copies of three recent testimonials, should be lodged with the Burgh Electrical Engineer, Victoria Road, Kirkcaldy, not later than 23rd July, 1945.

(The Ministry of Labour and National Service, A.9.D., have given permission under the Control of Engagement Order, 1945, for the advertisement of this vacancy.) 2311

NORTH OF SCOTLAND HYDRO-ELECTRIC BOARD

Assistant Commercial Engineer

APPLICATIONS are invited by the Board for the post of Assistant Commercial Engineer. Applicants must have a good all-round experience on the commercial side of an electricity undertaking, operating preferably in a rural area and also giving supplies in bulk to other undertakings. Ability to carry out the technical and commercial investigations and calculations required by the Electricity (Supply) Act, 1926, and the Hydro-Electric Development (Scotland) Act, 1943, is essential.

Salary £750/£1,000 per annum, according to qualifications and experience. The successful candidate will be required to join the Board's superannuation fund after satisfactory medical examination.

Applications, stating age, qualifications and experience, to be sent to the Secretary, 16, Rothesay Terrace, Edinburgh, 3, not later than Monday, 23rd July, 1945.

The Ministry of Labour and National Service, A.9.D., have given permission under the Control of Engagement Order, 1945, for the advertisement of this vacancy.

T. LAWRIE, Secretary.
2264

CITY OF YORK

Electricity Department

APPLICATIONS are invited for the position of Temporary Chief Clerk in the Corporation's Electricity Undertaking. Salary £400, plus cost of living bonus of £59 16s. per annum.

The appointment will be subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Candidates who have had a responsible appointment with a progressive authorised Electricity Undertaking would be preferred.

Applications, stating age and qualifications, and giving detailed particulars of experience, should be sent (together with copies of two recent testimonials) to the undersigned not later than Monday, 23rd July, 1945.

E. J. NICHOLS, M.I.E.E.,
City Electrical Engineer.

Electricity Offices,
Clifford Street,
York.
2342

SURREY EDUCATION COMMITTEE

Kingston Technical College

REQUIRED to commence duties on 1st September, a Graduate Lecturer in Electrical Engineering for Electrical Engineering Subjects to Higher National Certificate standard. Corporate membership of the Institution of Electrical Engineers essential.

The salary will be the Burnham Graduate Scale (£315-15-£555) with placing according to industrial and teaching experience.

Forms of application, which should be returned as soon as possible, may be obtained from the undersigned on receipt of a stamped addressed envelope.

J. W. ARCHER, B.Sc.,
Principal.
2341

WATSON & SONS (ELECTRO-MEDICAL) LIMITED

APPLICATIONS are invited for senior appointments on our sales staff after the present M.O.L. restrictions have been removed. For those possessing initiative, a good personality and knowledge of X-ray equipment there are exceptional opportunities.

Write in confidence in the first instance, giving details of experience and age. Interviews will be arranged later in London.

WATSON & SONS (ELECTRO-MEDICAL) LIMITED.
Temporary Head Office: 76, Castle Street, Reading.
263

ASSISTANT required for Estimating Dept. of leading South Coast electrical contractors. Experience in all modern wiring and illumination systems essential. Over 51 or Class "A" ex-service men only. Apply, stating age, experience and salary required, to—Box 2346, c/o The Electrical Review.

LEEDS COLLEGE OF TECHNOLOGY

Principal: C. Chew, M.Sc.Tech., F.R.I.C.

Department of Electrical Engineering and Physics

APPLICATIONS are invited for the post of FULL-TIME LECTURER in ELECTRICAL ENGINEERING, duties to commence in September next or as soon as possible thereafter.

Applicants should possess a good Honours degree and have had industrial and teaching experience. Salary according to Burnham Scale.

