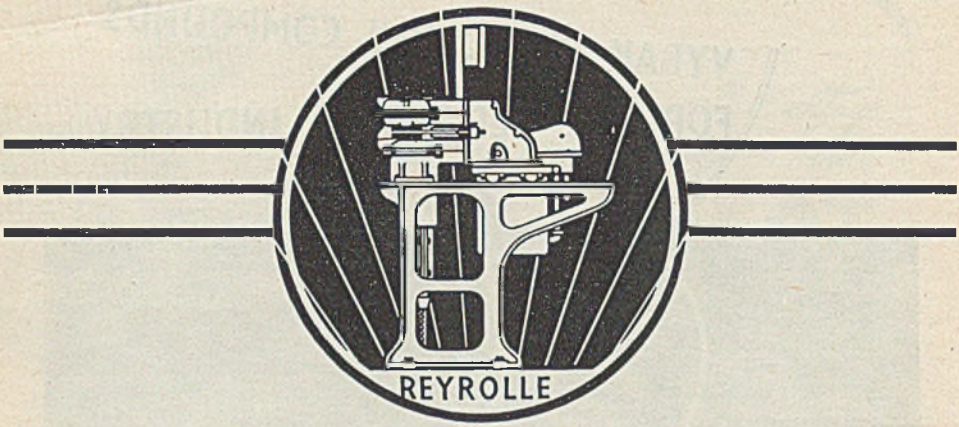
THE

ELECTRICIAN

THE TECHNICAL NEWSPAPER OF THE ELECTRICAL INDUSTRY

9 MAY, 1947
SIXPENCE



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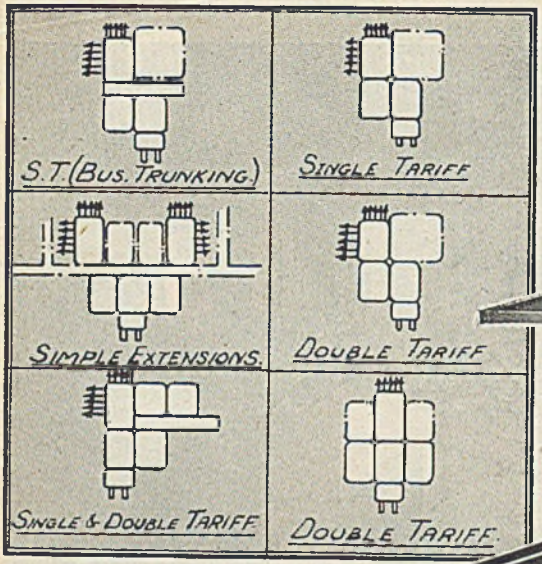
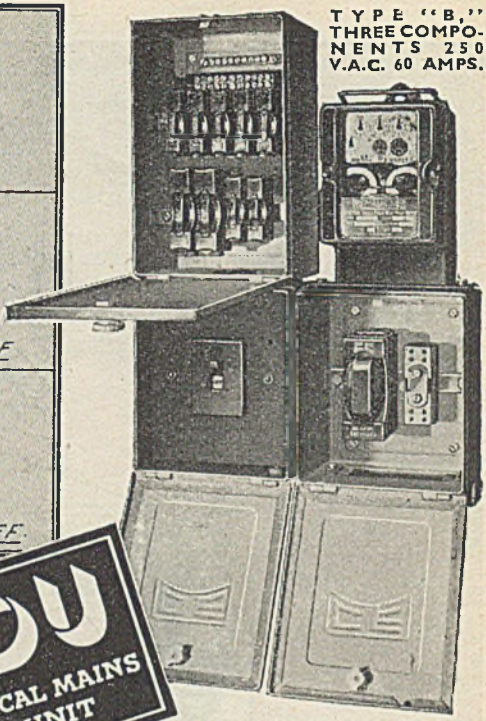
REYROLLE *and* SWITCHGEAR

ORIGINATORS OF METALCLAD DRAW-OUT SWITCHGEAR

Reyrolle

HEBBURN-ON-TYNE, ENGLAND

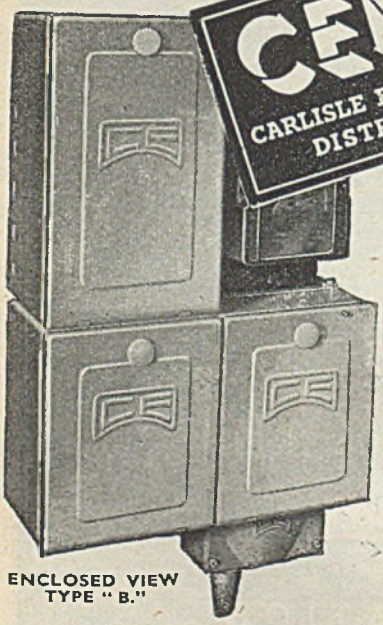




TYPE "B," THREE COMPONENTS 250 V.A.C. 60 AMPS.

CEMDU

CARLISLE ELECTRICAL MAINS DISTRIBUTION UNIT



ENCLOSED VIEW TYPE "B."

The modern supply control unit

Providing hitherto unknown neatness, simplicity and safety, CEMDU—the up-to-date system of electricity intake and distribution is rapidly being adopted by many supply authorities. All components are completely enclosed; extensions can easily be effected; any meter can be fitted and customer's fuses are rewirable. Types are available to meet any requirement either 60 ampere or 60 and 30 ampere double pole Main Switch Control. Supplied in attractive black or cream stove enamelled finish. Write for full particulars to the sole Manufacturers.

Also available:

TYPE "C" TWO COMPONENTS, SINGLE-TARIFF, 250 V.A.C. 60 AMPS.

TYPE "D" TWO COMPONENTS, DOUBLE-TARIFF, 250 V.A.C. 60-30 AMPS.

CARLISLE ELECTRICAL MANUFACTURING CO. LTD.

Bentcliffe Works, Eccles, Lancs.

'Phones: Eccles 1691-2-3-4. Telegrams: "Carlectric" Eccles.

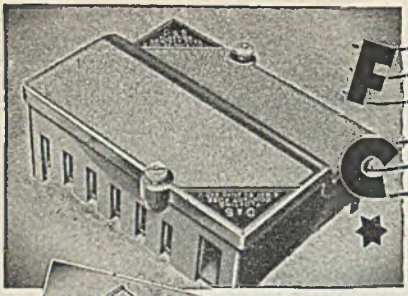
ELECTRICAL MEASURING INSTRUMENTS for COMMUNICATION ENGINEERING

BPL

BRITISH PHYSICAL LABORATORIES

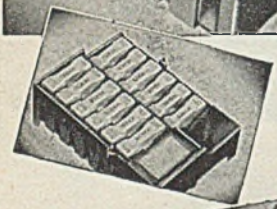
QUADRANT WORKS, FINCHLEY LANE,
LONDON, N.W.4

Phone: Hendon 3682 & 3230

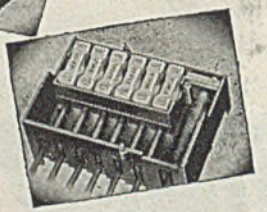


FLOATING CONTACT

the NEW distribution

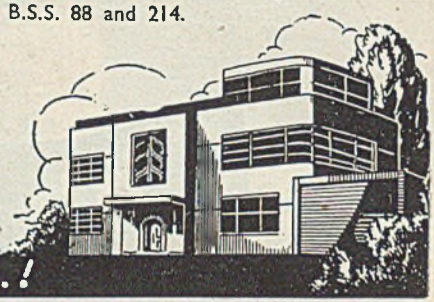


● Dimensions only 7⅝" × 6½" × 4¼". ● Power Lighting and Heating "under one roof." ● Saving in wiring cost and space. ● Each row of fuses a separate unit. ● Each fuse in its own compartment. ● Conforms to B.S.S. 88 and 214.



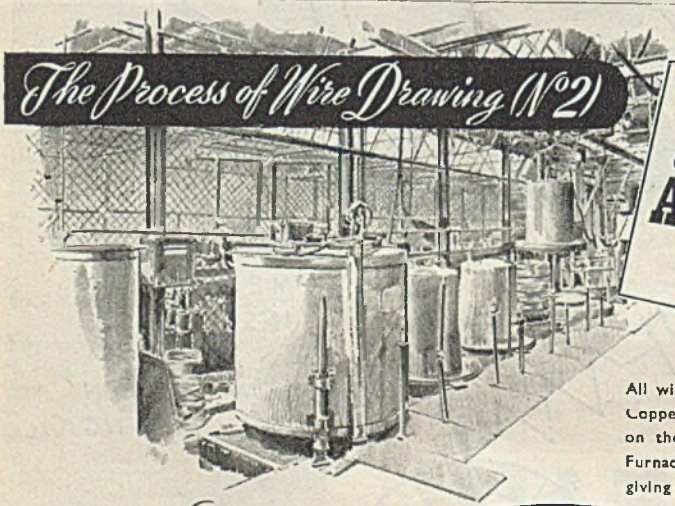
2 sizes—4 way and 6 way.
30 A. max. cap.

Write for F.C. leaflet



The NEW House will need it..!

Announcement of Dorman & Smith Ltd., Manchester, London, Glasgow. EIF 46



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Electrical **ANNEALING**

All wires, from 44 SWG to the thickest Copper Strip manufactured, are annealed on the latest type British made Electric Furnaces with protective atmosphere, giving the highest possible quality finish obtainable anywhere in the world.

R. H. SYMONDS Ltd.

47, Victoria Street,
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Telephone: ABBey 2771 (Pte. Br. Ex.)
Works: Enfield, Middlesex

E. 24

THE world-wide use of "AVO" Electrical Testing Instruments is striking testimony to their outstanding versatility, precision and reliability. In every sphere of electrical test work they are maintaining the "AVO" reputation for dependable accuracy; which is often used as a standard by which other instruments are judged.

Write for Pamphlet descriptive of the "Avo" Instruments illustrated above.

THE AUTOMATIC COIL WINDER & ELECTRICAL EQUIPMENT CO., LTD.
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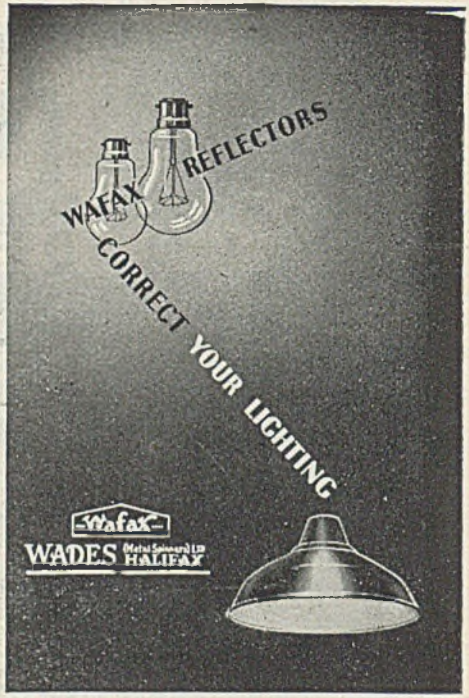
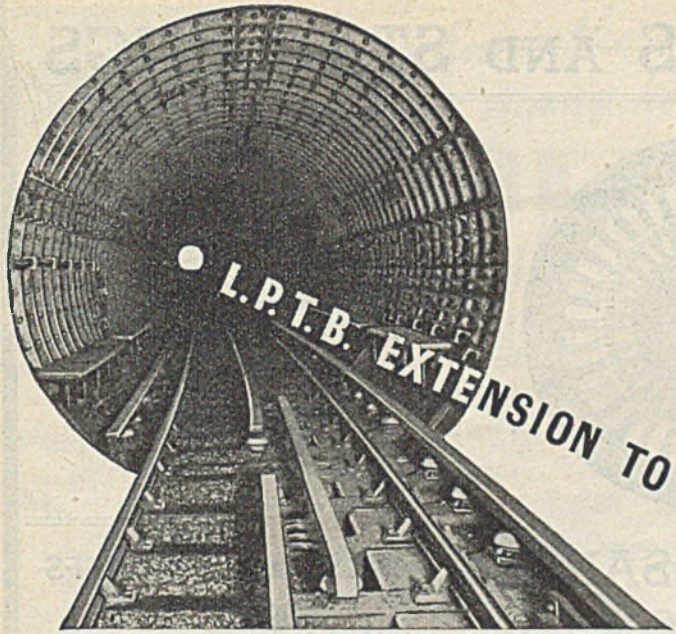
INDEX TO ADVERTISERS IN THIS ISSUE





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Castle Bromwich
STAND C700

NO interruption of the mains supply can affect the lighting on the new Stratford tube extension. P. & G. batteries are installed to apply emergency lighting to the stations and certain sections of the tunnel automatically and on the instant any such interruption occurs. Reliability is the first consideration for stand-by duty of this sort. The name P. & G. and E.P.S. is the surest guarantee that the emergency system will function without a shadow of doubt should the necessity arise.

Four sub-stations are equipped—Leyton, Newbury Park, Leytonstone and Redbridge—each with batteries comprising 120 cells having a capacity of 400 ampere hours in ten hours

Ensure longer life in your present batteries by having them replated by us.

PRITCHETT & GOLD and E.P.S. CO. LTD.
Formerly The Electrical Power Storage Co Ltd—the first Battery makers

* *London Transport buses are fitted with Dagenite batteries made by Peto and Radford, our associated company.*

50 GROSVENOR GARDENS, LONDON, S.W.1 *Telephone:* SLOane 7164 *Telegrams:* Storage, Sowest, London

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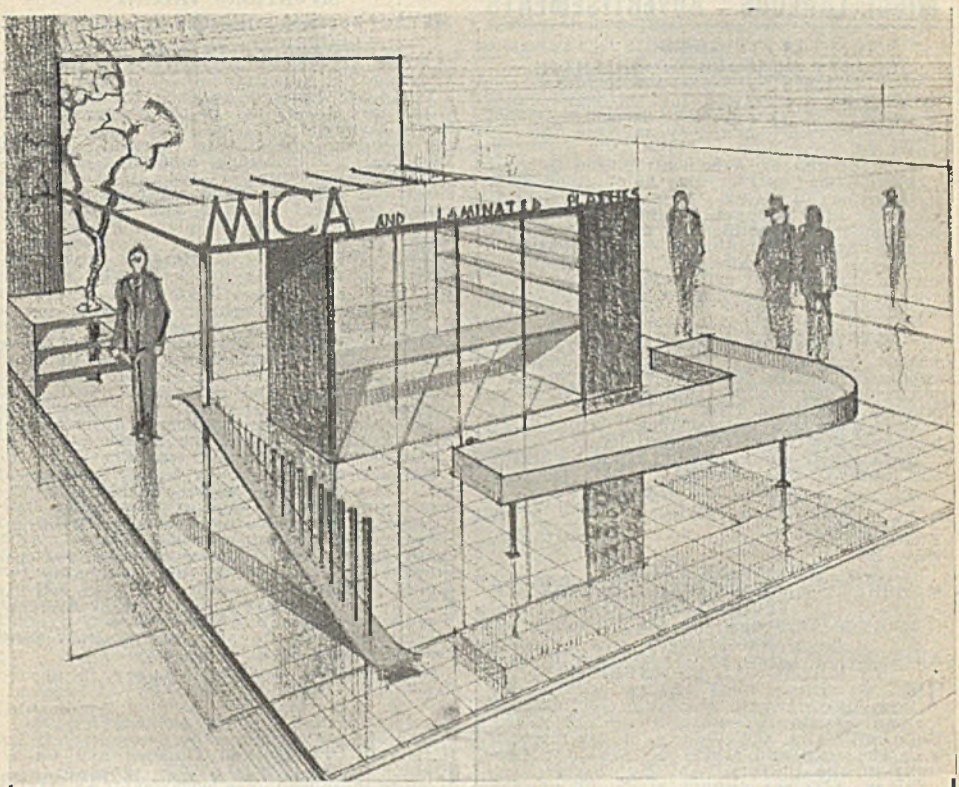
People are amazed when they learn of the variety of CLIPS we make — steel clips, bronze clips, stainless clips, big clips, small clips . . . clips in every conceivable shape and pattern . . . clips for every possible use. We can make to print or specification or our Research Department can design a clip for that particular job of yours.
Over 92 years of clip-making is at your disposal. **B.I.F. (Birmingham) Stand B424.**

Sole Makers

HERBERT TERRY & SONS LTD., REDDITCH

London, Birmingham, Manchester.



MISCELLANEOUS ADVERTISEMENTS

TENDERS

COUNTY BOROUGH OF BRIGHTON.
ELECTRICITY DEPARTMENT.

TENDERS are invited for the supply and delivery of Low Voltage Paper Insulated MAINS CABLE for one year from the 1st July, 1947.

Form of Tender, Specification and General Conditions of Contract, may be obtained upon application to Mr. H. Pryce-Jones, M.Eng., Engineer and Manager, Brighton Corporation Electricity Department, Electric House, Castle Square, Brighton, 1, on payment of a deposit of £1 1s, (which will be refunded only on the return of all documents and the receipt of a bona fide tender not subsequently withdrawn).

Tenders and all documents (which must be in plain sealed envelopes not bearing any name or mark indicating the sender) endorsed "Tender for Specification No. 189" must be delivered to me before noon on Monday, 2nd June, 1947.

No tender will be considered which does not comply with these conditions.

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

J. G. DREW,
Town Clerk.

Town Hall,
BRIGHTON, 1.
May, 1947.

SITUATIONS VACANT

MANCHESTER MUNICIPAL COLLEGE OF TECHNOLOGY.
(Faculty of Technology in the University of Manchester.)

APPOINTMENT OF ASSISTANT LECTURER IN ELECTRICAL ENGINEERING.

THE Governing Body invites applications from University Graduates in Engineering for an Assistant Lectureship in Electrical Engineering in the College of Technology, with the title and status of Assistant Lecturer in the University of Manchester.

Salary: £420 per annum, rising by annual increments of £20 to £500 per annum. Commencing salary according to qualifications.

Conditions of appointment and form of application may be obtained from The Registrar, College of Technology, Manchester, 1. The last day for the receipt of applications is **Thursday, 22nd May, 1947.**

Canvassing, either directly or indirectly, will disqualify a candidate for appointment.

J. E. MYERS,
Principal of the College.

COUNTY BOROUGH OF BRIGHTON.
BRIGHTON TECHNICAL COLLEGE.
Principal: G. E. Watts, M.A., Ph.D., F.R.I.C.

APPLICATIONS are invited for the appointment of a LECTURER IN ELECTRICAL ENGINEERING who should hold an Honours Degree in Engineering or equivalent professional qualification. Duties will include teaching of Telecommunications up to Final Degree standard.

Salary will be in accordance with the Burnham Technical Scale with full allowances for approved research, industrial and teaching experience and for war service. The person appointed will be required to take up duty in September, 1947.

Further particulars and form of application may be obtained from the undersigned. The completed form should be returned with copies of two recent testimonials to The Principal, Technical College, Brighton, 7, within two weeks of the appearance of this notice.

W. G. STONE,
Education Officer.

Education Office,
54, Old Steine,
BRIGHTON, 1.

SITUATIONS VACANT

METROPOLITAN BOROUGH OF ISLINGTON.
ELECTRICITY DEPARTMENT.

APPLICATIONS are invited for the following permanent appointments:—

Technical Assistant.—Salary in accordance with Class G, Grade 7 of the National Joint Board Schedule, at present £518 14s. - £550 4s. per annum. Applicants should possess technical qualifications admitting to Corporate Membership of the Institution of Electrical Engineers and must have had a sound technical training and practical experience in the technical planning associated with the development of an Electricity Supply Undertaking. Preference would be given to applicants under 35 who hold a Degree in a British University.

Mains Assistant Engineer.—Salary in accordance with Class G, Grade 8, at present £490 7s. - £499 16s. per annum. Applicants should have experience in the laying, jointing and maintenance of E.H.T., H.T. and Low Tension Underground Mains and Static Substations. Applicants must be capable of taking stand-by duty in turn, and preference will be given to Corporate Members of the Institution of Electrical Engineers.