Particulars and form of application, to be returned not later than Saturday, 28th July, may be obtained by sending a stamped addressed foolscap envelope to The Director of Education, Education Department, Calverley Street, Leeds, 1.
2325

BOYS or Girls required to learn Elect. Inst. making. Apply—W. C. Davey & Co., 180, Tottenham Court Road, W.1.
2318

CENTRAL Electricity Board, S.W.E. and S.W. Area, Bristol. Assistant Control Engineer. Applications are invited for the position of Assistant Control Engineer, Grid House, Bristol. Candidates not exceeding 35 years of age with some knowledge of power station work and technical qualifications at least of graduate I.E.E. standard are preferred. Applications to the Manager, C.E.B., Grid House, 26, Oakfield Road, Clifton, Bristol, 8.
2291

CHIEF Draughtsman required (over 51, or Class "A" ex-service men only) by well-known electrical and radio instrument manufacturer. Previous experience essential. Good prospects. Write, stating age and full particulars to—Box 2212, c/o The Electrical Review.

CLERICAL Assistant, Class A. Ex-Serviceman, for Stores Office. Must have thorough knowledge of all electrical material. Apply—London Electrical Company, 92, Blackfriars Road, S.E.1.
2324

COMMERCIAL Assistant to Manager of Lighting Section. Applicants must have had previous experience in the electrical industry, and preferably a knowledge of the electric light fittings business. Applicants must be free from the Control of Engagement Order, 1945. Salary £300-£400 p.a., according to qualifications.—Box 290, c/o Dorland, 18, Regent Street, S.W.1.
2352

COMMERCIAL Manager is required by large company producing domestic appliances in Birmingham. Post calls for highly experienced administrator carrying equal status with works and technical managers and embracing control of sales, buying, costing and accounting. Commensurate salary and profit bonus. Applications treated confidentially. Write—Box 806, 191, Gresham House, London, E.C.2.
2315

ELECTRICAL contractors in London area, having large showrooms, require a Saleswoman as Assistant Manageress. Excellent opportunity to person having personality and drive. Preference given to applicant having experience in electrical fittings and appliances, etc., sales. Apply, stating age, experience and salary required.—Box 2328, c/o The Electrical Review.

ELECTRICAL contractors in London district, who are well known and long established, require the services of an Estimating and Supervising Engineer. Applicant must have had good experience and be capable of organising and operating large and small contracts both technically and commercially. Reply stating age, experience and salary expected. Advertisers are prepared to pay a good salary to applicant having proved ability. Permission has been given for this advertisement by the Ministry of Labour and National Service Appointments Office.—Box 2327, c/o The Electrical Review.

ELECTRICAL Engineering firm near Glasgow requires a Works Manager with first-class experience of mass production and thorough knowledge of electrical appliances, including small electric motors. Salary £1,000 p.a. according to qualifications and experience. Applications, which must be in writing, should state date of birth and full details of qualifications and experience (including a list in chronological order of posts held). Address—"0570," Wm. Porteous & Co., Glasgow.
2343

INVOICING and Costing Clerk required by large firm of electrical contractors in N.W. London district. Must be able to act on own initiative. Progressive and well-paid position to capable male applicant who is over 51 years of age. Applications also considered from Class A ex-service men. Apply, stating age, experience and salary required to—Box 2329, c/o The Electrical Review.

JUNIOR Estimating Engineer, Class "A" man, required for London sales office. Applicants should be conversant with A.C. and D.C. motors, control gear and ventilating fans. Write, stating age and experience to—Box 2281, c/o The Electrical Review.

JUNIOR Sales Engineer required to cover part of London territory for manufacturers of high-class electrical apparatus used in radio and telecommunications industry. The duties will be to call on established clients to advise on the use of correct equipment, and to make new contacts. Applications considered from Class "A" ex-service men only. Permanency with good post-war prospects. Firm scheduled under E.W.O. Reply, giving full details of age, experience and salary required.—Box 2300, c/o The Electrical Review.

LIGHTING Engineer, thoroughly conversant with modern lighting practice, and capable of drawing up scientifically designed lighting schemes for industrial and commercial applications. Applicants must be free from the Control of Engagement Order, 1945. Salary £300-£400 p.a., according to qualifications.—Box 292, c/o Dorland, 18, Regent Street, S.W.1. 2353

MANAGER Battery Factory, Johannesburg, South Africa. Applications invited from competent persons with necessary technical and practical experience and organising ability to take charge manufacture of lead and acid motors, cars, stationary and haulage types of batteries. Present monthly output 5 000 batteries. Salary £1,000/£1,500 year, plus 1½% to 2½% participation in nett profits. Applications by air mail, giving full particulars age, experience and references, to—Box 1045, Johannesburg, South Africa. 2339

MANAGING Designer for Electric Light Fittings Section. Applicants must have experience in the design and construction of all types of electric light fittings, and a thorough practical knowledge of the trade. A knowledge of Photometry is desirable. Applicants must be free from the Control of Engagement Order, 1945. Salary £400-£600 p.a., according to qualifications.—Box 288, c/o Dorland, 18, Regent Street, S.W.1. 2351

MANCHESTER Collieries Ltd. invite applications for a vacancy which has arisen for Lighting Engineer. Duties include technical supervision of lamprooms, testing and research work on lamps, underground lighting layouts, measurement, etc. A practical and theoretical knowledge of electricity and the theory of light is essential. Training, if necessary, will be given in colliery cap-lamp equipment. Salary will depend upon qualifications, etc. Applications, stating age, experience and qualifications, should be sent to—The Chief Mining Agent's Dept., Manchester Collieries Ltd., Walkden, Manchester. 2313

PLANNING Engineer to take charge of planning department and jig and tool drawing office. Must be first-class jig and tool designer having good all-round experience with mass production, particularly on small mechanisms utilising press work, auto parts and bakelite mouldings. Only Class "A" ex-service man accepted until present restrictions removed. Good salary offered for right man. Write, giving age, salary expected, experience, etc., to—Box 2345, c/o The Electrical Review.

RADIO Laboratory Engineer, over 51 or Class "A" ex-service man, with practical experience of Radio and also electrical measurements, offered permanent post with good prospects.—Box 2323, c/o The Electrical Review.

REPRESENTATIVE required for East Anglian area, operating from Ipswich office of C.M.A. firm of electric cable manufacturers. Write, stating age, experience, etc., to—Box 2307, c/o The Electrical Review.

TRANSFORMERS. Works Manager required for N.W. London. Must be fully experienced in manufacture of transformers of all types up to 500 kVA and capable of managing labour. Salary £750, plus commission on profits. Full particulars of age, experience, etc., to—Box 2223, c/o The Electrical Review.

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APPOINTMENTS FILLED

Dissatisfaction having been so often expressed that unsuccessful applicants are left in ignorance of the fact that the position applied for has been filled, may we suggest that Advertisers notify us to that effect when they have arrived at a decision? We will then insert a notice free of charge under this heading.

BOX 2122—Buyer required.

SITUATIONS WANTED

ADVERTISER (50), experienced all branches, sales-office organisation, many years administrative position, methodical and efficient controller, seeks change.—Box 7256, c/o The Electrical Review.

ACCOUNTANT (36), 20 years' varied and extensive practical experience with eminent London chartered accountants (final figures, taxation, secretarial duties, costings, etc.), desires responsible Secretary-Accountant position with commercial firm.—Box 7269, c/o The Electrical Review.

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B.Sc.Eng. (Hons.) (23), exempt, inventive, wide experience transformer and switchgear testing and commissioning and experimental work, seeks post with better prospects, London area.—Box 7288, c/o The Electrical Review.

CAPABLE Engineer (32), experienced, works installations, application of electric motors, sales, works procedure, office administration, will consider responsible progressive position with medium-size concern. Own car. London or South. Alternatively partnership with small investment.—Box 7303, c/o The Electrical Review.

ELECTRICAL Engineer, exempt, H.N.C., 5 yrs. works, 1 yr. admin., desires position Technical or Sales Representative Midlands.—Box 7237, c/o The Electrical Review.

ELECTRICAL Engineer, exempt, 20 years' exp. research-design-manufacture of el. apparatus, domestic and heating, temperature control, inventive abilities, organizer, seeks position.—Box 7300, c/o The Electrical Review.

ELECTRICAL Engineer, German refugee, University training, 30 years' experience consulting power-stations, high tension and factory installations, seeks position.—Box 7302, c/o The Electrical Review.