Mains Draughtsman.—Salary in accordance with Class G, Grade 9, at present £399 - £414 15s. per annum. Preference will be given to Candidates having experience in the Drawing Office of an Electricity Undertaking. The person appointed will be responsible for the preparation of drawings and estimates required for the development of a large E.H.T., H.T. and Low Tension Distribution System. Some knowledge of building construction, with special reference to sub-stations and cable draw-pits, will be an advantage.

Junior Mains Engineer.—Salary in accordance with Class G, Grade 9a, at present £360 3s. - £375 18s. per annum. Applicants should have had a sound technical training, preferably with some experience on E.H.T., H.T. and Low Tension Underground Cable Systems. Consideration will, however, be given to those who have been unable to obtain the practical experience but have the necessary technical qualifications.

Junior Draughtsman.—Salary in accordance with Class G, Grade 9a, at present £360 3s. £375 18s. per annum. Preference will be given to candidates having had experience in the preparation of network diagrams and records covering mains, services and sub-stations.

Each of the above permanent appointments will be subject to the provisions of the Local Government Superannuation Acts, 1937 and 1939, and to a satisfactory medical examination.

Candidates are required to disclose in writing whether to their knowledge they are related to any member, or holder of any senior office under the Council.

Canvassing either directly or indirectly will be a disqualification.

The Council are unable to make any arrangements whatsoever for the provision of housing accommodation for the successful candidates.

Application forms for each of the above positions may be obtained from the Engineer and General Manager, Electricity Department, 341/343, Holloway Road, N.7, and should be completed and returned to him, endorsed appropriately, not later than noon on 16th May, 1947.

W. ERIC ADAMS,
Town Clerk.

Town Hall,
Upper Street, N.1.

DRAUGHTSMAN required for development work on Automatic Telephone Exchange Equipment. Apply in writing giving particulars of qualifications, experience, age and salary required to:—Ref.: 634, Siemens Brothers and Co. Limited, Woolwich, S.E.18.

SITUATIONS VACANT

LIVERPOOL EDUCATION COMMITTEE.
CITY TECHNICAL COLLEGE,
Byrom Street, Liverpool, 3.

Principal: R. R. Butler, M.Sc., F.R.I.C.

THE Committee invite applications for the appointment of a full-time Lecturer in the Department of Electrical Engineering.

Applicants should possess a University Degree in Engineering, preferably including Telecommunications, and Corporate Membership of the Institution of Electrical Engineers is desirable.

Salary will be in accordance with the Burnham Technical Scale (£300 - 15 - £525), with additional allowances depending upon experience and training, and will be subject to a 5 per cent. contribution under the Teachers' (Superannuation) Acts. Some teaching practice is desirable and experience of City and Guilds Telecommunications Engineering Courses would be an advantage.

Forms of Application and conditions of appointment may be obtained, on receipt of a stamped addressed foolscap envelope, from H. S. Magnay, M.A., Director of Education, 14, Sir Thomas Street, Liverpool, 1, and applications should be received by him not later than Friday, 30th May, 1947.

Candidates serving in H.M. Forces overseas may submit direct applications, giving particulars of age, education, qualifications and experience, the number of their release group and the names of not more than three persons to whom the Local Education Authority may refer. Canvassing, either directly or indirectly, will be considered a disqualification.

W. H. BAINES,
Town Clerk.
Clerk to the Local Education Authority.

ST. PANCRAS BOROUGH COUNCIL.
ELECTRICITY AND PUBLIC LIGHTING DEPARTMENT.

Appointment of Deputy Consumers' Engineer and Deputy Meter Superintendent.

APPLICATIONS are invited for the above appointment on a salary scale of £651 per annum rising to £673 1s. per annum in accordance with Grade 5, Class "H" of the National Joint Board Schedule. Candidates must be Graduate or Corporate Members of the Institution of Electrical Engineers or possess an engineering degree.

They must also have had a sound electrical training and considerable experience in the organisation of a Meter Department, installation and maintenance of domestic apparatus and general wiring and should possess some knowledge of operating a change-over scheme from direct to alternating current.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the successful applicant will be required to pass a medical examination by the Council's doctor.

Candidates, who may be required to attend for interview, will be communicated with. The Council are unable to assist the successful applicant in the provision of housing accommodation.

Canvassing of members of the Council, directly or indirectly, is strictly prohibited and will be deemed to disqualify a candidate.

Applications should be made by letter, suitably endorsed, and must reach the undersigned **not later than the 19th May, 1947.** Candidates must state their age, qualifications and details of education, training and experience, and should submit **copies** of three recent testimonials.

R. C. E. AUSTIN,
Town Clerk.

St. Pancras Town Hall,
Euston Road, LONDON, N.W.1.
April, 1947.

SITUATIONS VACANT

MANCHESTER CORPORATION ELECTRICITY DEPARTMENT.

APPLICATIONS are invited for the following appointments:—

FOUR JUNIOR ENGINEERS for training in Power Station Operation, at a salary in accordance with Class J, Grade 10b, of the N.J.B. Schedule (£316 p.a. to commence).

Applicants must have served an apprenticeship in engineering, and have technical qualifications equivalent to the Higher National Certificate in either electrical or mechanical engineering. Previous experience in power station work not essential. Must be prepared to do shift work if required. Age between 20 and 30.

The appointments are subject to the City Council Superannuation Scheme, and successful candidates will be required to pass a medical examination.

Applications stating age and full particulars of technical training and experience, together with copies of testimonials, to be endorsed "Junior Power Station Engineer," and addressed to the Chief Engineer and Manager, Electricity Department, Town Hall, Manchester, 2; and be received not later than Friday, 23rd May, 1947.

Canvassing, directly or indirectly, will disqualify.

PHILIP B. DINGLE,
Town Clerk.
Town Hall,
MANCHESTER, 2.
25th April, 1947.

METROPOLITAN BOROUGH OF ISLINGTON.
ELECTRICITY DEPARTMENT.

APPLICATIONS are invited for the position of Relief Charge Engineer at a salary in accordance with Class G, Grade 8a, of the National Joint Board Schedule, at present £458 17s.-£471 9s. per annum.

Applications, giving full details of experience, age, training and qualifications, accompanied by copies of recent testimonials, should be completed and returned to the Engineer and General Manager, Electricity Department, 341/343, Holloway Road, N.7, endorsed "Relief Charge Engineer" not later than noon on 16th May, 1947.

The appointment, which is permanent, will be subject to the provisions of the Local Government Superannuation Acts, 1937 and 1939, and to a satisfactory medical examination.

Candidates are required to disclose in writing whether to their knowledge they are related to any member, or holder of any senior office under the Council.

Canvassing either directly or indirectly will be a disqualification.

The Council are unable to make any arrangements whatsoever for the provision of housing accommodation for the successful candidate.

W. ERIC ADAMS,
Town Clerk.
Town Hall,
Upper Street, N.1.

APPLICATIONS are invited for a temporary appointment for a post as Scientific Officer (Electrical engineering and instrumentation) at the Atomic Energy Research Establishment, Harwell, near Didcot, Berks.

Candidates should possess a University degree in electrical engineering, together with experience of electrical instrument work. Preference will be given to candidates with experience in electronic technology.

Salary, which will be determined by age, qualification and experience, will be on the following provincial range: £255 - £470 (men) and £255 - £400 (women), plus a consolidated addition varying from £78 at the minimum of the scale to £90 at the maximum (men) and from £63 at the minimum of the scale to £72 at the maximum (women). Forms of application are obtainable from the Secretary, Ministry of Supply, Est. 8.C, Room 193, Shell Mex House, London, W.C.2.

ARMATURE Winding Charge-hand required for Repair shop, to control female labour on small Armature and Stator winding. Applicant must have experience of A.C. and D.C. winding.—The Midland Electric Installation Co. Ltd., Cyprus Works, Upper Villiers Street, Wolverhampton.

DRAUGHTSMEN and Designers are required by Midlands electrical manufacturers of transformers. Experience up to 500 kVA at least desirable.—Applications with particulars of experience and salary expected, in confidence, to Box L.E.S., "THE ELECTRICIAN," 154, Fleet Street, London, E.C.4.

SITUATIONS WANTED

FOREMAN Electrician, age 28. 14 years' experience. Excellent refs. Seeks progressive position.—Box L.E.O., "THE ELECTRICIAN." 154, Fleet Street, London, E.C.4.

FOR SALE

55 KW. 400/440 volts, 3-phase, 50 cycles, 4-wire system, Diesel engine driven, ALTERNATOR SETS.—Horseshoe Supply Co. (Spalding), Ltd. 'Phone: Spalding 3088, Horseshoe Road, Spalding.

LADDERS, Trestles and Handcarts, from Ramsay and Sons (Forfar), Ltd., Forfar.

FLUORESCENT REFLECTORS good quality commercial type in several designs, any quantity supplied.—Dept. 6, JOHN PHILLIPS AND CO. ELECTRICS, 31, Fortune Green Road, N.W.6. Hampstead 8132.

TELEPHONES, Ex-Admiralty for Ships, Mines, Factories. Handsets, Jacks and Plugs, Indicator Lamps and Jacks. 25 000 RELAYS (20 types), 150 000 yds. Sleeving, Switch Keys. Five tons Ebonite and Fibre rod, sheet and tube. 5 line Switchboards. 10 line Portable metal switchboards. Accumulator Capacity Testing sets. 5 bank Indicators and Jacks. 4 way flat and concentric Jacks and Plugs. Resistance wires, Nichrome, Cupro Nickel, Eureka and Constanton. Laminations, Interleaving Paper. Call and inspect.—Jack Davis, 30, Percy Street, London, W.1. Museum 7960.

LEATHER FINGER STALLS.—Made of Chrome Hide. Very strong and hard wearing. Length 3 in. Price 4s. per doz. Prompt delivery. Sample on application.—Willson Brothers, Industrial Clothing Manufacturers, Epsom, Surrey.

JUNCTION Electric Irons, superior design and quality, supplied with suitable stand. Also Junction Nickel plated Torch Cases. Supplied for home trade and export. Also large selection of household electrical appliances, Fires, Radiators, other electric Irons, Toasters, Table Lamps, Torch cases. Dry batteries, etc. Please write for full list. —Brooks & Bohm, Ltd., 90, Victoria Street, London, S.W.1. Tele.: Vic. 9550/1441.

ATLAS lamps from stock, delivery in London, Surrey, Sussex and Kent; other lines include clocks, toasters, fires, irons, kettles, fans, fittings, chargers, speakers, etc.—Drubel Radio Distributors, Ltd., 39a, Stafford Road, Croydon. Croydon 1107.

TIME SHEETS.—Our stock-printed Time Sheets are remarkably cheap compared with specially printed ones. On decent quality 8 in. by 10 in. paper:—100, 3s. 6d.; 500, 15s.; 1 000, £1 7s. 6d. Post Free. Send for sample.—F. H. Brown Ltd., P.O. Box 26, Burnley, Lancs.

TINNED STEEL ARMATURE BINDING WIRE.—All even numbered sizes from 16 s.w.g.-28 s.w.g. supplied from stock on 7 lb., 14 lb. or 28 lb. reels.
FREDERICK SMITH & CO. WIRE MANUFACTURERS LTD., CALEDONIA WORKS, HALIFAX.

FOR Export Only.—Prompt delivery unlimited quantities "Reelek" 1 kW Electric FIRES.—Reeves Electrical and Radio Co., Ltd., Baldock, Herts.

FOR SALE

BI-UNI.—The New Push-Button Flush-Fitting Domestic Switch. Wholesale Enquiries Only. Send for details—Scemco Ltd., Scemco House, 6/7, Soho Street, London, W.1. Tel.: GER. 1461/2/3.

LIGHT ALLOY SHEETS available in large quantities for immediate delivery ex-stock in all gauges from 6 ft. by 2 ft. to 8 ft. by 4 ft. from 1s. 6d. to 2s. per lb.; also Light Alloy Tubes, Bars, Strip, Coils, Angles, etc. —Box L.E.N., "THE ELECTRICIAN," 154, Fleet Street, London, E.C.4.

1—85 h.p. L.D. M. 3 Bearing Slip Ring Motor, 400 volts 3 phase 50 cycles, with Control Gear.—Oldfield Engineering Company Limited, 96, East Ordsall Lane, Salford, 5.

ELECTRIC MOTORS, A.C. and D.C. We supply all types and sizes of Electrical Machinery—Slow Speed Reduction Gears can be supplied to customers' requirements with short deliveries. Send your enquiries to The Electro Power Co. Ltd. (formerly Be-Be, Eng.), 3, Retreat Close, Kenton, Middlesex. Tel.: WORdsworth 4928.

DYNAMO & MOTOR REPAIRS LTD.,
Wembley Park, Middlesex.
Telephone: Wembley 3121 (4 lines).
Also at Phœnix Works, Belgrave Terrace, Soho Road, Handsworth, Birmingham.
Telephone: Northern 0898.

REBUILT MOTORS AND GENERATORS.
Long deliveries can often be avoided by purchasing rebuilt secondhand plant. We can redesign or replace surplus plant of any size.
SEND US YOUR ENQUIRIES.
OVER 1 000 RATINGS ACTUALLY IN STOCK HERE.

ALUMINIUM SHEETS, Dural and Pure, 8 ft. by 4 ft., 6 ft. by 3 ft., 16-22 Gauge; no licence.—Henry Moat and Son, Ltd., Atom Works, Newcastle/Tyne. 1.

MOTORS.—½rd. h.p. DELCO S.P. 110/250 volts repulsion induction. 1 450 r.p.m., £8; customer collects. 2½ h.p. HIGGS variable speed 3 ph. 50 cycles 400/440 volts, nearly new, from MURAD capstan lathe, suitable any driving work. £25 or near offer. FIRE ELEMENTS: 10 in. Pencil type with dual SCREWED ON end caps and terminals, 1 000 watts 200/220 or 230/250 volts. Alternatively 750 or 500 watts. All at 4s. 6d. each single samples plus 6d. postage and packing. Special quote for quantities. Also new ADJUSTABLE 10 in. or 12 in., 4s. 9d. each single samples, plus 6d. registered postage and packing. Special quote for quantities. OBLONG curved iron firebars also in stock. 8 in. by 3 in. or 7 in. by 3 in. fire opening. 1 000 watts or 750 watts, 5s. 6d. and 5s. each single samples, plus 6d. post. Complete with brass terminals. ELEMENT SPIRALS: All sizes made up. 1 000 watts 17s. per dozen, £8 5s. per gross. TOGGLE SWITCHES: 5/10 amp. s.p. flush, long dural dolly, two hexagon dural locknuts. 2s. 6d. each sample, post free. Special quote for quantities. 2 AND 4 B.A. SCREWS, NUTS AND WASHERS in large quantities in stock. All brass.—PRUDEN AND POPE (E. C. A.), 38, Church Road, Upper Norwood, S.E.19. Tel.: LIVingstone 1426.

WHY not assemble your own Fluorescent Fittings? We can supply 5 ft. Troughs, Chokes, Power-Factors, Suppressors, Starters, Lamp Holders, etc., at a special all-in price, or separately. 5 ft. and 4 ft. Fittings complete with tubes at a keen price.—Write, call or 'phone L. Goodman (Radio) Ltd., 9, Percy Street, Tottenham Court Road, W.1. MUSeum 0216.

LAMPSHADES. Modern designs, beautifully executed at attractive prices. Generous trade terms. Agents wanted.—Thanet Industries (Kent), Clarence Road, Ramsgate.

FOR SALE

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CONTENTS

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The Fair

THE British Industries Fair which opened in London and Birmingham on Monday is being looked upon by the world at large as the shop-window of British industry, as indeed it is. As yet it is too early to give any clear indication of what the result in terms of orders from overseas will be, but even at this stage inquiries are reported to be many and valuable, while a spirit of encouraging optimism permeates both sections of the fair.

One unfortunate aspect of the gigantic effort which industry has made to make the exhibition a success is concerned with paper, for despite the fact that this year's fair is bigger than any of its predecessors, technical newspapers such as this are still starved of pages by the Paper Controller when, in view of their overseas circulation and the part they play in the export drive, they should be given the opportunity of presenting to buyers unable to visit this country the fullest possible details of all that is new. Any attempt at such an undertaking under present conditions, no matter how successfully it may be carried out, must fall short of the standard set by pre-war years and any who may have wondered why treatment of the fair by the technical journals has not been more generous must find what consolation they can muster from the knowledge that official austerity is the answer.

As it is, we continue from last week a review of the fair in as adequate a form as the paper restrictions will allow, and though we are perforce to confine descriptions to the barest details, suffi-

cient is given to indicate the many directions in which the industry leads. That British industry is in that forefront has this week been well in evidence, for of the many buyers with whom we have been in contact, none has failed to find something which he has not seen before, none has been disappointed in his search for new developments. In the last issue and again in this an attempt has been made to paint a word picture of the fair in such a way as to give a comprehensive understanding of the advances which British industry has made since the end of hostilities, despite the shortages of man-power and materials, of fuel cuts, electricity restrictions and controls. It is a brave advance, and if our description of it falls short of the glory it deserves, the omission is due to yet another shortage—paper.

Showmanship and Shortages

THE B.I.F. is a commendable example of British industrial enterprise, but behind the exhibits there are all too often production problems. Handicapped by the difficulties named above, many exhibitors are unable to give any firm date for delivery of their products, and the coal allocations announced by the President of the Board of Trade for the summer months will do little or nothing to ease the position. At the Press preopening view of the fair on Friday last, some exhibitors pointed out that this is the first B.I.F. to be held under the auspices of a Government of planners, and their work has so constricted the steel bottleneck, that supplies of certain components have substantially dried up. When the allocation of coal to the steel industry was fixed at 75 per cent., it appeared to be assumed by those responsible that this would result in an output of 75 per cent. of all types of steel goods, whereas the effect has been production of over 75 per cent. in certain types and a falling away in others —due in most cases to wrong distribution of the right grade of fuel. Because of these and other difficulties, it is beyond the ability of many exhibitors at the fair to give short-term delivery dates in all cases, though it will be plain to all visitors to the stands that in skill ingenuity and enterprise British industry still leads the world. The pity is that bureaucratic control has prevented output from keeping in line with the demand.

Next Winter's Coal

ANY satisfaction which might have been felt at the restoration, from June 1, of last summer's allocation of coal for industry, is offset by the official admission that this involves a risk, deliberately taken, of another crisis next winter—dependent in the first instance on the extent to which individual industrial consumers succeed in building up three weeks' stocks of coal by October 31, and, what is more important, on the course of coal output during the summer months. With regard to the latter, the figures touched last week were the highest for nearly five years, but since it is not possible to make any firm forecast of the effect on output of the five-day week now in operation, it would be unwise to assume that these figures will be maintained. In some collieries the limit of winding capacity has already been reached, in others transport and siding facilities may limit the amount of loading possible in five days, indicating thereby that the effective coal output available to industry is by no means decided by the coal won at the face alone.

Uncertainty of Future Output

THE official coal target for the year of 200 000 000 tons is generally accepted to be 20 000 000 tons short of actual demand, and can in any case only be reached by wholehearted co-operation on the part of everyone in the mining industry; a co-operation which, judging from the recent remarks of the mineworkers' leaders, is by no means assured. In the uncertainty born of these circumstances, a shortage of several million tons on the already inadequate 200 000 000 tons seems inescapable, despite the faith of the Government that all will be well, that the risk to be taken this summer is justifiable. We have on several occasions in these columns given warning of the danger of a fuel crisis next winter every bit as crippling as was that of three months ago, and the statement on fuel made by the President of the Board of Trade last week should give emphasis to that warning rather than birth to a hope that the restrictions imposed on

consumers will by next winter permit our coal stocks to be built up to the figure they ought to be.

Danger of Fuel Restriction

THE effect of the fuel crisis last winter was that some £200 000 000 worth of exports were lost, industry was dislocated to an extent even now hard to assess, and because of the conditions then obtaining production received a setback from which it is still suffering. If we are to achieve full production of manufactured goods, the minimum coal output target for 1947 should be about 220 000 000 tons, of which 10 000 000 at least should go to recreate stocks. By the ban on domestic space heating by gas and electricity, it is hoped to save 2 500 000 tons and the remaining 7 500 000 tons must therefore be saved by industry out of the summer allocation based on last year. Bearing in mind the fact that the fuel crisis of last winter was largely due to summer coal deliveries to industry being insufficient for stocks to be built up while still maintaining full manufacturing production, the risk which the Government is taking is very real. If industry restricts production in order to build up winter coal stocks, the overall output of manufactured goods and materials will be reduced by an appreciable percentage, which will be reflected not only in our export figures, but also in the home market. The answer to the problem is higher coal production, for, with the meagre supplies reaching industry, restriction in consumption in order to build up stocks, as the Board of Trade suggests, will do little else than slow down the tempo of our manufacturing capacity even further.

Standardisation versus Progress

ADDRESSING a meeting at Lewisham a few days ago, Mr. HERBERT MORRISON, Lord President of the Council, made comments about the generating plant position which deserve close attention. "At the present time," he declared, "there are 345 generating stations in this country and all of them are fully entitled to specify their own pet design of generating plant. You might think, to see the orders, that making electricity in, say, Manchester was quite a different problem from making electricity in East London." We had now, Mr. MORRISON added, to standardise plant in order to speed up production and to simplify problems of maintenance. On the following day, Sir STAFFORD CRIPPS, addressing his fortnightly Press conference, spoke along much the same lines, reaffirming that "steps were being taken to introduce a measure of standardisation." The difference between the efficiencies of the many types of plant at present in use may well be, as Mr. MORRISON subsequently contended, "trifling," but it should never be forgotten that the very great advance in national thermal efficiency between the two wars was made by improvements which seemed, in themselves, insignificant, and by close attention to just those varying requirements of places like Manchester and East London. As a temporary expedient, the decision to standardise may increase plant production and speed the end of the present crisis, but it should be reconsidered at the earliest opportunity. One of the greatest dangers inherent in nationalisation, and one to which we have already called attention, is that what may be defensible as an emergency measure may well become, with the stimulus of competition removed and with unimaginative bureaucratic control, a permanent policy. If it does, not only will the steady cheapening of electric power become a thing of the past, but Britain's lead in power station design may be irrecoverably lost.

I.E.E. Benevolent Fund

THE annual report of the I.E.E. Benevolent Fund to be presented to the contributors at the annual meeting on May 15, shows that during 1946 donors and subscribers numbered 12 079, or 39 per cent. of the total membership at the end of the year. The average amount subscribed was 14s., but for the total membership it was only 5s. 6d. The remaining 61 per cent. of the membership for some reason or other do not at present subscribe to support the fund and it is to these that this note is addressed. That the fund is deserving of their support there can be no doubt and that it is administered with strict impartiality is shown by the fact that, of the 86 persons to whom grants were made in 1946, two-thirds were neither contributors nor dependants of contributors.

High Tension A.C. Contactors

By B. Feltbower, B.Sc., A.M.I.E.E.

In the article below the author deals with the operation of contactors for use with h.t. type motors, and the design of the equipment involved. The views expressed are not necessarily endorsed by the Editor, and opinions upon them are invited for publication or otherwise.

HIGH-TENSION a.c. motors have been used over a number of years for a variety of driving purposes, among which may be mentioned fans, pulveriser mills, feed pumps and other high-powered boiler auxiliaries or large pumps and compressors, rolling mills and winding machinery. The motors are wound for voltages from 1 000 V up to 11 kV, but in more recent years a tendency to standardise on 2 000, 3 000 and 6 000 V seems to have been established.

The control and protection of these motors was originally carried out by circuit-breakers of conventional design. A problem, however, was the frequency with which some of the breakers had to operate. The mechanism of the standard breaker is designed to deal with relatively few operations per day and new designs had to be developed so that when using high-tension motors a reasonable life of mechanism and contacts could be expected.

It had occurred to several motor-control gear makers to build high-tension contactors, following the ideas developed for the low-tension air-break and oil immersed contactor, but some difficulties were encountered. The rupturing capacity was low, due to the contact design and the lack of a suitable arc control, and a number of failures occurred. It was not until it was recognised that the solution of the problem lay in the separation of the duty of the circuit-breaker and the contactor, that successful designs were made possible.

The interruptions of the short-circuit currents is left to the circuit-breaker or, in more recent years, to the high-rupturing capacity fuse, and the contactor is only used to control the motor and, in conjunction with relays, to protect it against overloads.

Air-break reversing contactors, magnetically or pneumatically operated, have been designed for voltages up to 6 600 V and for the control of motors up to 2 000 H.P., operating up to 150 times per hour. They are bulky, but all parts are easily accessible for inspection and maintenance.

Motors of high horse-power are rarely required to operate as frequently as small machine-tool motors, with the exception, perhaps, of motors driving winding equipment or reversing rolling mills, where frequent reversals are necessary. With this thought in mind, oil-immersed contactors were developed, suitable for frequent operations, say up to 40 per hour, which are well suited for the control of motors driving pumps, fans, compressors, etc.

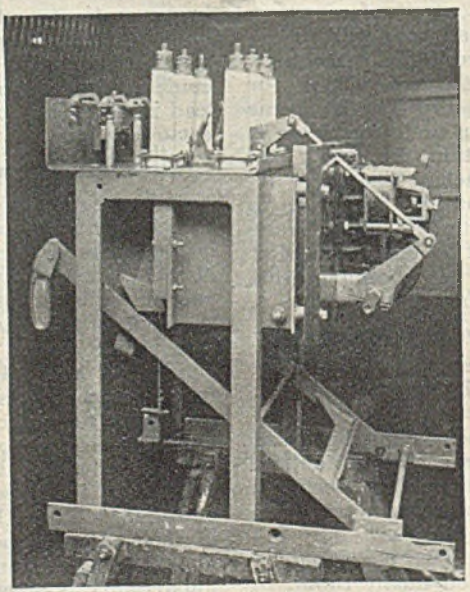


Fig. 1—High tension oil immersed contactor for 3 300 V, suitable for controlling motors up to 500 H.P.; viewed from magnet side, with oil tank raised

These oil-immersed contactors can be built in more compact form, the result being a relatively small, self-contained unit, easily accommodated inside a motor starter cubicle, containing isolator, transformers, relays, fuses, etc. It is thus possible to make use of the advantages of either individual or grouped motor control.

So far, oil immersed contactors have only been designed for voltages up to 3 300 V but experimental designs for higher

voltages have been tried out successfully. Unfortunately, no specification dealing with high-tension contactors in particular, exists. B.S.S. 775 for "Contactors" is intended to cover gears up to 6 600 V, but apart from some general remarks, little is said about the high-tension contactor. The usual procedure is, therefore, to extract all the relevant information relative to making and breaking capacity, operating duty, temperature rises and range of operation from B.S.S. 775, and to collect the remainder from the various high-tension switch gear specifications.

Operation of the contactor is usually performed by standard low-tension solenoid or clapper-type magnets. They provide full no-volt protection by tripping out if the supply voltage drops below 50 per cent. of the normal value. Air-break contactors are occasionally operated by compressed air, the control being effected by electrically operated valves. In this case, no-volt features are either provided by the operating magnets of the valves or special arrangements have to be made by fitting a separate no-volt relay.

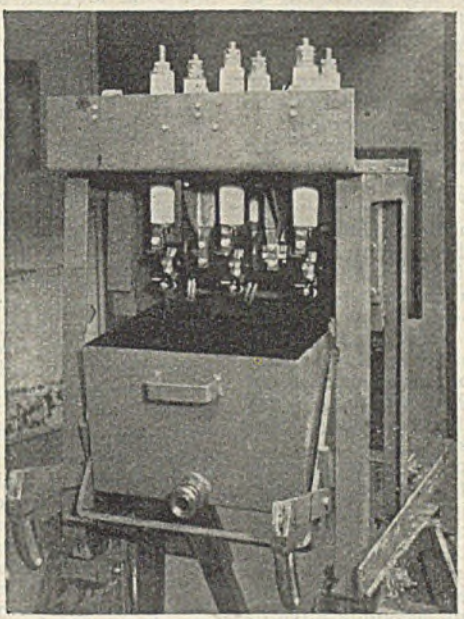


Fig. 2—The contactor illustrated on the opposite page, viewed from the other side with the tank lowered for inspection

Blow-out coils are generally included in the air-break design where also long breaks are essential to prevent restriking of the arc. Elaborate arc chutes and blow-out shields are necessary to prevent flash-over from phase to phase. With reversing contactors it is also essential, that the arc of the forward contactor is completely extinguished and that the voltage at the motor terminals is reduced to a low value before the reverse contactor can be closed, and rather complicated electrical interlock schemes are required.

Oil immersed contactors need not be fitted with blow-out coils, the quenching action of the oil preventing any excessive arcing and the contact breaks can also be kept shorter.

The earlier designs of oil immersed contactors employed magnets, directly coupled to the moving contacts. The opening speed of the contactor in these cases is then only controlled by the throw-off force of the contact springs and the out-of-balance weight of the magnet armature. The latter is heavy, permitting only low opening speeds to be obtained with the available acceleration, and causing the arc to be drawn out to a considerable length, before it is extinguished. The oil in these contactors has been found to carbonise rapidly making frequent replacements necessary. Contacts and tank also require frequent cleaning and inspection. Special interphase barriers have to be fitted to prevent phase flash-overs.

A considerable improvement in the design of the oil immersed contactor has been effected by making the opening speed of the contactor independent of that of the magnet armature. A tripping device is incorporated in the driving mechanism, coupling the contactor shaft positively to the magnet only for the closing and holding-in operations. A compression spring is incorporated in the mechanism, and is put under tension when the contactor is closed. As soon as the operating coil is de-energised and the magnet starts to open, a catch operates the tripping device and uncouples magnet and contactor shaft. The latter, and with it the contacts, are then only under the control of the compression and contact springs and the contacts separate at high speed, independent of the heavy armature. After the latter has completed its opening stroke, the tripping device is reset and reclosing of the contactor is possible. The arc developed with this type of operating mechanism is generally shorter and reduces carbonisation of the oil and wear of the contacts. No interphase barriers are necessary; the spacing of the contacts is sufficient to prevent any flash-over. Contact separating speeds of 3 to 5 ft. per sec. have been found satisfactory.

Air-break contactors are generally designed with a single break, flexible con-

nectors being used for connecting the fixed terminals to the moving contacts. Oil immersed contactors can be similarly arranged or may be fitted with a double break, making the use of flexible connectors unnecessary. The movement of the contacts in the single break contactor is angular and bearings for the contactor shaft are required. In the double-break contactor, the contacts are supported on a carrier which performs a parallel motion for which vertical guides are required.

The contacts are in most cases of the rolling butt type, i.e., the contacts are shaped and arranged in such a way, that a rolling and sliding action takes place when closing. This ensures, that interruption and making of the current is always done on the contact tips, leaving the contact bases, where the current is carried continuously, clean and free from burning. Contact between the fixed and moving butts is of the line type, the contact pressures used being of the order of about 8 lbs. per inch of contact length. Special contact metal inserts are frequently fitted into the contact bases.

Oil-immersed contactors, if used inside starter cubicles, need not be provided with tank interlocking switches if the tank lowering device is arranged so that the starter door cannot be closed with the tank in the lowered position. This prevents closing of the isolator and the contactor contacts from becoming alive or being closed whilst the tank is lowered. Where such contactors are separate units, interlock switches must be incorporated.

Tank lowering can be effected by a lever mechanism only since the tanks are smaller and lighter, and the oil content is less than in circuit breakers, where screw-operated lowering devices are in general use. With the tank lowered, all contacts are readily accessible for inspection and maintenance.

An example of an oil-immersed contactor is illustrated in Figs. 1 and 2. This high-tension contactor of the unit type is suitable for the control of motors up to 500 H.P. and 3 300 V. Fig. 1 shows a view from the operating magnet side with the link mechanism, coupling the magnet with the contactor shaft through the top of the tank, clearly visible. The trip catch for separating contactor shaft and magnet can be seen mounted between the two rows of porcelain bushes. Auxiliary switches can be attached to the magnet shaft extension and, if required, a latch-in mechanism for d.c. tripping can be mounted on top of the magnet. Fig 2 shows the same contactor with the oil tank lowered.

It is possible to fit two such contactors either side by side or back to back and to arrange mechanical interlocks between them for reversing or pole changing duty. High-tension contactors are used for straight-on, star-delta and auto-transformer starting of induction motors, for the stator control of wound-rotor motors and for the control of synchronous motors.

Acknowledgment is due to Messrs. Brookhirst Switchgear, Ltd., for permission to publish the illustrations.

Electricity in France

ALTHOUGH there have been restrictions on the domestic and industrial use of electricity, France is planning for an ever-increasing demand, which has been steadily rising between the two wars and is likely to continue.

The possibilities of increasing production were outlined by the President of the Electricity Modernisation Commission recently, when he stated that the aim was to step-up by 20 or 30 per cent. on pre-war generation. Station installations would be modernised to give the greatest output, and compared with the low tension output of 3.7 milliard kWh in 1938 and 5 milliard in 1946, the 1951 output would be 7.2 milliard kWh. High tension supplies would be 5.9 milliard, 7.2 milliard and 12.4 milliard kWh respectively. Total output for 1938 was 21 milliard kWh, for 1946 24.9 milliard kWh, and for 1951 it would be 39.5 milliard kWh. The aim was to provide 1 000 kWh per inhabitant, and this will be increased after 1951. Hydraulic power generation had increased considerably, from 11.6 milliard kWh in 1938 to 14.3 milliard in 1947. Thermal station output increased from 2.5 milliard to 3.7 milliard. Imports mainly from Germany, increased by one milliard kWh. The demand, however, was greater than supply and meant that even average thermal plants may have to be kept in use. Supplies were largely insufficient during winter when demand was greatest and hydro-electric supply poor.

Measures envisaged to overcome this problem include the extension of hydro-electric installations to provide an extra 9.6 milliard kWh a year. Gas supplies available from blast furnaces are also to be fully exploited for generating purposes, new installations of 640 000 kW being set up.

By 1951 hydro-electric generation will be 23 milliard kWh compared with 11.6 in 1938, and thermal generated power 7.8 milliard against 2.5 milliard.

STEEL CONDUIT CONTINUITY

by "SUPERVISOR"

IN 1940 the B.E.A.I.R.A. commenced investigations into the electrical continuity of steel conduit joints, following some general expression of disquiet concerning the complete reliability of such joints. In 1943 an interim report was issued, Ref. F/T152a, under the joint authorship of Messrs L. Kallir and E. E. Hutchings and which contained a general discussion of results, with some preliminary conclusions.

It was felt at that time in some quarters that several of the preliminary conclusions were unduly optimistic in view of experiences with conduit joint continuity, and which had led to the initiation of the investigations. For instance, in dealing with conduit joints in three categories, the highest class is described as a "Joint soundly made and assembled with all the necessary precautions to ensure and maintain intimate metallic contact between the conducting surfaces." It is stated, under 1, "The initial resistance of such joints will be low (less than 1 milliohm) and they will be affected only in a very slight degree by variations of temperature or mechanical influences (shock, vibration, or bending forces in the conduit). If provided with a protective coating of suitable paint after assembly there is no risk of their deterioration even under conditions of exposure to damp or corrosive fumes."

JOINT DETERIORATION

One of the criticisms made at the time of issue of the preliminary report was to the effect that conduit joint deterioration does not alone depend upon the ingress of dampness or corrosion from outside, but may also be caused by reason of condensation inside the conduit, in which case painting externally would be useless. The veil covering the later work of the E.R.A. has been to some extent lifted, and a hint of modification in connection with the early conclusions is given in a recent letter to the technical Press from Mr. E. E. Hutchings, one of the authors of the above-mentioned preliminary report. In this he says, "What is wanted is the universal adoption of some means of preventting deterioration at every joint,"—and by every joint one assumes that even the class 1 joint mentioned in the early report is now under suspicion.

Mr. Hutchings goes on to say, in this connection, "As for practical reasons it is not possible to ensure full tightening, e.g., due to sets in the conduit run, and the last fraction of a turn makes all the difference, the alternatives seem to be lock-nuts throughout, which would add greatly to the cost, or some simple treatment of the threads which will prevent ingress of moisture not only from outside, *but from condensation within the conduit.*" (The italics are the present writer's). It looks rather as if the full report, when issued, will give full weight to the important matter of conduit joint deterioration, which from very wide experience takes place at practically all screwed conduit joints, and which was not given due weight in the preliminary report.

PROTECTION OF THREADS

Apparently the E.R.A. have, during the last few years, been experimenting with several substances which can be wiped over the conduit threads before assembly. Some twenty years ago, the writer carried out considerable investigation into this same aspect of the problem, when an ordinary red lead compound was found to be effective in preventing serious deterioration, although somewhat detrimental to rubber cable insulation. It will be interesting to see what conclusions are reached by the E.R.A. in this direction, and what materials are recommended for use. It must be stated, however, that when conduit joints had been badly made in the first instance, the application of aluminium paints or red lead compounds merely accentuated the rise in resistance due to deterioration, and at an early stage in the investigations. The highest class of workmanship remains an essential condition, whatever palliatives in the form of compounds or pastes are applied.

It has to be remembered that the interim report mentioned above dealt only with screwed conduit joints, the investigations into grip-continuity joints not having been commenced. Again, the conclusions of the forthcoming report may be forecast from a further comment in Mr. Hutchings' letter, in which he says "The trouble with grip conduit fittings is that they are even more sensitive to defective installation than the screwed type, and this applies particularly to the 'pin grip,' for if the set screw is not very firmly screwed home the only point of contact which it can ensure may be missing."

It is sincerely to be hoped that this campaign against the pin-grip type of fitting will not be carried to extremes, as seems the case at present. The draft British Standard Codes of Practice, recently re-

viewed in this column, started the ball rolling by stating objections to this type of fitting, and it is now to be carried a stage further by the E.R.A. It is agreed that there are some very poor types of pin grip fittings on the market, rough cast fittings with piffling little brass screws with inferior threads, but there are others, and the present writer's experience is that most reliable installations can be made with such fittings, to mention one only, the "Terra-Grip." It is rather unfair to lump all pin grip fittings into one category, and express an adverse opinion, but many experienced engineers will certainly not concur with the findings.

Let us for a moment take a realistic view of the matter, as the present writer sees it, and as it should be considered by E.R.A. The lug grip fitting is without doubt a good job in many instances, but nearly all specifications, codes of practice and what-not, want the enamel to be filed away from the end of the conduit before insertion into the fitting. This not only thins out an already very thin steel wall, but is quite ineffective, for the reason that the grip fitting remains enamelled or dirty inside. Even if an initial low-resistance reading is secured, early deterioration is probable, as rusting must take place quite early on, causing not only increase in resistance, but possibly the complete disappearance of the end of the conduit.

To all intents and purposes, the only really effective contact with a lug grip fitting is made by the cutting of the shoulders of the screw lugs into the steel conduit, and filing the conduit does not

(Continued at top of next column)

affect this in any way. To this extent the lug grip fitting has no advantage over the pin grip type, in fact, the pin of a good type grip probably bites into a larger area of conduit wall than does the lug grip shoulders.

An objection to the pin grip type of fitting is that the pins are so placed that they are likely to project through plaster and cause rust points on finished walls. It should be possible to locate these on the sides of the fittings, when even this slight objection might disappear.

All will agree with Mr. Hutchings that what is wanted is the universal adoption of some means of preventing joint deterioration. In a wider sense, however, it might be said that what is even more wanted is the development and use of systems of wiring that do not have to depend upon the unpredictable behaviour of normally poor conductors like steel and lead under the conditions of use and installation that they must inevitably meet.

Steel and Welding

AT a meeting of the Institution of Structural Engineers, Mr. A. Ramsay Moon, director of research, British Welding Research Association, stated that by making fuller use of welding for erecting steelwork structures, hundreds of thousands of tons of steel could be saved annually. There were, he said, some thirty-six power stations to be built in this country within the next two years, and if the steelwork were welded it would be possible to show a saving of steel of the order of 20 per cent. and more in cost. Although the war was over, the economies and increased output which could be realised by the use of welding remain unchanged. An increased use of welding in the structural field now would save large quantities of steel—with a corresponding saving in the amount of coal necessary to make it.