ELECTRICAL Engineer, trained technically and practically, thirty years' experience in installation work, industrial and residential power and lighting, fourteen years with public supply authority, inspecting and testing and S. and D. used to estimates, costing and accounts. South or South-west districts preferred. Could manage technical side and office for electrical contractors.—Box 7258, c/o The Electrical Review.

ELECTRICAL Engineer (24), student I.E.E. up to B.Sc. standard, experience in design, manufacture and testing of electric motors, also knowledge of French and German, seeks change of post providing scope for initiative and organising ability.—Box 7274, c/o The Electrical Review.

ELECTRICAL Engineer (40), university training, 18 years' experience supervising electrical installation contracts, seeks post as Sales or Works Engineer.—Box 7292, c/o The Electrical Review.

ENGINEER, Mechanical and Electrical, desires position as Works Manager with reputable firm engaged on instruments, radio, clocks, communications or F.H.P. motors. Advertiser experienced in modern methods and machine tools, also planning, estimating, time study, rate fixing, tool design and work layout, small or large quantities; 15 years administrative includes works and production manager. Age over 40. Any firm desiring to go straight ahead with its peace-time programme on commonsense lines and prepared to pay a minimum salary of £1,000 please communicate with—Box 7277, c/o The Electrical Review.

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ENGINEER, 15 years' power, light current and consulting experience, seeks any post in London area.—Box 7299, c/o The Electrical Review.

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100-h.p., 400/3/50, S.R., 730-revs., Louvre Vent., B.T.H. (ball bearings), with Ellison O.I. gear.—Greenhalgh Bros., Burton's Field Mill, Atherton, M/cr. 2294

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160-kW, 500-volts, 700-revs. S.I., two ped. brgs., on bedplate.—Greenhalgh Bros., Burton's Field Mill, Atherton, nr. Manchester. 2295

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ACETATE and other thermoplastic scrap; polythene and P.V.C. in any form; also scrap cable and insulated wire; urgently wanted.—Elton Levy & Co. Ltd., 18, St. Thomas Street, S.E.1. 30

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AGENCIES

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Engineers, Merchants and Importers,

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2306

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2331

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EXPORT to India: An export house with well-established connections in the Indian market desires to hear from manufacturers of Electrical Accessories, Household Appliances, Refrigerators, etc., who seek to expand their export business. Write, giving full details, to the—Empire Export & Import Company, 2, Broad Street Place, London, E.C.2. 70

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MANUFACTURERS' Agents, covering the whole of Great Britain and Colonies, are desirous of contacting manufacturers with a view to sole selling rights (either commission or buying), post-war arrangements considered. —Box 23, c/o The Electrical Review.

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IT is desired to secure the full commercial development in the United Kingdom of British Patent No 470047, which relates to an improved multi-pole electric circuit breaker, either by way of the grant of licences or otherwise on terms acceptable to the Patentee. Interested parties desiring copies of the patent specifications and further particulars, should apply to—Stevens, Langner, Parry & Rollinson, 5 to 9, Quality Court, London, W.C.2. 2332

FACSIMILE Recorder. The proprietor of Letters Patent No. 536645, relating to the above matter, is desirous of entering into negotiations for the sale of, or issue of licences under the patent. Enquiries to—Forrester, Ketley & Co., Chartered Patent Agents, 88-90, Chancery Lane, London, W.C.2. 2330

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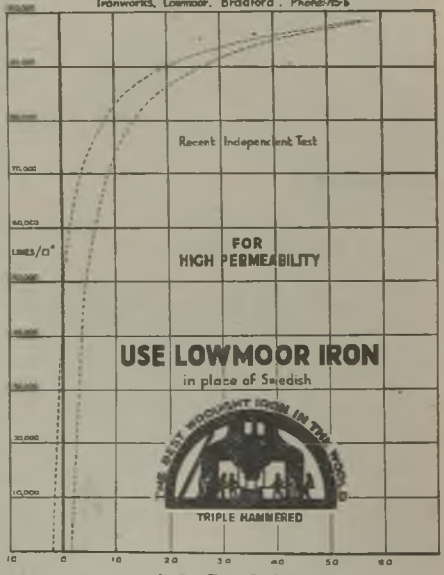

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