Boys' Hostels' Association

THE sum of £2 445 has been raised by an appeal on behalf of the Boys' Hostels' Association, made by Viscount Portal in connection with the annual dinner at which he was chairman, held at Grosvenor House, London, on April 23. The association is responsible for the John Benn Hostel for working boys at Stepney and hopes to rebuild its other hostel, King George's House, Stockwell, which was destroyed by enemy action during the war, as soon as the necessary authorisations for the work can be obtained.

Mr. John Benn, chairman of the Council of the association, told the guests that 80 per cent. of the boys at the Stepney hostel were either orphans or homeless as a result of family estrangements due to the war. In stressing the residential side of the hostels' work, Mr. Benn said it was this feature which distinguished the association from other boys' clubs activity. The boys, he added, contributed nearly £4 000 from their own earnings towards the cost of the association each year, which represented an average payment per week of £1 by each boy.

Mr. Oliver Lyttelton, M.P., commended the work of the Boys' Hostels' Association because, he said, in overcoming the present dangerous crisis in the affairs of the country, it was necessary to look to the youth.

Other speakers were Canon Ross Wallace, headmaster of Sherborne School, Viscount Portal, and Sir Ernest Benn, Bt.

British Industries Fair

Further Review of Some of the Electrical Exhibits

The Electrical Section of the British Industries Fair, at Castle Bromwich, opened on Monday, and has throughout the week been well attended. Inquiries as to what is new have been brisk and information with respect to delivery dates has been eagerly sought.

* * *

Continuing from last week our review of the Fair we give below brief descriptions of those stands which are representative of the exhibits as a whole. Overseas visitors to the Fair who may from time to time feel in need of guidance with respect to the activities of the electrical industry, or who are seeking information as to electricity supply, are cordially invited to avail themselves of the facilities offered by THE ELECTRICIAN *on Stand A.427. The stand is available for appointments, inquiries and services, and all who care to visit us there during the period of the Fair will be most welcome.*

IN dealing with the exhibits at Castle Bromwich it was felt that it would be better to give an impression of what may be seen, rather than a catalogue of the stands, and for this reason the descriptions below are representative. Fuller details would have encroached upon the limited space available and many of the items mentioned would have unavoidably been crowded out.

The London Sections of the Fair were dealt with in the last issue and in our introduction to the Castle Bromwich Section in the same issue reference was made to the exhibits of British Insulated Callender's Cable, Ltd., British Thomson-Houston Co., Ltd., Chloride Electrical Storage Co., Ltd., E. K. Cole, Ltd., English Electric, Ltd., Eralite Manufacturing Co., Ltd., Ferranti, Ltd., General Electric Co., Ltd., Metropolitan-Vickers Electrical Co., Ltd., Newman Industries, Ltd., Westinghouse Brake and Signal Co., Ltd.

* * *

Acru Electric Tool Mfg. Co., Ltd.

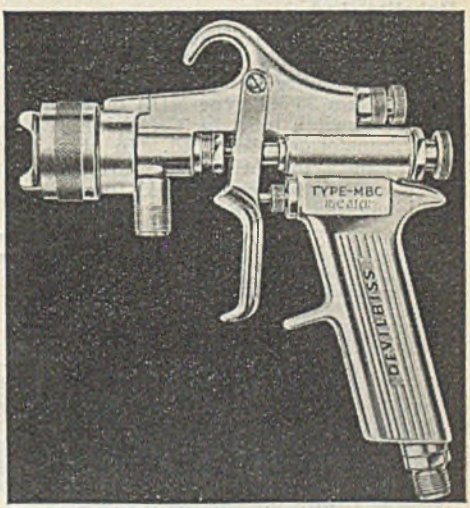
This exhibitor displays a number of small components and appliances, including soldering irons, heating elements, welding transformers, neon testers, fluorescent auxiliaries, electric motors and reduction gears. In addition, the "Pyrobit" electric hand drier is shown, and there is to be seen a new soldering iron element claimed to be unbreakable and practically everlasting. (Stand C.215.)

Aerospray Manufacturing Co., Ltd.

On this stand are shown spray painting equipment, comprising a full range of spray guns, air rectifiers, pressure feed paint containers and other accessories, and air compressing plant from ½-10 H.P. with petrol engine or electric motor drive. (Stand D. 732.)

Aerograph Co., Ltd.

This company is exhibiting spray-painting equipment for every painting purpose, pressure feed tanks, air transformers and pressure regulators, air compressors, exhaust fans, petrol-driven and electrically-driven complete portable spray painting outfits. (Stand D.302.)



Aerograph type M.B.C. spray gun

Automotive Engineering Co., Ltd.

Here are to be seen B.H.B. pistons, including wire wound type; Seeger Circlips; "Twicklip" spring clips; "Twix" wire cutters, "Twix" banding metal cutters, and examples of non-ferrous castings. A subsidiary company, Hardinge Machine Tools, are showing on the same stand collets and feed fingers for automatic machines, capstan lathes, etc., and circular form tools. (Stand D.213.)

Aidas Electric, Ltd.

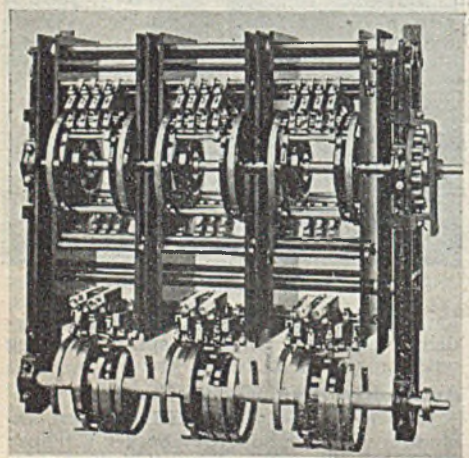
Among the "Sadia" water-heating appliances shown are the new C.E.L. coal-electric heater, which combines the advantages of electricity with the economy of coal, and the compact new U.B.D. heater. Some of the models on view have special finishes for export only. (Stand C. 105.)

Babcock and Wilcox, Ltd.

The principal exhibits are an intertube pulverised fuel burner, as supplied to North Tees, Llynfi and Little Barford power stations, and a complete section of the Rotograte stoker of the type now being supplied at Kearsley. An "E" type mill, a Bailey pulverised fuel feeder, an economiser section and various soot blowers are also shown, and models are displayed of marine and power station boilers. A small cinema theatre on the stand gives a continuous showing of films on steam and boiler practice, one of which illustrates the Cyclone furnace in operation. (Stands D.306 and 407.)

Bakelite, Ltd.

Examples of heavy electrical equipment relying extensively on Bakelite materials for insulation are being displayed. Typical of these is a 33 kV type MDA on-load tap changing switch built by the British Electric Transformer Co., Ltd. In this, the main panels insulating and carrying the fixed contacts are constructed from Bakelite laminated, and the fixed contacts are

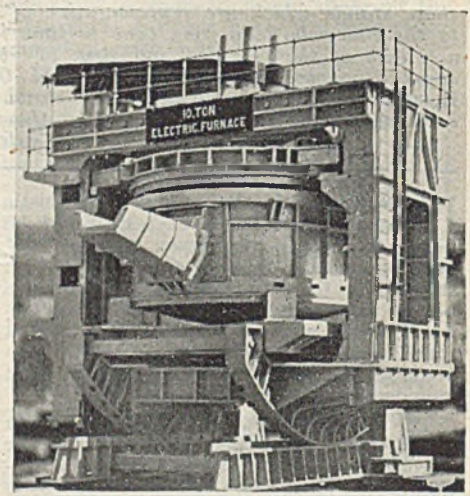


Tap-changing gear of a 33 kV transformer, employing Bakelite laminated and moulded insulation

clamped to rods insulated with Bakelite laminated tube. Other examples of the uses of Bakelite, ranging from heavy switchgear to radio and telephone components are to be seen, and the relatively new application of laminated plastics to the manufacture of instrument cases is demonstrated. (Stand C.404.)

Henry Balfour and Co., Ltd.

The Balfour Group of Companies are exhibiting, with a series of models, a wide range of products, from spray driers for the preparation of dried milk products to special equipment for the chemical industry. Another model depicts an electric furnace of 10 tons capacity. (Stands D. 642 and 743).



Model 10-ton electric furnace, shown by the Balfour Group

Barrie's Electrical Agencies, Ltd.

On this stand are shown a number of electrical accessories, cables and flexibles, wood blocks and fittings for fluorescent lighting. (Stand C.302.)

Belling and Co., Ltd.

Practically the whole of this company's range of electric fires and cookers is to be seen on this stand, items of particular interest being the "Crescent" reflector fire, for portable use or wall mounting, the "Sherborne" fire with an illuminating effect, and two new "Electricoal" fires. Other exhibits include free-standing and wall-fitting warm air circulators and several post-war electric cookers. (Stand C. 515.)

Cable Makers' Association

On an interesting stand which is designed to be generally representative of the various types of cables and accessories

used in electric light, power and telephone installations are shown examples of the newest high-voltage cables and some telephone cables of historical interest. (Stands C.312 and 413.)

Members of the association are: Anchor Cable Co., Ltd.; British Insulated Callender's Cables, Ltd.; Connollys (Blackley), Ltd.; Craigpark Electric Cable Co., Ltd.; Crompton Parkinson, Ltd. (Derby Cables, Ltd.); Enfield Cables, Ltd.; Edison Swan Cables, Ltd.; W. T. Glover and Co., Ltd.; Greengate and Irwell Rubber Co., Ltd.; W. T. Henley's Telegraph Works Co., Ltd.; Johnson and Phillips, Ltd.; India Rubber, Gutta-Percha and Telegraph Works Co., Ltd.; Liverpool Electric Cable Co., Ltd.; London Electric Wire Co. and Smiths, Ltd.; Macintosh Cable Co., Ltd.; Metropolitan Electric Cable and Construction Co., Ltd.; Pirelli-General Cable Works, Ltd.; St. Helens Cable and Rubber Co., Ltd.; Siemens Bros. and Co., Ltd.; Standard Telephones and Cables, Ltd.; Union Cable Co., Ltd.

Chance Bros., Ltd.

In association with Austinlite, Ltd., this manufacturer is showing marine lighting equipment, with automatic stand-by plant, control switches, switchgear, and rotary switches. "Sumo" electric submersible and surface pumps are also shown (Stand D.527).

Charles Churchill and Co., Ltd.

The "Melo-Chyme" door call and its transformer may be seen on this stand, and in addition there are shown hand tools, valve lappers and key cutting machines. (Stand D.724.)

Clang, Ltd.

Among a number of electrical accessories which are to be seen on this stand are a light saving switch, by means of which the brillance of standard ten to 100 W bulbs can be reduced to a gentle glow, with a corresponding saving in current, without the use of an adjustable resistance. (Stand C. 217).

Constructors, Ltd.

On this stand, steel equipment for engineering, transport, maintenance and storage, suitable for industrial establishments, is being shown. (Stands D.401 and 300.)

Cooke and Ferguson Ltd.

Here are shown all types of switchgear, up to 66 kV. On show is a UD4 metal-clad unit, incorporating a low-oil-content, arc controlled, horizontal single break circuit-breaker. Also shown are current transformers, an air compressor driven by a 7½ H.P. motor with a capacity of 42 cu. ft. at 100 lbs. per sq. in., used in the assembly of parts for electrical accessories. The company's "Nelson" stud welding division demonstrates the welding of steel studs to plates. (Stand C.109.)

Copper Development Association

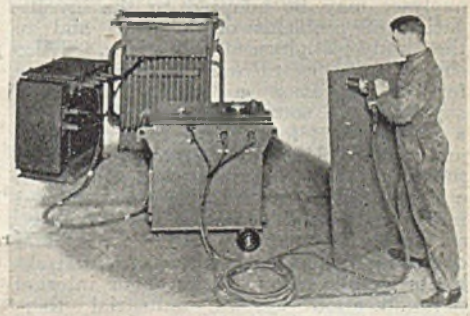
The exhibits of this association cover the mining and processing of copper and include some of the products of which copper is a constituent. Among applications of copper to the electrical industry which are being demonstrated are a 264 kV gas-filled cable, trailing cables for mines and samples of copper and copper-alloy overhead line conductors. A cavity magnetron and waveguides illustrate the uses of copper in radar, and there may also be seen a number of parts for instruments, such as berrylium-copper springs and a 2 000 A copper alloy shunt. (Stand D. 232.)

Davis and Timmins, Ltd.

The products displayed on this stand include screws, nuts, washers, terminals, cable sockets and connectors, and conduit bushes. Brass automatic screw machine repetition parts suitable for the electrical and allied trades are shown, as are inserts for plastics, presswork, etc. (Stand C.213.)

The D.P. Battery Co., Ltd.

Here are indicated some uses for which the company's batteries have been designed, with particular emphasis upon some special installations. Representative examples are a 10 200 A-h., 118-cell battery, weighing approximately 300 tons, for use in connection with the production of colour films for export; a 265-cell, 2 600 A-h battery supplied for an overseas docks and harbour installation; a 800 A-h cell in a glass box, of the pattern made for three U.S.S.R. power stations; and a cell as

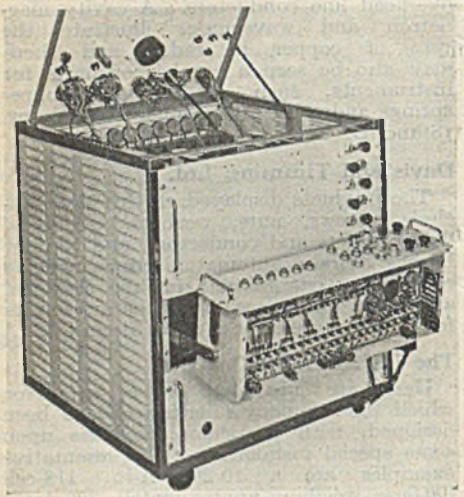


Stud-welding plant, shown by the English Electric Co., Ltd. A description of this stand (C. 613 and 512) was given in our last issue

used for underwater propulsion of submarines. The other exhibits include a specimen of one of the 18 000 cells used by the Admiralty for the destruction of magnetic mines during the war. Electric vehicle batteries are also being shown. (Stand C. 711.)

Edison Swan Electric Co., Ltd.

Among exhibits shown is a low frequency wave analyser, designed primarily for use with the company's electro-encephalograph to interpret exactly the complex electrical impulses generated within the brain and thus give to the specialist a result which facilitates his



Edison Swan low frequency wave analyser, for use in conjunction with the electro-encephalograph

diagnosis. In addition, it is being used by research workers to investigate the mechanisms of brain activity. The analyser may be adapted to the investigation of problems of acoustics and to the study of physical vibrations. Also shown is an electric welding torch needing for its operation a normal electricity supply and a source of compressed air or a gas cylinder, for welding modern plastic materials. Multiple metal-to-glass seals providing single or multiple terminals in a single mounting which may be soldered into a can in one operation are exhibited, as are also vacuum capacitors for circuits operating at high peak voltages. Other exhibits include a loudspeakerphone internal communication system, industrial thermionic valves, Tungar battery chargers for a.c. mains 5-12 A 15-90 V, valve and metal rectification, accumulators and batteries, industrial and commercial fluorescent lighting equipment, street lighting lanterns and flood lighting equipment. (Stand C.604.)

Electrolux, Ltd.

A new silent absorption-type refrigerator, being shown for the first time on this stand, is the L.300, a 3 cu. ft. model. Other domestic patterns are on view, and there is also a new internal bag type suction cleaner, the model Z.30. (Stand C.722.)

Electric Construction Co., Ltd.

A feature of this stand is a demonstration of stepless regulation of motor speed, using a grid-controlled mercury vapour rectifier circuit. Another equipment controls both speed and torque of a motor by the same methods and there are also rectifiers, three-phase starters and battery chargers. (Stand C.704.)

E.M.B. Co., Ltd.

The electrical exhibits of this stand include the company's unbreakable jointless and rustless grid type resistances, and steel case drum type reversing controllers, while in addition a complete air break contactor starter, together with samples of individual contactors, are shown. The latter include on the a.c. side a new unit specially designed for very arduous mining service duty, while on the d.c. side, the single pole contactor shown is used in large quantities for battery-vehicle service duty. Among the mechanical exhibits on the stand are a No. 6 diecasting machine which is a small edition of the company's No. 12 machine, a No. 7 injection moulding machine for thermo plastics and a 50-ton moulding press for thermo setting materials; all are new designs. (Stand D.134.)

General Accessories Co., Ltd.

The " Surrey " micro-break a.c. switch is demonstrated on this stand, together with a range of " Clix " and " Genacco " wiring accessories. Some new switch socket outlets include a flush-fitting flat-pin type. (Stand C.706.)

G. A. Harvey and Co. (London) Ltd.

Some interesting metal products being shown by this manufacturer include pressure vessels for working up to 3 000

EXPORT AND IMPORT PRICES

Speaking at the B.I.F. banquet in London on Monday, the President of the Board of Trade said that some 5 000 overseas buyers intended visiting the Fair. Our export prices had not risen in proportion to our import prices, but if the latter continued to rise, prices of the former would need to be adjusted.

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lb. sq. in., turbine casings, a number of perforated metal appliances, for sifting, filtering, grading, and radiator grilles. Examples of gilled tube are being displayed in lengths of varied diameters and pitch. This product is a new departure in gilled tubing, claimed to give a rate

of heat transfer approximately 25 per cent. greater than for the crimped gill tube. (Stand B. 329.)

Hoover, Ltd.

There are displayed examples from the manufacturer's range of squirrel-cage F.H.P. motors for continuous duty, in split-phase, capacitor start, three-phase and shaded pole types. Some of these motors are shown sectioned. (Stand C.710.)

F. A. Hughes and Co., Ltd.

" Elektron " magnesium alloys may be seen on this stand, in the form of sheet, extrusions and casting. Some " Elektron " prototype constructions are also shown. (Stand D.307.)

Victor H. Iddon Ltd.

On this stand is a range of domestic and industrial electrical accessories, e.g., lampholders, ceiling roses, switches, bell transformers, transformer buzzers and handlamps. Among the exhibits is a new B.C. adaptor, designed to prevent unscrewing of any part on insertion or withdrawal. It can be supplied for T.R.S. conforming to B.S.S. Overall Dimensions. Also displayed are new Nettle 5 and 15 A 3 pin sunk and surface shuttered sockets, conforming to B.S.S. 546. These sockets incorporate a patent anti-flash screen with three wings designed to make it impossible to expose the live tubes without, at least, the simultaneous use of two pins. The surface type sockets have an interior partly sunk into a loose pattress. This makes possible the use of the socket either as an ordinary surface or as a semi-sunk type at will. In the latter case the pattress is discarded and the socket is mounted in the usual way. (Stand C.109.)

Imperial Chemical Industries, Ltd.

The metals division of this firm is exhibiting many kinds of non-ferrous metals in plates, sheets, strips, tubes, wires, rods and extrusions, and a number of light alloys. Degreasing and heat treatment are demonstrated on another stand and in the exhibit of the paints division are shown lacquers and varnishes for industrial purposes, including electrical fittings and insulation. (Stands D. 214, 308, 315, 409.)

Langley (London), Ltd.

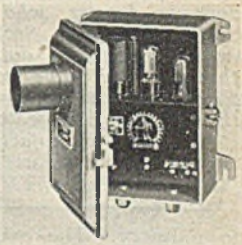
This company exhibits some of the wide applications of mica to electrical engineering, with the material processed into a variety of shapes and with micanite and laminated plastic tubes and bushes. (Stand C. 226.)

Linread, Ltd.

The exhibits include two new items of interest to those whose work involves fastening problems, especially users of sheet materials of all types. The first of these is the Rivnut, a one-piece, internally threaded and counterbored tubular rivet, that can be pulled up or headed while working entirely from one side, and the second new item is the Phillips recessed head screw. These latter are already largely used in American industry, and are available with filister, mush, round, and flat and raised countersunk heads in the standard threads and materials and finishes. Demonstrations at the stand enable comparison to be made between the speed of insertion of Phillips screws and the older type. (Stand D. 115.)

Londex, Ltd.

Various kinds of electrical remote control equipment are being shown by this firm, including number of relays developed for the Services during the war. Process timers and remote flow indicators are being demonstrated, as well as applications of photo-electric control equipment. The " Lectra-evel " liquid level control system is already widely known, and some of its possible applications are demonstrated at the stand. (Stand C.718.)



Londex photo-electric cell relay equipment

Marconi Instruments, Ltd.

A variety of electronic instruments for industrial applications is being shown. These include pH meters, moisture content meters and bridges, etc., for measuring various electrical constants. Moisture and conductivity recorders are of special interest, and there are also valve voltmeters, beat frequency oscillators, a wave analyser and meters for determining the thickness of metallic platings. (Stand D.505.)

Matthews and Yates, Ltd

Cyclone fans for drying materials, air conditioning, dehydrating and induced draught for boilers are being shown by this exhibitor. A range of models includes multivane fans, with forward and reverse curve, paddle blade fans, air washers, humidifiers and cyclone separators. Electric air propellers and gilled copper heater units are also of interest. (Stand D.705.)

Mavitta Drafting Machines, Ltd.

The exhibits on this stand are of special interest to the engineer designer, and include drafting machines, drawing stands

and mathematical scales. The quadrant heads used with the equipment are designed with or without micrometer adjustment as desired. (Stand D.712.)

Metway Electrical Industries, Ltd.

This stand features a range of conduit fittings and flexible metallic tubing, electric heating elements and many porcelain accessories. (Stand C.302.)

Mond Nickel Co., Ltd.

On this stand, the main emphasis is on the extensive research and advisory services which this company makes available to industry. The evolution of high-temperature resistance alloys for gas turbines is well illustrated, and another exhibit displays how a difficult welding problem, encountered in the production of heat-exchangers, was overcome. To indicate the way in which the company can be of use in advising designers on the selection of the most suitable materials, a wireless circuit calling for components with special properties is used as an example. (Stand B. 709.)

VIEWS OF OVERSEAS BUYERS

Unstinted praise of the achievements of British Industry has already been expressed by no fewer than some 18 000 home and overseas buyers who have visited the Castle Bromwich Section. Speaking of extended delivery dates, they said that though these have set a problem, it is already clear that the Fair will succeed in the primary purposes of showing the world what British manufacturers can do and of creating goodwill as the foundation of future business.

Murex, Ltd.

In an exhibit which well illustrates the wide range of metals and alloys manufactured in the Rainham works of the parent company, a selection of permanent magnets made by the sintering process will be of electrical interest. The group of new permanent magnet alloys, known as Alnico and Alcomax, contains up to five times as much magnetic energy per unit volume as the older magnetic steels, but are so hard and brittle that they can be shaped only by grinding. Using the sintering process, magnets can now be moulded from powders to most desired forms with a great measure of consistency. The subsidiary company, Murex Welding Processes, Ltd., are showing several electric arc welding plants, including a mobile 400 A Diesel-driven set designed for work in the oilfields and equipped with special air filters. In addition, there is being shown a range of welders' accessories. (Stands D. 245 and 144.)

Philips Lamps, Ltd.,

On their stand, the company displays a wide range of electrical products for industrial use, including magnetic filters for cleansing of lubricating systems, coolants, or paints contaminated with ferrous particles, a special type being the " Easy-Clean " filter, for applications where ferrous contamination is very heavy. Battery chargers and high-frequency generators are being shown and there are several arc and resistance welding equipments and auxiliaries. These include a new portable resistance welding gun which is completely self-contained. It is fitted with servo-pneumatic control of time and welding speed and is capable of 10 to 120 spot-welds per minute. The rating is 20 kVA and the welding capacity 2 × 16 s.w.g. mild steel. (Stand C. 609.)

Pritchett and Gold and E.P.S. Co., Ltd.

Batteries for a number of applications are to be seen on this stand; these include large stationary cells for country-house lighting, telephone exchanges and switch-tripping equipment, train lighting cells, car batteries and starter batteries for use on airfields. Aircraft batteries fitted with microporous plastic separators are shown. (Stand C. 700).

Rapid Magnetting Machine Co., Ltd.

Several types of magnetic separator are shown, including the special " Rapidity " separator for feebly magnetic ores and sands. Among other magnetic equipment are purifiers, clutches, chucks, lifting and handling magnets, percolators and the new " Rapid Magnaclamp." (Stand C.409.)

Rawlplug Co., Ltd.

In addition to their well-known Rawlplugs, Rawlbolts, tools and other fixing devices, this company is showing two products of interest to the electrical industry. These are toggle bolts and Rawlanchors, developed for making firm fixings in walls and partition boards, in which it is difficult to use screws, nails, or nuts and bolts. The Rawlplug gravity toggle is a metal member suspended on the end of a screw. When the member is pushed through a hole in the material into the void behind, the longer side falls by gravity. The screw is then turned until the member is drawn tight against the back of the material. (Stand C.703.)

Record Electrical Co., Ltd.

Among a comprehensive range of electrical measuring instruments which this manufacturer is showing are a new pocket-size continuity tester with standard ranges of 0-3 and 0-30 ohms and fitted with an improved test spike with a push button in

the handle. Insulation testers are also to be seen, and there are some flame-proof moving coil and moving iron instruments. A moisture meter for use in the cotton industry is an interesting feature, and several ammeters, wattmeters and tachometers with a 240° angular deflection are shown. (Stand C.716.)

Rev Motors, Ltd.

On this stand are shown some of the new "Electrotors," which were fully described in our last issue. (Stand C.100.)

Rubery, Owen and Co., Ltd.

Pressings, steel domestic equipment, bolts and nuts and machined components are exhibited. (Stands D.717 and 616.)

Runbaken Electrical Products

An unusual exhibit on this stand is the "Alert" car alarm, a device containing a mercury switch which is connected in the horn circuit of a car. Movement of the car after the alarm has been set puts the horn into intermittent operation, thus giving warning of theft and tampering. A midget electric drill, with a capacity up to ¼ in. in brass, an electro-plating rectifier and a mains-operated electro-plater are also shown. (Stand C. 724.)

St. Helens Cable and Rubber Co., Ltd.

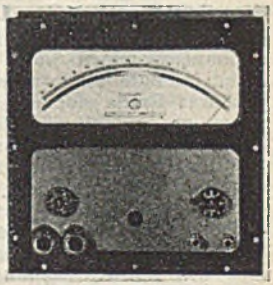
Acid and corrosion resisting "Cabtyrit" linings for chemical plant, mechanical rubber mouldings and rubber flooring, matting and sheeting are among the exhibits on this stand. (Stand D.745.)

Salford Electrical Instruments, Ltd.

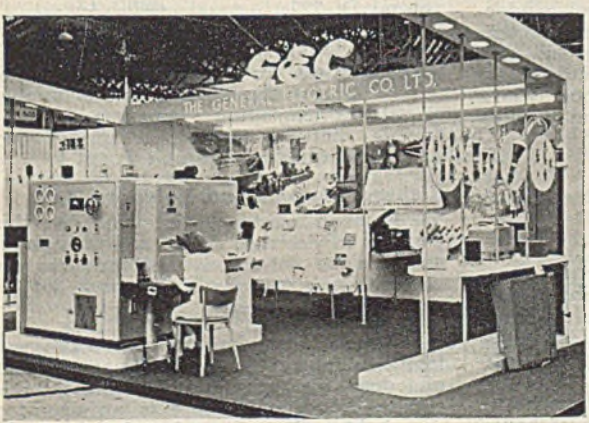
At the Birmingham section of the Fair, this company is displaying its products on the G.E.C. stand, while they have a site under their own name at Olympia. Among the exhibits there are a Radio Sonde, a miniature radio transmitter which is attached to a balloon and travels into the stratosphere, descending again by parachute. As it rises it transmits signals which depend upon the prevailing meteorological conditions. These signals are received and recorded and provide accurate data for use in the preparation of weather reports. The device has been officially adopted by the Air Ministry. A number of electrical measuring instruments are also being shown, including photometers, universal meters, cathode-ray oscillographs, and there will be a display of quartz crystals. (Stands C. 503 and 402.)

Sangamo Weston, Ltd.

Several new instruments which are not yet in production are being shown at this stand, including a new 54-range test set fitted with overload protection. An unusual feature of this meter is that it embodies an insulation test at 500 V d.c., the voltage being derived from self-contained batteries. Two other prototype instruments to be seen are a photographic exposure meter and a pocket-size light meter. In the existing range of appliances are temperature compensated watt-hour meters, synchronous motor-driven time switches and a new frequency meter which incorporates a ratiometer type movement operating in conjunction with a special rectifier circuit and employing a sine wave filter. (Stand C. 412.)



Weston 12 in. scale laboratory standard wattmeter



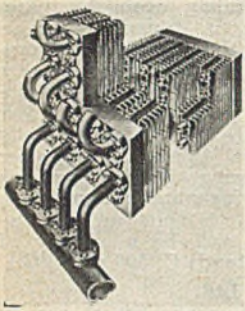
Part of the G.E.C. stand (C.503 and 402) at Birmingham, showing a 5kW industrial high-frequency generator which is demonstrating tool tipping by induction heating. The stand was described in our last issue

Scottish Cables, Ltd.

On this stand a comprehensive selection of cable samples is shown, covering the range from small domestic flexibles up to 33 kV mains. Typical tests, as used in the factory for quality control and development of v.r.i. cables, are demonstrated, together with the process of textile braiding. Various accessories for 33 kV cable systems are on view. (Stand C. 315a.)

Senior Economisers, Ltd.

Waste heat recovery is the theme of the exhibits at this stand. A quarter-scale model represents the Senior-H type of economiser, for working pressures up to 450 lbs. sq. in. For higher pressures, the Senior Twin-Tube model is suitable. In this, the tube elements are assembled in banks; the water flows through pairs of tubes and the pairs are connected at each end by forged connector boxes. (Stands D.230 and 331.)



"Twintube" economiser, unit, shown by Senior Economisers, Ltd.

Simplex Electric Co., Ltd.

Various household and other domestic appliances which are shown on this stand include three new models of the post-war Creda domestic cooker, features of which are plug-in heating elements, fully automatic oven control and quick heating ovens. The new Creda hand-dryer, for use in schools, cloakrooms, etc., and electric storage water heaters, with capacities ranging between 1½-12 gallons are also shown, and electric irons, fires and heavy duty cooking equipment designed for restaurants, etc., are to be seen. The company are showing some recent developments in the design of 500 V switchgear and some h.r.c. interchangeable fuses. (Stand C. 507 and 406.)

Frederick Smith and Co.

Among the variety of electrical conductors which are shown here are copper, cadmium-copper, bronze and special alloy rods, trolley and line wires and silver-plated copper and cadmium-copper wires. Commutator copper, sections and forgings are also on view. (Stand C.316.)

Stirling Boiler Co., Ltd.

See Babcock and Wilcox, Ltd. (Stands D.306 and 407.)

Sterling Cable Co., Ltd.

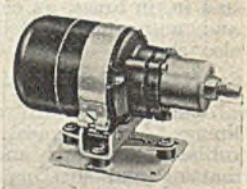
This company is exhibiting a comprehensive range of high quality rubber, synthetic rubber and thermo-plastic insulated wires, cables and flexibles, for industrial and domestic use. A special feature displays a range of fully-tropicalised insulated cables and flexibles. A central terminal box, for the "Octopus" system of house wiring, is also being shown. Attached to this box are flexible armoured cables of predetermined lengths, the equipment being factory-assembled before delivery on site. (Stand C. 111).

Standard Telephones and Cables, Ltd.

A striking feature on this stand is a model electric railway, used to demonstrate the company's railway signalling apparatus. The other exhibits include remote control systems (including street lighting apparatus), cables, rectifiers, private telephones, radio frequency heating equipment and resistance soldering appliances. (Stands C.231 and 108.)

Smith's Industrial Instruments, Ltd.

A special feature of this stand is a demonstration of the "Desynn" system of remote indication. A development of a war-time aircraft instrument, this is expected to find increasing use in industry in connection with the distant indication of pressure, force, displacement, temperature, fluid level, etc. The system employs a transmitting and an indicating unit, the former being a toroidal resistance tapped at three equidistant points and fed with d.c., and the latter containing a distributed three-phase star-connected winding, each phase being connected to the tappings on the transmitter toroid. In addition, a range of industrial instruments, including tachometers, pressure gauges, counters and thermostats is being shown. (Stand D. 727.)



Transmitter unit for "Desynn" remote indication, mounted in anti-vibration holder, shown by Smith's Industrial Instruments, Ltd.

Herbert Terry and Sons, Ltd.

In addition to a range of "Anglepoise" lamps, this stand shows a number of articles employing springs, as well as flexible shafting cables and spring and engineers' washers. (Stand B.424.)

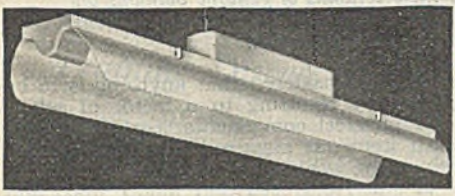
Richard Thomas and Baldwins, Ltd.

The main electrical interest on this stand is in electrical sheets and stampings, and various flat-rolled steel products are also shown. (Stands D.200 and 301.)

Thorn Electrical Industries, Ltd.

"Atlas" incandescent and fluorescent lamps, fluorescent control gear and fittings and domestic appliances are shown at this stand. A special feature is an open-top detachable-reflector unit for use with 80 W tubes, which is easy to instal and clean and is of attractive appearance. Another exhibit of interest is the "Mary Ann,"

double-way electric iron, the sole-plate of which is pointed at either end to permit speedier work without ruffling or creasing. The "Mary Ann" electric cleaner and



"Atlas" open-top detachable reflector unit, shown by Thorn Electrical Industries, Ltd.

the heavy duty "Bedalux" cleaner are shown and there are examples of precision resistors, including barretters, dummy antennæ and non-linear bridge indicators. (Stand C. 311.)

Vactite Wire Co., Ltd.

"Eureka" and nickel-chrome resistance wires and tapes are exhibited, and there may also be seen molybdenum wires, tapes and rods, copper clad, nickel, platinum clad and other wires. (Stand C.316.)

Henry Wiggin and Co.

Covering many industrial applications, a wide range of nickel alloys is being shown by this company. A special section is devoted to alloys for electronics, and it includes a special high purity nickel and a nickel-manganese alloy, developed for use in the manufacture of radio valves. Another exhibit of interest to valve manufacturers displays "Nilo K," a new product which simplifies the process of sealing metal to medium-hard boro-silicate glass. Bi-metallic strips are also shown. (Stand D. 709.)

Bankside: The Government View

SPEAKING at a Press conference held in the offices of the present Bankside power station on Tuesday, Mr. Silkin, Minister of Town and Country Planning, expanded upon Greater London's need for electricity and reaffirmed his conviction that the new building at Bankside would not adversely affect views of St. Paul's nor spoil plans for the development of the south bank.

A bigger power station was necessary at Bankside and others would be needed elsewhere, he said, because in 1951 the electricity requirements of Greater London would be 67 per cent. higher than in 1946, and by 1960 it was estimated that they would be twice those of 1951. Since it took four years to build a power station, there was little time to be lost if demands were to be met. The choice of sites was limited because they had to be by a river, near the area of distribution and of about seven or eight acres. Rotherhithe had been suggested as an alternative, but however satisfactory that might be, there was need for both—and more.

The new building at Bankside would occupy about two acres of an eight-acre site and the rest of the ground would be attractively laid out with gardens and trees. The building would be set 210 ft. from the river and there would be a road between it and the proposed river promenade. Oil would be fed to the station through a pipe and stored underground. So far as size was concerned, the new station would be lower, shorter and about the same width as St. Paul's Cathedral.

Regarding the effect of the station on the south bank scheme, Mr. Silkin contended that the County of London plan was "quite tentative" and that he did not expect a start to be made on the scheme for at least 30 years. By then, he concluded, the power station might possibly have been made out of date by the development of atomic energy.

It is expected that the revised plans for the station will be submitted to the Royal Fine Arts Commission within a fortnight.

Electrical Statistics

THE monthly Digest of Statistics, published on Monday by the Central Statistical Office, shows that the weekly average consumption of coal by authorised electricity undertakings in the five weeks of March was 583 000 tons, compared with 638 000 tons in February and 566 000 tons in March last year. Distributed stocks of coal held by electricity undertakings in March aggregated 1 728 000 tons, contrasted with 1 351 000 tons in the previous month and 1 176 000 tons in March last year.

The table relating to electrical generating plant shows that in January deliveries of hydraulic turbines were 42.0 thousand B.H.P. and orders on hand amounted to 1 299.6 thousand B.H.P. Deliveries of steam turbo-alternators of 10 000 kW and over were rated at 60.0 thousand kW, while orders on hand were rated at 5 748.4 thousand kW.

The production of electrical appliances classed as building components or fittings showed increases generally over the figures for February as follows: Cookers, from 9.3 to 14.1 thousands; wash-boilers, from 12.8 to 19.9 thousands; immersion water heaters, 20.4 to 32.9 thousands; and meters from 62.3 to 116.1 thousands.

Correspondence

The Editor welcomes the free expression in these columns of genuine opinions on matters of public interest, although he disclaims responsibility alike for the opinions themselves and the manner of their expression

H.V. Pole Lines

[To The Editor]

Sir,—I read with much interest the constructive comments by a New Zealand Engineer on B.S. 1320/1946 which appeared in The Electrician of March 28 last. Having been associated with the drafting of this specification, I feel it may also be of interest to give explanations on some of the points raised.

Experience with lines with unearthed steelwork in this country to date does not indicate a tendency for flashovers to occur at poles supporting transformers or switchgear; in fact, within the writer's experience, the most severe flashover occurred at an intermediate support, the insulators and conductors being undamaged, the discharge following a shake in the pole to ground level.

It is pleasing to note that 10 years' experience in New Zealand with the horizontal formation of conductors confirms our confidence in this arrangement as the best practice.

In Great Britain imported Baltic red fir poles erected to a factor of safety of 3.5 have given an average life of 30-40 years, and it is, therefore, felt that reduction to a factor of safety of 2.5 is fully justified. It is not considered that anything is to be gained by resorting to a factor of safety of 2 on steel components, particularly on such items as stay rods and stay wires, which are subject to abnormal corrosion.

It was recognised that tallow wood and iron bark would be suitable alternatives to karri, jarrah and gurjun, but it was felt desirable to limit the list to those most commonly used and easiest to obtain in this country. A minor objection to iron bark is that it is difficult to work.

The reason for twisting the cross-arm tie straps is to make them less conspicuous, and, therefore, less unsightly, and follows Post Office practice in this respect. The use of wooden struts is to preserve the interphase insulation and thus decrease the possibility of interphase flashover under lightning conditions.

The use of chafers and stirrups is an essential feature of this type of construction. The stirrup has the effect of holding the head of the insulator together in case of severe damage, thus preventing the conductor from resting on the cross-arm, while the chafer reduces the risk of conductor fatigue.

Yours faithfully,

Leeds. S. R. Siviour.

I.E.E. Radio Section Dinner

An informal dinner was held by the I.E.E. Radio Section in London on April 30, when in the absence of the President, Mr. Percy Good, vice-president, proposed success to the Section. After pointing out that the Section was now over 28 years, Mr. Good congratulated all concerned with the extent of its activities.

MR. H. J. NUNN

Prof. Willis Jackson, chairman, in reply said that though the Section was a busy one, its interests were nevertheless closely allied to the main body of the Institution, as would be all its future activities. He welcomed the presence of the Chairmen of the Installations, Transmission and Measurement Sections, and invited the first named to speak.

In acceptance, Mr. J. F. Shipley, in humorous vein, pointed out that though he had been rather awed by the extreme youth of some of the members assembled in the Institution building on the occasion of the meetings of the Section, he noted with some interest that there were at the dinner many whose ages were more comparable with his own.

Prof. Willis Jackson then pointed out that Mr. H. J. Nunn, who had carried out the secretarial duties of the Section since its inception, had transferred that responsibility by degrees to Mr. K. W. Brown. In the circumstances the Section felt so deeply about the change and appreciative of all that Mr. Nunn had done, that the occasion could not pass without some notice of the association. The Chairman of the Section then handed to Mr. Nunn a well-filled chromium tobacco jar and pipe, together with a cheque.

The genuine surprise with which Mr. Nunn received the gift was only surpassed by his appreciation of the thought which prompted the giving of it.

Sales Management Conference

Training Discussed at Three-day E.D.A. Meeting

THE 1947 Sales Management Conference of the E.D.A., arranged " for the free discussion of practical problems amongst representatives of electricity supply undertakings from all parts of the country," was officially opened in London on Wednesday, under the chairmanship of Mr. V. W. Dale, general manager and secretary.

There were 306 delegates from the sales staffs of 190 supply undertakings.

Mr. Dale, in his opening remarks, said the magnificent attendance at the E.D.A. second post-war sales management conference symbolised an act of faith by those who were in the front line of electrical development in this country. He hoped the conference would be the nucleus of a great conference at which, in the not too distant future, the supply delegates would confer not only among themselves, but also with other sections.

RELATIONS WITH THE PUBLIC

Public relations, said Mr. Dale in introducing the discussion on " Public Relations and Consumer Services in the Electricity Supply Industry," demanded that from top to bottom, not only from three to four executive officers, but from chief engineer to junior meter reader, they should impart into the execution of their duties a spirit of service to the community. The methods, and their instilment into the undertakings' personnel, was a function of management. They wanted to see the idea of public relations accepted in its widest sense. They believed it should permeate their industry until every public-spirited employee felt a lively sense of his or her responsibility as part of a completely integrated service. They wanted to feel that in all their contacts and communications, already very highly developed, they could be sure that the public would get prompt and sound advice on every conceivable aspect of utilisation, free from complexities and irritating delays. In short, they wanted to establish beyond doubt that the industry existed to serve the public.

On Wednesday afternoon, Mr. J. I. Bernard (chief technical officer, E.D.A.) gave an address on " Trends in Technical Service " and the advising of consumers on correct utilisation of electricity. The paper was concerned, Mr. Bernard explained, with the " know how " of using electricity to the best effect and at the highest possible efficiency. The electricity supply industry was not the only party concerned in the problem of correct utilisation. There was also the manufacturer of the equipment, who was often in the best position to give advice on the most efficient way of using it. On the other hand, some manufacturers were either unwilling or unable to say how their apparatus should be employed to give the best results, while some firms, usually with no electrical background, made apparatus which was inefficient or dangerous. There were, therefore, many cases in which the supply industry had to bridge a gulf between the manufacture of apparatus and its successful use. The supply authority was most closely acquainted with consumers, who looked to it increasingly for sound technical advice.

For all new or specialised applications there was a great advantage in pooling ideas and experience in a central organisation, and in this respect the E.D.A. had a long record of service to consumers and manufacturers, and as a clearing house between members on questions of installations, safety, reliability and maintenance. Some of the problems which were currently being investigated by the association's technical staff were then described, and the author instanced the work done by E.D.A. committees in regard to the electrical equipment of the textile industries.

LIAISON WORK

There was much useful work to be done by liaison between the supply industry and other bodies, both local and national. The E.D.A. itself had devoted a considerable proportion of its technical service to liaison between the Government and the industry, and this work was likely to increase.

Referring to the technical training of undertaking staffs, Mr. Bernard said that some technical subjects fell to be dealt with by a central organisation on a national or area basis. An E.D.A. electric water heating design course held in London recently was judged to be highly successful and would be repeated in other areas later, and there were other subjects, including farm electrification, on which courses might well be held.

In the final part of his paper, Mr. Bernard dealt with the testing of appliances. The primary demand was for the disapproval of shoddy appliances, but there were many difficulties in compiling detailed specifications for all kinds of apparatus. The E.D.A. and the British Standard Institution had therefore agreed to put into operation a scheme under which the faults of appliances judged to be unsatisfactory would be taken up with the manu-

facturers concerned, and there was reason to believe this would be welcomed by the manufacturers themselves, while the Government has given their approval. The E.D.A. testing house which was to be established would find plenty of work to do, although the actual tests to be made might not be very intricate and might be a matter of examination by the skilled and experienced eye.

In the evening, delegates to the conference attended a performance of a number of E.D.A. films, including "Can We Be Rich," "A Place in the Sun," and four films for schools.

Dealing with the E.D.A. facilities for staff training in the course of his paper on Thursday, Mr. J. A. Stedman said three essentials for a salesman were: (1) a knowledge of the basic principles of selling; (2) a knowledge of the service or article which he was selling; and (3) a knowledge of the needs of the buyer. The first two could be made subjects for direct instruction. The third was a matter of experience and self-tuition. The machinery of the E.D.A. provided assistance on those three points. The first item, and the second, in so far as domestic appliances were concerned, were the subject of the training offered in the E.D.A. salesmanship training course. Exchange of views and experience in connection with the third item (apart from E.D.A. publications) was made possible by the convening of conferences, national and area, and functions of a similar character. Another facility was the public speaking competition.

NEED FOR SALES ORGANISATION

The question of staff training within the supply industry was the subject of the following paper, by Mr. C. F. Wells (Yorkshire E.P. Co.), who said that practically every undertaking in the country now acknowledged the necessity for a progressive sales organisation. This should be organised not only to deal with inquiries, correspondence and complaints, but also to render statistical service in the formulation of sales policies designed to improve the load factor of the undertaking and to increase the sale of units per £ of expenditure.

Sales assistants, Mr. Wells thought, should have reached the higher national certificate standard in electrical engineering, and should aim at becoming corporate members of the I.E.E. In addition, a sound commercial training was essential, and the B. Comm. degree or the Diploma in Commerce represented a good standard of knowledge for those aspiring to senior positions.

With the aid of a suggested syllabus, the author then outlined suggested refresher courses for those who had recently re-entered the industry, and which might be carried out within the undertakings, and spoke of the training of women demonstrators.

The afternoon paper on Thursday was delivered by Mr. S. Loweth (county architect, Kent County Council) who, dealing with the subject "Electricity in Schools," said that to meet the provisions of the new Education Act and also to make good the damage and delay resulting from the war it was necessary to build quickly and cheaply, and to bear in mind the need for the utmost flexibility in design.

It was in this latter consideration that electricity came into its own. It was very difficult in many districts to heat buildings economically by electricity, but the time would come when this would be done and meanwhile, electric heating had many advantages over water heating, among which were the ease with which additions and alterations could be made, better heat control and saving in maintenance costs.

ELECTRIC VEHICLES

Beginning a paper on "Electric Vehicles," on Thursday afternoon, Mr. R. C. Hawkins (E.D.A.) said that the mistake was often made of regarding electric and petrol vehicles as competitive. In fact, the choice between them resolved itself into a consideration of the duties which they had to perform. The range of electric vehicles was limited to 35-40 miles, and if the daily mileage was more than this then petrol vehicles should be used. The maximum speed was about 18-20 miles, but in crowded districts this was unimportant, and the rapid acceleration of electric vehicles was much more material. The capital cost compared unfavourably at the present time with petrol, but running and maintenance costs were considerably lower. The true field for electric vehicles was in short-run traffic with many stops, particularly in cities or towns.

From the viewpoint of the supply authorities, Mr. Hawkins said, the charging of accumulators could constitute a valuable off-peak load, and the supply undertaking was in an excellent position to develop electric vehicle sales in co-operation with the manufacturers.

There was little substance in the prevalent fears that electric vehicles could not operate in hilly districts, and many were doing so to-day.

The conference will conclude to-day (Friday) with papers on "Showroom Design and Layout," "Dairy Farming and Electricity," and "Photography." There will be a conference luncheon, and the proceedings will terminate with a general discussion. The remainder of the conference will be reported in our next issue.

Electrical Personalities

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

DR. P. DUNSHEATH, director and consulting engineer of W. T. Henley's Telegraph Works Co., Ltd., has arrived back in England, having travelled by air from Australia on the completion of an extensive tour, including visits to Tasmania and New Zealand, on which he was accompanied by Mrs. Dunsheath. In the course of his journeys, Dr. Dunsheath, on behalf of the I.E.E., of which he is the immediate past president, addressed overseas branches and also members of corresponding institutions in the Dominions; visited most of principal power schemes, mining centres, engineering, shipbuilding and industrial concerns, and had interviews with many leading Government officials, engineers, principals of scientific bodies, universities, and so on. Dr. Dunsheath speaks appreciatively of the extreme friendliness of the reception given him everywhere and the eagerness of the people whom he met in the Dominions to keep alive and strengthen the bonds with the homeland. He found that they, too, are confronted with major industrial problems, labour difficulties and inadequacy of plant, which, in many cases, had been subjected to excessive wear during the war years, and they are, therefore, able to understand something of our own post-war problems.

DR. P. DUNSHEATH

MISS CAROLINE HASLETT was the speaker at Wirral County Grammar School for Girls' Speech Day at Hulme Hall, Port Sunlight, on May 1.

MR. E. J. BATCHELOR, who joined the Brush organisation last year, has been appointed assistant managing director of Brush Coachwork, Ltd.

MR. J. H. WILLIAMS, who has been prominently associated with the radio industry for many years, has succeeded Mr. Leslie Gamage as president of the Radio Industries Club for the year 1947-48.

MR. D. J. W. HARVEY, chief electrical engineer to the Kirkcaldy Corporation, has been appointed chief electrical engineer for the Fife and Clackmannan area under the National Coal Board.

LORD FORRESTER, managing director of Enfield Cables, Ltd., is seriously ill in a nursing home at Braga, Portugal, suffering from a head injury and a fractured wrist caused by a fall when visiting the Ermal Dam, Minho, on May 1.

MR. FREDERICK W. PURSE has been re-elected president of the Building Industries' National Council. It is interesting to note that the building industry recognises the electrical side, both in regard to the installation and supply, for when elected as president last year Mr. Purse was the first electrical engineer to hold this office.

MR. F. W. BRECKNELL, Birkenhead borough electrical engineer since 1941, is due to retire on October 3. He entered the service of the Birkenhead electricity department in 1900 as switchboard attendant, and in 1926 was appointed deputy electrical engineer.

MR. T. R. GRATY, until recently the sales manager of the traction department of the Metropolitan-Vickers Electrical Co., Ltd., has been appointed special representative of that department and has set out on an extensive tour overseas with the object of concentrating attention on certain aspects of traction work in export markets. After serving for three years with the Bombay, Baroda, and Central Indian Railway, Mr. Graty joined the traction department at Trafford Park in 1923 and was appointed assistant manager in 1932. In 1935 he became sales manager, and has been associated with a large number of important traction contracts, including the electrification of the Central Railway of Brazil. Mr. A. E. Grimsdale, who succeeds Mr. Graty as sales manager of the traction department, was educated at Brighton Technical College and joined the company

MR. T. R. GRATY

MR. A. E. GRIMSDALE

as a special trainee in 1922, subsequently going to the traction control engineering department. In 1927 he went to Australia, and for three years acted as resident engineer for the Sydney suburban electrification scheme. He was appointed trolley 'bus sales engineer in 1932, and in 1941 became assistant to the manager of the company's Attercliffe works at Sheffield. In 1945 he returned to Trafford Park and was appointed deputy sales manager, traction department.

SIR HARRY RAILING, chairman and joint managing director of the General Electric Co., Ltd., Lady Railing, Mr. Leslie

SIR HARRY *and* LADY RAILING, *with* VISCOUNT MARGESSON (*left*), *at the G.E.C. staff dance at the Lyceum Theatre*

Gamage, vice-chairman and joint managing director, the Hon. Mrs. Leslie Gamage, and Viscount Margesson, were among a gathering of 900 at a G.E.C. staff dance held at the Lyceum Theatre, London, recently.

MR. R. P. BEDDOW has been elected a director of Electrical and Industrial Development, Ltd.

SIR HAROLD SPENCER JONES, the Astronomer Royal, has accepted nomination as president of the Institute of Navigation and Sir Robert Watson Watt has accepted nomination as a vice-president.

MR. H. B. ROBIN ROWELL has been re-elected president of the North-East Coast Institution of Engineers and Shipbuilders. Mr. W. T. Butterwick and Mr. W. E. Loveridge have been re-elected vice-presidents, and the new vice-presidents are Mr. T. Bankhead Coull, Sir Lawrence Edwards and Mr. C. Stephenson.

MISS M. I. DEWDNEY, personal secretary to the managing director since the inception of the company, with Miss M. A. Tickner, assistant secretary, with 45 years' service, and Mr. A. J. Wood, of the motor and plant department, with 33 years' service—a combined total of 126 years—who are retiring on pension, were entertained by the executive directors of the Sun Electrical Co., Ltd., at an informal dinner at the Trocadero Restaurant on April 29.

MAJOR - GENERAL LESLIE B. NICHOLLS who, as General Eisenhower's chief signal officer, was largely responsible for the signal communications for the North African campaign and the liberation of Europe, is now a director of Cable and Wireless, Ltd., and is visiting the Middle and Far East to plan the development of civil communications. He left London by air on Wednesday, May 7.

MR. G. SMALLMAN, the Manchester and East Lancashire representative of Electrical Components, Ltd., was the winner of the Founder's Cup in the 18-hole medal competition at this season's opening meeting of the Lancashire and Cheshire Radio and Electrical Golfing Society at Stockton Heath on April 30. His gross score was 82, less the handicap of 6—76 nett. The subsidiary competition—9-hole greensome against bogey—for prizes presented by the society, was won by Mr. C. P. Woods and Mr. G. Ditchfield, both of Bolton.

MR. WILLIAM C. McBRIEN, chairman of Toronto Transportation Commission, Mr. H. C. Patten, the Commission's general manager, and Mr. C. E. DeLeuw, consulting engineer, are visiting London to inspect the London Underground in connection with plans to construct an underground railway in Toronto. On May 1 the chairman, Lord Ashfield, and members of the London Passenger Transport Board, entertained the Transportation Commission representatives at dinner at Claridge's Hotel. Mr. Alfred J. Barnes, Minister of Transport, Sir Cyril Hurcomb and Sir Reginald Hill, both of the Ministry of Transport, were among those present.

MR. J. G. POTTS, who retired recently from the position of chief engineer and manager of the Bury (Lancs) electricity undertaking, has received an inscribed gold watch and an illuminated address in the form of an album bound in red leather, as tokens of appreciation of his 36 years' service with the Corporation. The presentation was made by the Mayor (Ald. T. Taylor) at the dinner held in the Derby Hall, Bury, to mark the jubilee of the undertaking on May 1, in the presence of 150 guests, including representatives of Lancashire local authorities and Mr. S. J. Watson, the first chief electrical engineer.

Obituary

MR. A. V. SWALLOW, works manager of the St. Helen's Cable and Rubber Co., Ltd., at Slough, aged 53 years. He went to Slough 24 years ago.

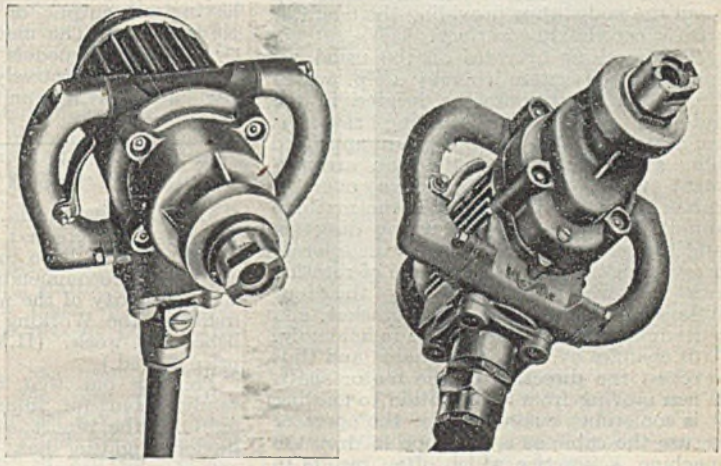
Coal Drilling Equipment

Two New Machines for Easy Handling and Operation

IN 1939 two new coal drills were developed by the Consolidated Pneumatic Tool Co., Ltd., of 232, Dawes Road, London, S.W.6, but the war made it necessary to lay aside their exploitation until the end of hostilities. Production of the new designs is, however, now in hand and in view of the coal situation, the drills should attract considerable attention. A feature of both types is the general shape—which makes for ease of handling, and the fact that they are easily dismantled without the services of a highly skilled fitter.

Model 525, a 50-cycle relatively light-weight drill, is available in four standard types of similar design, but different speeds. The machine has been tested and certified by the Mines Research Station at Buxton, and is covered by Flameproof Certificate No. FLP. 2018. The standard winding is for 125 V, three-phase, 50 cycles, the motor being of the induction type. Because of the "offset" spindle design, holes may be centred within 2 in. of the roof. Constant stalling when the bit encounters hard material has been overcome by the provision of an amply rated motor. The importance of this will be appreciated when it is remembered that the method usually applied to release a drill under such conditions is to repeatedly open and close the switch. Under such rough usage, ample switch and motor capacity is essential if the machine is to survive. The drill is rated at 1.5 H.P. on a ½-hour basis in accordance with B.S.S. No. 1090-1943, and the weight/power ratio is 24-26 lb. per H.P. developed, according to the model. Exceptional lightness has been achieved by the use of electron castings, heat treated to give maximum tensile strength.

Essentially, the drill comprises a solid cast-type "Uniloy" rotor, free from end connections and having a pinion on the rotor shaft; this, through suitable gearing, drives the main gearcase spindle, with the wing driver mounted on the end. The use of heat-treated alloy-steel spur gears arranged in "side shaft" formation follows the usual practice of the company who, after nearly 50 years' experience, still find it the most satisfactory form of drive for this application.



Left, the 50-cycle Model 525 coal drill, and right, the 150-cycle "Hicycle" tool

The gear box can be quickly detached as a unit from the main body by removal of four nuts, thus facilitating maintenance. Should a change of speed be required, another gear box of different ratio may be substituted. In the case of the 700 r.p.m. model, single reduction gearing is employed, the other three standard machines of the range incorporating double reduction gears which give lower speeds. The speeds and weights of the four models are 700 r.p.m. (36 lb.), 534 r.p.m. (38 lb.), 417 r.p.m. (38 lb.), and 319 r.p.m. (38 lb.). Other speeds, however, can be supplied to special order.

To prevent coal dust from working along the spindle into the gears, the front end of the gear case is sealed. To comply with the requirements of the Chief Inspector of Mines, the wing driver is shrouded, but an alternative fitting is available (patent applied for), which not only completely "shrouds" the wing driver but also

allows the operator to hold the driver chuck assembly in order to support the tool by hand when starting a hole. This unit comprises an extension spindle and wing driver on which is mounted an outer sleeve for gripping. When not held, the sleeve is free to rotate with the extension spindle, thus minimising wear.

Cooling is achieved by a fan mounted on the rear end of the rotor shaft and directing air continuously over the deeply-finned body casing. Integral with the fan cover is a breast plate providing a smooth surface for the operator to apply shoulder pressure. The handles are heat-insulated from the body, thus providing the operator with a cool holding surface.

The machine operates on the usual remote control system whereby a s.p. switch closes the main contactor located in the gate-end panel. The trailing cable is connected to the motor by an approved plug and socket connection, an arrangement which facilitates change over of cables for repair purposes. If the machine spindle is running in the wrong direction and the gate-end box does not incorporate a reversing switch, the direction of rotation can be reversed by removing the four nuts securing the cable entry bracket, and turning it through 180° before re-assembly. This changes over the two phases and thus reverses the direction of the motor shaft. When moving from one position to another it is sometimes customary for the operator to use the cable as a tow rope to drag the machine, a practice which often results in the cable being torn from the machine. To minimise damage, a gland of particularly robust design has been developed for attaching the cable.

Under working conditions the machines, naturally, receive very rough treatment which often results in breakage of the handles. To obviate resulting repair delays, detachable handles have been introduced.

All bearings are mounted in hard metal inserts cast integral with the casing and not fitted directly into the electron seatings. This detail prevents any chances of bearings working loose; most bearing fits are as close as 0.00025 in. To prevent grease from working into the motor, the rotor bearings are shielded on one side. Internal lubrication is by means of two grease plugs in the gear case, and one at the rear end to lubricate the upper rotor bearing.

The second tool operates on the high-frequency principle and incorporates all the design features of the machine described above. It has a squirrel cage induction motor operating on a three-phase supply of 150 cycles, and running at 9 000 r.p.m., i.e., three times faster than the ordinary 50-cycle system. Consequently, the motor develops three times the power per lb. weight of tool, this resulting in a machine of considerably higher power and lighter weight; characteristics which make it suitable for drilling Cardox or burster holes, and water infusion holes, as well as ordinary shot holes. These machines develop 2 H.P. at ½-hour rating and weigh 35 lbs.—a weight-power ratio of 17.5 lbs. per H.P., as compared with 24/26 lbs. per H.P. developed by the 50-cycle drill. While the 50-cycle tool operates from a gate-end panel containing a transformer, the h.f. model works from a panel containing a frequency changer having an output of 150 cycles, 110 V, three-phase. The machine is available in two standard models of 680 r.p.m. and 440 r.p.m. respectively, both weighing 35 lbs. and having an overall length of 16½ ins.

The Wool Industry

BETTER standards of lighting in mills and the increased application of individual electric drive to weaving machinery are among recommendations for improving the popularity of the wool textile industry, made in the Working Party Report published last week. (H.M. Stationery Office, price 3s. 6d.)

Pointing out that there is still "certainly room for improvement" in mill lighting, the report says that while good modern lighting has been introduced at considerable expense in many mills, there are some where standards are low, resulting in an unnecessary strain on the eyesight of workers. "Good lighting (and especially fluorescent lighting) generally requires some experimentation before a suitable system and lay-out can be selected," the report goes on. "Apart from arrangements for the greatest possible admission of daylight, and for a sufficient intensity of artificial light, care has to be taken to eliminate glare and to provide for a reasonable brightness of walls, ceilings and machines. The use of colour and light are to some extent interdependent and a good lighting and colour scheme can add greatly to the amenities of mills."

Apart from an improvement in general working conditions arising from the use of individual electric drive, the report finds a psychological advantage in the removal of overhead shafting, in that "the attitude of the average worker is held to be affected by his sense of the anxiety of the management to keep up with the latest technical standards, and his identification of such standards with the extensive use of electricity." Electrification of mills with individual drive admits more light and reduces noise, as well as improving the general decoration with the use of colour.

Electricity Supply

London.—The London and Home Counties J.E.A. has approved expenditure of £6 501 for extensions to mains and services.

Bury.—A display called "Lighting Through the Ages," at the electricity showrooms, was opened on April 29 and will close to-morrow.

Burnley.—The Lancashire E.P. Co. are considering the erection of a new power station on a site adjoining the existing station at Padiham.

Bath.—Expenditure of £11 853 for extensions of the distribution system has been approved by the Electricity Committee, who have also agreed to expenditure on the increase of transformer capacity.

Fulham.—The Borough Council has made application for consent to replace a 10 000 kW turbo-alternator at the Townmead Road generating station by a 60 000 kW set. The new plant, it is stated, would be within the present boiler capacity of the station.

Croydon.—Consent has been issued to the installation, in the new generating station, of a main 50 000 kW turbo-alternator, an auxiliary 2 500 kW alternator and two boiler units of 320 000 lbs. hr. M.C.R., together with the necessary buildings, civil engineering works and a 2.5 million galls. per hr. cooling tower.

Chelsea.—Following complaints about nuisance from grit from the chimneys of Lots Road power station, the L.P.T.B. has passed to the Corporation a short précis of a report on a scheme for the installation of grit extraction plant, and an informal discussion on the scheme has taken place between the parties concerned. The total cost of the plant proposed would be approximately £20 000, and the Board will proceed with the installation if the Borough Council consider the scheme satisfactory. The technical report is now being given further consideration before a decision is reached.

Sheffield.—The Corporation electricity department recently collaborated with the Ministry of Fuel in a public "Fuel Utilisation Exhibition." The department's stand illustrated the industrial, commercial and domestic applications of electricity and showed, amongst other things, electrically-operated colliery winding gear and a spot welding equipment. The domestic section contained a selection of modern appliances, whilst the commercial section was devoted to electricity in canteens, restaurants, etc. A feature of the stand was a diagrammatic working model of a power station and samples of h.t. jointing

The display above, illustrating some of the domestic, commercial and industrial uses of electricity, was arranged by the Sheffield electricity department for a recent fuel utilisation exhibition in the town

prepared by the department were also on show. Mr. J. R. Struthers (general manager) reports that the exhibition was well supported during its fortnight's run.

Hammersmith.—Plans for celebrating the undertaking's jubilee, which falls in June, have been approved by the Electricity Committee. The proceedings will open with a reception and dinner in the Town Hall, on Friday, June 20, and a commemorative brochure will be prepared for the occasion. For the entertainment of staff and employees, a dance will be held in the Town Hall on the following night, a theatre voucher being presented to those members of the staff who cannot then be spared from duty, and a half-day holiday with pay will be granted. On June 21, 1897, when public supply commenced, nine consumers were connected. Investigations have shown that only one of these original consumers—a firm—is still in existence, and they are to receive a suitable plaque or certificate. Expenditure of £11 000 has been approved for mains extensions and the erection of an e.h.t. sub-station in Rockley Road, and of £5 550 for the replacement of e.h.t. and h.t. switchgear at the Olympia sub-station.

A.S.E.E. Annual Dinner

Secretary's 25 Years' Service Recognised

FOR the first time since the formation of the Association of Supervising Electrical Engineers 34 years ago, ladies were present at its annual dinner and reunion at the Connaught Rooms, London, on May 2, and many of the gathering of 400 were intrigued by the words " A Domestic Interlude " on the toast list. This was of a felicitous nature, being the presentation of a radio set to Mr. A. Brammer, the general secretary, to mark the completion of 25 years' service to the association, and of a dressing table set to Mrs. Brammer in recognition of the support and encouragement she had given her husband in his work. Mr. H. Nimmo, the president, occupied the chair and was accompanied by Mrs. Nimmo and supported by the first president, Mr. A. H. Dykes, five other past presidents, and the first chairman, Mr. J. M. Crowdy.

In proposing the toast of " Our Guests," the President mentioned that Mr. A. P. Trotter, who was president for the year 1916-17, would be 90 years of age next month, and he was sending a special message from those present to him. The prestige of the association continued to grow. Ten new branches had been formed and 170 sectional meetings were held in the last session.

Mr. V. Z. de Ferranti, president of the I.E.E., responding for the guests, spoke of the very close connection the association had had with the I.E.E., as was shown by the fact that all its presidents had been members of the institution and at least four had been presidents of the institution.

Miss Caroline Haslett, director of the E.A.W., also replied, in a witty and entertaining speech.

In making the presentation to Mr. and Mrs. Brammer, Mr. R. W. Whitley, a past chairman and a founder member of the association, said the fact that during the last 25 years the membership of the association had multiplied by more than a hundredfold was some indication of Mr. Brammer's success.

Mr. Brammer made suitable acknowledgment and said the work had been extremely enjoyable.

Sir William Halcrow, president of the Institution of Civil Engineers, submitted the toast of " The Electrical Industry " and as an indication of the progress of the industry, said that when the Severn barrage scheme was first planned by his late partner in 1916 the number of turbines for the generators which would have been required then was 200, about 1930 that number had come down to 72, and when, three years ago, he and two others were asked to report on the scheme they found the same energy could be provided from 32 turbines.

Col. B. H. Leeson, director of the B.E.A.M.A., replied.

Institution of Engineers-in-Charge

OVER two hundred members and their guests attended the forty-second annual dinner of the Institution of Engineers-in-Charge, at the Holborn Restaurant on Friday, May 2. The president, Sir Clifford C. Paterson, F.R.S., was in the chair.

In proposing the toast of " The Institution," Sir William Larke, director of the British Iron and Steel Federation, said that the institution had a great function to perform, for it enabled engineers-in-charge to discuss their problems and pool their knowledge. Let them mobilise their experience, intelligence and patriotism in an effort to overcome the national difficulties, added Sir William.

In his reply the President said that there were many categories of engineers, but in that institution, a man's qualification and significance did not arise solely from his skill, but from his importance. They were in charge of people, a responsibility which few took seriously; but there was a need to put such a responsibility at a high psychological and spiritual level The man in charge must set the standard and encourage his subordinates. The great incentive these days was to maintain the standard of living, which resulted in the hypothesis that each individual must get all he could, causing antagonism between workers and employers. He did not decry the present industrial negotiating machinery, but wanted to get rid of the old antagonisms and establish a new team work.

Col. Allan Monkhouse, of the Royal Empire Society, replied to the toast of " Our Glorious Empire," submitted by Lt.-Col. K. Reavell.

The toast of " Our President " was proposed by Capt. A. E. Penn, hon. secretary of the institution.

Electricity Bill in Committee

Area Boards' "Justifiable Deficits"

THAT an Area Board might, for "perfectly justifiable reasons," show a deficit in its accounts "over quite a long period" was argued by Mr. Glenvil Hall, Financial Secretary to the Treasury, when the discussions in Standing Committee reached Part III of the Bill.

It had earlier been decided that the Committee should meet, from May 2, three times a week, but discussions are now continuing on the original twice-weekly basis. At the present rate of progress, the Bill is expected to be through the Committee Stage by the Whitsun adjournment.

Clause 25, which deals with transactions which might have resulted in the dissipation of assets between January 1, 1947, and the vesting date, was the subject of strong Opposition pressure, an amendment being moved by Col. Clarke which, he said, was designed, while safeguarding the purchaser against any transaction made on bad terms because of impending nationalisation, to make the clause less onerous. Maj. Roberts suggested the inclusion in sub-section (1) of the words "in the ordinary course of business" at present in subsection (3) to cover day-to-day business and remove uncertainty.

DISSIPATION OF ASSETS

Sir Frank Soskice (Solicitor-General) agreed to see if the words could be inserted. He denied that the clause imputed any dishonest motives to directors, but remarked that it would be grossly imprudent if the Minister, charged with protecting the public interest, did not include in the Bill some machinery to deal with such offences as interim dissipation of assets.

Later, during discussions on two Government amendments, Sir Frank Soskice, answering a complaint that the wide drafting of a clause made it possible for everyone who had ever done business with a supply undertaking to be brought before the arbitration tribunal, said that from the practical point of view there was no danger of this at all, as the tribunal before whom cases would come had power to make an order against those persons it chose and for such amounts as it thought fit.

The amendments were approved, and another Government amendment to delete sub-section (6) was also agreed to.

Replying to Mr. Boyd-Carpenter, the Solicitor-General undertook to introduce into the Bill a time limit—possibly 12 months—to the period during which transactions could be reopened.

Clause 25 was approved by 24 to 14.

When Clause 26, dealing with the disposal of foreign assets, was discussed, Mr. Glenvil Hall introduced an amendment imposing a limit on the period for disposal of foreign investments. Without such a proviso, he declared, an undertaking might conceivably drag out negotiations and thus the vesting date might have to be postponed for an indefinite period.

GOVERNMENT HOLDING COMPANY

The Government, Mr. Hall said, had no desire to force a sale, or that assets should be sold at an inopportunte time and possibly a loss result. A holding company might be set up by the Minister of Fuel and Power to take over foreign assets when the companies were nationalised and hold them pending disposal. He was sure, continued Mr. Hall, that the Committee would prefer the value of the assets to go to the Central Authority rather than that the major benefit should fall to some foreign Government.

The clause was agreed to.

When Clause 29 was reached, the wording relative to arbitration tribunal officers' allowances came in for heavy Opposition criticism and there was a heated scene after Mr. R. S. Hudson had remarked that, in the case of the Coal Board, the Treasury appeared to be sanctioning a ramp. The Opposition, Mr. Hudson said, desired an assurance that the word "allowances" covered no more than out-of-pocket expenses.

AREA ACCOUNTS

Before adjourning, the Committee reached Part III of the Bill (Financial Provisions) and Sir Arnold Gridley, supported by Col. Lancaster, made a plea in support of an Opposition amendment that the accounts of the Authority should permit easy comparison between the areas.

At this stage, Mr. Gaitskell said that in some circumstances, for perfectly justifiable reasons, an Area Board might have a deficit over quite a long period. He agreed about the desirability of comparisons, but there should not be hasty conclusions drawn from financial accounts without considering relative efficiency.

In Parliament

Electrical Questions Asked and Answered

Statutory Obligations.—The Minister of Fuel and Power told Mr. Keeling that it was not intended to introduce a Bill of Indemnity to excuse electricity undertakings from penalties for suspending, at the request of the Government, the performance of their statutory obligations. As far as he knew, Mr. Shinwell said, undertakings had not asked the Government for protection against any proceedings which might be opened against them.

Welsh Hydro Development.—Replying to Mr. Peter Freeman, the Minister of Fuel and Power stated that as a result of a full investigation by consulting engineers, several schemes had been put forward by the North Wales Power Co. for hydro-electric development in the Welsh hills. These schemes were now being examined by the Electricity Commissioners and the Central Electricity Board. He saw no need, Mr. Shinwell added, to appoint a committee to investigate the situation and would not say he would give the schemes every priority, but they were under consideration.

Electronic Calculators.—In reply to Mr. John Foster, the Lord President of the Council stated that the electrical calculating machines at present in use and under construction in the U.S.A. were not, in fact, electronic, but were worked by relays, and no similar calculators were contemplated for this country. An electronic calculator, which would operate at one thousand times the speed of these machines, was being planned now at the National Physical Laboratory. When completed, its services would be available to Government departments, research establishments and industry for calculations to which it might suitably be applied.

Oil Fuel Conversion.—In reply to a question by Mr. Hobson, Mr. Shinwell said that there were no chain grate fired boilers or p.f. fired boilers in stations that had been converted to oil fuel. In view of the small amount of progress made in the conversion of water type boilers to oil fuel, Mr. Hobson then asked, would the Minister reconsider his decision, which was against the advice of the C.E.B., and was taking labour away from the production of new boilers and boilers in course of erection which were urgently required, and which was saddling the electricity generating industry with heavy additional running costs? To this, Mr. Shinwell answered that he was not aware that this was against the advice of the Central Board, and on the contrary he had been in close consultation with them about it. The matters had been dealt with by the Heavy Plant Committee and he thought they were going along the right lines. He had not heard that 18 boilers were out of commission while this conversion was taking place.

Ash Content.—Replying to Maj. Roberts, Mr. Shinwell stated that he was advised by the C.E.B. that the average ash content of coal as received at generating stations under their control was 10.3 per cent. in 1939, as compared with 13.3 per cent. in 1945. A figure for 1946 was not yet available. Later, the Minister said that the National Coal Board were giving urgent consideration to the quality of coal marketed both as part of their long-term policy and their shorter term arrangements. He would shortly set up an industrial consumers' council, which could deal with such matters as allowing undertakings to buy coal according to its calorific value.

Approval of F.M.—Mr. William Shepherd asked the Postmaster-General if he had given consideration to the advantages of pulse-width over frequency modulation; and whether he had given any lead to set manufacturers as a result. Replying, Mr. Burke (Assistant P.M-G.) said that consideration had been given to the respective merits of f.m. and other types of modulation, including pulse modulation, for broadcasting on very short waves. At the present stage of technical development it was considered that f.m. offered the best prospects and the Government had approved the B.B.C.'s plans for the development of this system. Radio manufacturers had been advised accordingly.

Bankside.—The Government's decision to permit the erection of the new power station at Bankside will now be debated on the motion for the Whitsuntide adjournment, later this month. This follows the all-party meeting of peers and M.P.s which, as forecast in our last issue, was held on Monday night. At this meeting, Mr. Silkin, Minister of Town and Country Planning, made a long speech explaining the scheme, after which the opposing case was put by a representative of the L.C.C. It is reported that, having heard both points of view, the meeting was practically unanimous in declining to accept Mr. Silkin's arguments in favour of the site and decided, with one dissentient, to ask all M.P.s to support a motion urging the Government to reconsider the decision.

Industrial Information

Foundation Stone-Laying

On Friday, May 23, the Secretary of State for Scotland, Mr. Joseph Westwood, M.P., will lay the foundation stone of a new Philips' factory at Hamilton, Lanarkshire, Scotland. Built by Scottish Industrial Estates, Ltd., on behalf of the Board of Trade, the factory will be rented to Philips Hamilton Works, Ltd. Employment will be found for 2 500 workers in the Hamilton area in the manufacture of radio receivers and components.

Flameproof Electrical Apparatus

The Minister of Fuel and Power has issued a list of electrical apparatus for which certificates of flameproof enclosure have been granted during the three months ended March 31. At the request of the British Electrical and Allied Manfacturers' Association, a few copies of these quarterly lists will be on sale at the price of 1s. 2½d. (post free), and may be obtained from the library, Ministry of Fuel and Power, Kings Buildings, Dean Stanley Street, S.W.1.

Aluminium Development Association

The report for the year ended December 31, 1946, presented at the annual meeting of the Aluminium Development Association, stated that in addition to the four standing committees, a Research Committee was set up to advise the association on all aspects of research affecting the future development and application of aluminium and its alloys. This committee had taken over general responsibility for the welding research programme in hand at the University of Birmingham, and had left its detailed direction in the hands of a Welding Research Sub-Committee.

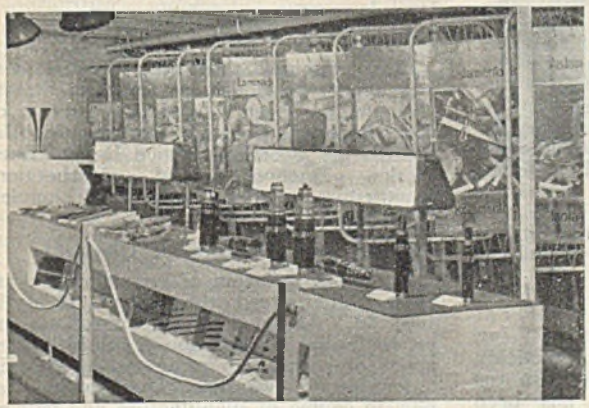
Lamp Delivery Van

After many months of waiting the Newcastle office of the Metropolitan-Vickers Electrical Co., Ltd., has become possessed of a new delivery van. The company hope it is a good omen and that the day is approaching when this bright and attractive van will be flashing through the Tyneside area full of Metrovick lamps, fittings and electrodes to supply the urgent needs of their customers.

New delivery van for the Newcastle office of the Metropolitan-Vickers Electrical Co., Ltd.

"St. Merriel" Floating Exhibition

The illustration shows a section of the combined stand of Enfield Cables, Ltd., and Enfield Rolling Mills, Ltd., which forms an important part of the Floating Exhibition on board the m.v. "St. Merriel," which, as was announced in our last issue, is visiting the South American ports of Rio de Janeiro, Santos, Montevideo, Buenos Aires and Rosario, to show samples of British products which can be delivered immediately or within six months of order. Sections of Enfield 66 kV three-core compression cable, and 132 kV and 264 kV single-core compression cable, are included in the display.



Combined stand of Enfield Cables, Ltd., and Enfield Rolling Mills, Ltd., in the Floating Exhibition on the m.v. "St. Merriel"

Economy in Packing Material

There is still a great shortage of lamp packing material, and that the Government has requested the electric lamp industry to continue

to make the utmost economies. All empty outer containers should be carefully preserved and returned either by rail, carriage forward, or by handing them to the lamp manufacturers' carmen. Prompt attention to this matter will help considerably in the maintenance of lamp supplies. Further particulars may be obtained from Mr. T. Whittaker at E.L.M.A. House, 25, Bedford Square, W.C.1 (Telephone: Museum 0766).

New Valve Factory

A new factory has been opened by the Mullard Radio Valve Co. at Gillingham,

A welding operation in the new Mullard valve factory at Gillingham

Kent, for the assembly of the component parts of miniature valves, for which there is a big demand. The women and girls employed there have been selected especially for their delicacy of touch.

B.I. Callender's New Factory

To meet the urgent needs of the Post Office authorities and to increase production of essential telecommunication equipment, British Insulated Callender's Cables, Ltd., have acquired a new factory at Melling, near Liverpool. This purchase has been made necessary because of serious delays in the building of the company's new factory on the Kirkby Trading Estate nearby. The Melling factory, which covers 9½ acres, will go into production almost immediately.

The "Airborne" Oven

A simple appliance by which food can be served to air passengers as attractively as though it had come straight from the kitchen of a first-class hotel has been adopted by B.O.A.C. The "Airborne" oven, specially designed by Richard Crittall and Co., Ltd., for use in in all types of civil air liners, has been adopted by the B.O.A.C. When placed in the oven, the deep-frozen cooked foods are sandwiched between panels which give radiant warmth in a gentle manner thus ensuring that the foods are restored to their original condition and flavour. The "Airborne" oven is a product of the Dulrae Manufacturing Co., Ltd., in the Richard Crittall group.

Diesel Engine Power

A comprehensive manufacturing programme for Diesel engines, with and without electrical machinery, is announced by Davey, Paxman and Co., Ltd., of Colchester. This makes use of considerable wartime manufacturing capacity for production of both Diesel generating sets of various sizes between 65 kVA and 330 kVA, and Diesel engines for non-electric drive of compressors, pumps, line shafting, etc.

Radio Industries' Club

The report for 1946-47, presented by the chairman, Mr. H. de A. Donisthorpe, at the sixteen annual meeting of the Radio Industries Club, in London, on April 29, showed that the membership had grown during the year from 601 to 642, plus three associate members, and that of the affiliated clubs of Scotland and Wales and Monmouthshire stood at 198 and 88, respectively.

Change of Telephone Number

The telephone number of the Morgan Crucible Co., Ltd., Battersea Church Road, London, S.W.11, is now Battersea 8822.

Lamp Supplies

The tender of Thorn Electrical Industries, Ltd., for the supply of Atlas lamps to the borough of Romford, has been accepted for a further 12 months from April 1.

Change of Address

Ekco announce that their Scottish service depôt, previously at Cadogan Street, Glasgow, has been moved to a section of the company's Scottish works and the address is: Scottish Service Depôt, Ekco Works, Duchess Road, Rutherglen, Lanarkshire. (Telephone: Rutherglen 2240/3).

Diesel Electric Plants for Disposal

Due to cancellation of certain contracts, several guaranteed three-phase 50 cycle 400/230 V Diesel-electric plants of various capacities, 50 kW and above, are to be disposed of at a small reduction in price in order to effect clearance. The machines are now in course of manufacture and will be completed ready for installing, inclusive of small fuel tank, switchboard, gauges, etc. They include heat exchangers, pump, pressure gauge, cocks and valves suitable for supplying 30 radiators and above at 180° F., giving supplementary works heating. Applications should be made to Mr.

S. B. Jackson, consulting engineer, Windsor House, Victoria Street, London, S.W.1.

B.S.S. for Electric Fuses

Three important specifications for electric fuses have been published recently by the B.S.I. B.S. 88, 1947, is a revision of the 1939 edition of the well-known B.S. 88, the main feature being the inclusion of a number of appendices drafted to assist the user in understanding all the implications of this rather technical specification. Some useful information has also been included on the selection and application of fuses. The other two specifications relate to low-voltage cartridge fuses (B.S. 1361 : 1947) intended primarily for use in consumers' units in dwelling houses, blocks of flats and office buildings, and low-voltage cartridge fuse-links (B.S. 1362 : 1947) designed primarily for use in plugs complying with the new specification (B.S. 1363) for fused plugs and shuttered socket-outlets. In B.S. 1361 four sizes of fuse have been standardised, the current ratings being 5, 15, 30 and 60 A, and the dimensions of each size have been so arranged that fuse-links of the same current rating are interchangeable, while fuse-links not of the same current rating are not interchangeable. The fuse-links dealt with in B.S. 1362 are rated at 3, 7, and 13 A, the dimension being the same for all ratings. Copies may be obtained from the B.S.I., 28, Victoria Street, London, S.W.1, price : 2s. each.

Electric Water Heating

The second of a series of three conferences on "Electric Water Heating for Domestic Purposes," organised by the Northmet Power Co., took place at the company's showrooms, Station Road, Wood Green, on May 1. Officials of local authorities, architects, surveyors, electrical contractors, plumbers and others had been invited. Mr. C. C. Hill, assistant general manager of the company, said water heating by electricity was being extended at such a rate that it was incumbent upon them to see that it was installed with the maximum efficiency to avoid wastage of precious fuel and loss of heat. The company desired to co-operate with electrical contractors and local authorities to ensure that everything that could be known about the subject was known, and to share any knowledge they had as a result of their experience and researches. Mr. R. Grierson, the company's heating engineer, gave a talk covering domestic airing and drying cupboards; water hardness and scale; corrosion; the preliminary survey of the existing installation, and the fitting of electric immersion heaters and thermostats, illustrating his remarks with a 10-gal. demonstration hot-water storage tank to which had been fitted good and bad conventional connections; lantern slides and blackboard diagrams. He mentioned that as scale was liable to stick to tinned copper elements of immersion heaters and remove the tin, the company was experimenting with nickel-chrome and Staybright steel. Tests with the latter were encouraging, and its use might solve the problem of erosion of elements. A discussion followed.

Price Increase

E. K. Cole, Ltd., announce an increase of 20 per cent. in the list prices of all "Thermovent" models from April 16.

British Equipment in Dutch Plant

Equipment supplied by the General Electric Co., Ltd., has been installed in a Douglas DC4 chartered from Royal Dutch Airways by Mr. Bernard van Leer, a Dutch business man. The aircraft is now on a 30 000 mile flight planned to cover the Middle and Far East. The refrigerator, grill boiler, hot cupboards and water

G.E.C. equipment in a Dutch liner includes a lightweight refrigerator (right) with capacity of 3.23 cu. ft. and thermostatic control. The hot cupboard has heating elements in the bottom and back of each compartment, the maximum loading being 750 W

heaters were supplied by the G.E.C. and delivered and installed at very short notice to fit in with the charter arrangements. All units operate at 24 V and are of special design for aircraft use. The galley capacity is such that a four-course hot meal for sixteen people can readily be prepared.

Contracts Open

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

Plymouth, May 10.—Supply, delivery and erection of one 100-ton, overhead electric travelling crane. Specification from City Electrical Engineer, Armada Street, Plymouth.

Dartford, May 10.—Provision of additional light points in houses on the Council's estates. Specification from Town Clerk, Town Clerk's Office, Dartford, Kent.

Birkenhead, May 13.—Supply and delivery of: (a) e.h.t. and l.t. p.i. cables; (b) rubber-insulated cables; (c) meters; (d) general stores; for period of 12 months commencing July 1, 1947. Specifications from Borough Electrical Engineer, Craven Street, Birkenhead.

Liverpool, May 14.—Supply and delivery of: (a) twenty-four 1 000 kVA transformers, 11 000/415 V; (b) twelve 500 kVA transformers, 11 000/415 V; (c) twelve 15 kVA transformers, 11 000/240 V. Specifications from City Electrical Engineer, 24, Hatton Garden, Liverpool, 3.

Willesden, May 19.—Electrical installations in 44 houses and 10 flats, in four contracts. Specifications from Borough Electrical Engineer and Manager, Electric House, 296, Willesden Lane, N.W.2.

Blackpool, May 19.—Supply, delivery and erection of two 20 MVA and one 10 MVA 33/6.6 kV transformers, with on-load tap-changing equipment; and delivery, jointing and laying of various lengths of cable. Specifications from Borough Electrical Engineer, Shannon Street, Blackpool.

Ashton-under-Lyne, May 19.—Electrical wiring of 54 permanent houses on Crowhill housing site, Littlemoss. Specification from Chief Engineer, Electricity Works, Wellington Road, Ashton-under-Lyne; deposit, 10s.

Manchester, May 20.—Supply, delivery and erection at Stuart Street generating station of ventilating plant in turbine and boiler houses. Specification from Chief Engineer and Manager, Electricity Department, Town Hall, Manchester, 2; deposit, £1 1s.

Manchester, May 20.—Supply, delivery and placing in position, during a two-year period, of static transformers, sizes 500—2 000 kVA. Specification from Chief Engineer and Manager, Electricity Department, Town Hall, Manchester, 2; deposit £1 1s.

Birkenhead, May 24.—Supply and delivery of one concrete type three-phase indoor reactor, to operate at 6.6 kV. Specification from Borough Electrical Engineer, Craven Street, Birkenhead.

Melbourne, June 4.—Supply of porcelain disc insulators for 220 kV transmission lines, for State Electricity Commission of Victoria. Particulars from Agent-General for Victoria, Victoria House, Melbourne Place, Strand, London, W.C.2; deposit with tenders, £25.

Madras, June 19.—Supply, delivery, erection and commissioning of switchgear, reactors and auxiliary equipment for the Basin Bridge "B" power station. Specifications from Messrs. Merz and McLellan, Milburn, Esher, Surrey; deposit £5 5s. for first copy and £2 2s. for subsequent copies.

Pretoria, July 1.—Supply, delivery and erection of one 180 000-lb. and one 27 000-lb. overhead electric travelling crane. Specifications from City Electrical Engineer in Pretoria or from Messrs. Merz and McLellan, Carliol House, Newcastle-on-Tyne, 1; deposit, £2 2s.

I.E.E. Benevolent Fund

LAST year grants from the I.E.E. Benevolent Fund were made to 86 persons, of whom two-thirds were not contributors or dependants of contributors, and the necessities of 70 dependants of beneficiaries were also provided for. The total amount of the grants was £5 583, compared with £4 781 in 1945, and the average amount granted to each beneficiary was £64 18s. 5d. The number of contributions during the year was 12 079, which represented approximately 39 per cent. of the total membership at December 31. The average amount subscribed was 14s., but for the total membership it was only 5s. 6d. The committee appeal to the 61 per cent. of the membership who do not subscribe to support the fund.

The income in 1946 from dividends, interest, annual subscriptions and donations was £10 193, as against £9 456 for the previous year.

The committee report that now it has been decided to develop a residential estate for beneficiaries it is felt that an incorporated body should be formed to administer the Fund and formal application has been made to the Board of Trade.

The annual meeting will take place in the I.E.E. lecture theatre on May 15 at 5 p.m.

Company News

CLARKE, CHAPMAN AND CO., LTD.—Net prft. for yr. 1946 £100 202 (£103 397). To staff pensions £15 000 (same), gen. res. £20 000 (same); div. 12½% (same); fwd. £45 235 (£44 922).

MIDLAND ELECTRICITY CORPORATION FOR POWER DISTRIBUTION, LTD.—Total inc. 1946 £1 377 453 (£1 255 535), deduct cost of elec. and distribution £931 654 (£881 876), sinking funds £85 477 (£79 820), management and gen. chrgs. £41 990 (£35 917), purchase and maintenance of apparatus £39 488 (£19 733), rents and rates £37 170 (£36 012), Elec. Commissioners £10 170 (£10 171), fees, legal chrges. £4 535 (£4 449), lvg. net rev. £226 969 (£187 557). To tax provn. £134 563 (£98 047), deb. int. £19 500 (same), res. £20 000 (same), 7% Pref. div. £7 700 (£7 148), Ord. div. (already announced) 9% (same) £46 200 (£44 800), fwd. £47 420 (£47 286).

ELECTRICAL FINANCE AND SECURITIES CO., LTD.—Strong criticism of the compensation terms of the Electricity Bill were expressed at the annual general meeting by the chairman, Mr. H. C. Drayton. The Stock Exchange prices, he said, were not a valuation of worth, but only a market price when purchase and sale took place. The company had been conservatively managed, had restricted its dividends and ploughed back excess earnings each year. They had been exhorted by the Chancellor of the Exchequer not to pay increased dividends as it might tend to increase inflation, and now he had taken advantage of a Stock Exchange quotation based upon the present dividend payable to acquire the stock.

SIEMENS BROS. AND CO., LTD.—To finance developments, extensions and improvements which the company has undertaken, the directors propose to raise £1 050 000 by an issue of new preference shares to stockholders. Proposals to raise the capital of the company by £1 000 000 by the creation of 1 000 000 4 per cent. cumulative redeemable second preference shares of £1 each are to be considered at an extraordinary meeting on May 30 and, subject to the necessary approval, it is intended to offer the new shares for subscription at 21s. per share to stockholders. The issue has been underwritten and consent of the Treasury to the proposals has been obtained. A circular to holders states that the company's orders in hand are very satisfactory and 33 per cent. of total production is for export. The whole of the proceeds of the issue will be expended in this country with the possible exception of a few special types of machines which may be unobtainable here. Present authorised and issued capital of £3 000 000 consists of £550 000 in 10 per cent. cumulative preference stock and £2 450 000 in ordinary stock.

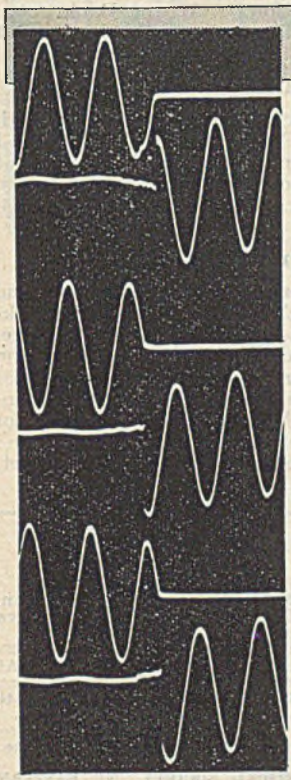
NORTHAMPTON ELECTRIC LIGHT AND POWER CO., LTD.—Presiding at the annual general meeting, Lord Henley (chairman) said that the quantity of electricity sold to their own consumers had shown an appreciable increase over the previous year, and they were proceeding as rapidly as possible with extensions to the remaining villages and farms in the company area which were still without a supply. Owing to shortage of materials, however, progress was slower than ever before. Although the price of coal had risen still higher, they had made no general increase in charges apart from a small alteration to the rate for industrial heating. It was doubtful if they would be able to maintain these cheap rates much longer, as in addition to the rising price of coal the price of electrical plant was again increasing, largely as a result of the shorter working hours which came into force last January.

Metal Prices

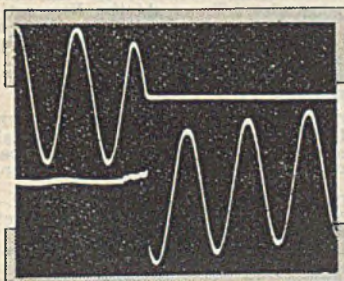
	Monday, Price	Inc.	May 9 Dec.
Copper—			
Best Selected (nom.)...per ton	£135 10 0	—	—
Electro Wire bars ... „	£137 0 0	—	—
H.C. Wires, basis ... „	£155 0 0	—	—
Sheet ... ... „	£178 10 0	—	—
Bronze Electrical quality 1% *Tin*—			
Wire (Telephone) basis per ton	£177 15 0	—	—
Brass (60/40)—			
Rod basis ... ... „	1s. 2½d.	—	—
Wire ... ... „	1s. 6½d.	—	—
Iron and Steel—			
Pig Iron (E. Coast Hematite No. 1) ...per ton	£8 19 0	—	—
Galvanised Steel Wire (Cable Armouring) basis 0.104 in. ... „	£34 5 0	—	—
Mild Steel Tape (Cable Armouring) basis 0.04 in.) ... ... „	£21 15 0	—	—
Lead Pig—			
English ... ... „	£91 10 0	—	—
Foreign and Colonial... „	£90 0 0	—	—
Tin—			
Ingot (minimum of 99.9% purity) ... „	£440 10 0	—	—
Wire, basis ... ... per lb.	5s. 6¾d.	—	—
Aluminium Ingots ...per ton	£80 0 0	—	—
Spelter	£70 0 0	—	—
Mercury (spot) ... per bott.	£21 0 0	—	—

Prices of galvanised steel wire and steel tape supplied by C.M.A. Other metal prices supplied by B.I. Callender's Cables, Ltd. The latter prices are nominal only and do not include any allowances for tariff charges.

ARC CONTROL DEVICES ON ALL C-F BREAKERS for VOLTAGES above 3·3 kV.



In circuit breakers with a separate arc control device per phase, the successful interruption on each phase is not dependent upon assistance from the pressure and turbulence generated by the arcs on the other phases, so that consistent operation is maintained even on SINGLE PHASE faults within the rating of the breaker.



See Stand C109 . Engineering Section, B.I.F.

Electrical Division

COOKE & FERGUSON Ltd

VICTORIA STREET OPENSHAW MANCHESTER 11

CF.74

Commercial Information

Mortgages and Charges

NOTE.—*The Companies Act of* 1908 *provides that every mortgage or charge shall be registered within* 21 *days after its creation, and that every company shall, in its annual summary, specify the total amount of debt due from it in respect of mortgages or charges. The following mortgages and charges have been registered. The total debt prior to the present creation, as shown in the annual summary, is given—marked with an *—followed by the date of the summary, but such total may have been reduced.*

BRIGHTON RADIO CIRCUIT, LTD.—March 18, two morts. or charge, to Westminster Bank, Ltd., each securing all moneys due or to become due to the Bank; respectively charged on 77, Grand Parade, Brighton, with fixtures, and 162, Milner Road, Brighton, with fixtures. *Nil. October 18, 1946.

W. J. PARRY AND CO. (NOTTINGHAM), LTD., electrical and general engineers; March 31, £2 500 debs.; general charge. *Nil. August 14, 1946.

Receiving Orders

WILSON, Jack, residing at Knowlden, Ashwood Drive, Riddlesden, Keighley, and carrying on business at 81, Bradford Road, Riddlesden, Keighley, electrical engineer. Court: Bradford. Date of Receiving Order: April 22, 1947. Debtor's Petition.

SEWARD, Leon Gerald, H.M. Prison, Canterbury, lately residing at 72, Cheriton Road, Folkestone, Kent, and carrying on business at The Radio Store, Central Railway Arch, Cheriton Road, Folkestone. Radio dealer. Court: Canterbury. Date of Receiving Order: April 17, 1947. Creditor's Petition. Act of Bankruptcy proved in Creditor's Petition—Section 1-1 (G.), Bankruptcy Act, 1914.

Adjudication

KERSHAW, Eric Gordon, Dale View, Luddenden Foot, Yorks, radio and electrical engineer, and now temporarily residing at 4, Ashton Road, Mytholmroyd, Yorks. Court: Halifax. Date of Order: April 16, 1947.

Intended Dividend

LOCK, Frederick Reginald Arthur, and LOCK, Victor Charles, residing at 3, Oakleigh Road, Oldswinford, Stourbridge, Worcs., and carrying on business at Union Street, Stourbridge, under the name or style of Locke Brothers, electrical engineers. Court: Stourbridge. Last Day for Receiving Proofs: May 10, 1947. Trustee: Hooper, Kenneth Victor, 1, Priory Street, Dudley, Official Receiver.

Coming Events

Friday, May 9 (To-day)

ILLUMINATING ENGINEERING SOCIETY.—Birmingham. "The Physical Nature of Light," by H. J. Cull. *6 p.m.*

Sunday, May 11

I.E.E., LONDON STUDENTS' SECTION. — Ramble to Rickmansworth. From Baker Street. *9.49 a.m.*

Monday, May 12

BRITISH KINEMATOGRAPH SOCIETY.—Manchester. "Auditorium Requirements in Sound-film Presentation," by L. Knopp. *10.30 a.m.*

INSTITUTION OF POST OFFICE ELECTRICAL ENGINEERS.—London. Annual General Meeting. "The Work of the Submarine Section During the War," by W. H. Leech. *5 p.m.*

Tuesday, May 13

I.E.E.—London. Radio Section. Discussion. "Future Trend of Component Design for the Services," opened by G. W. Sutton and E. M. Lee. *5.30 p.m.*

I.E.E., CAMBRIDGE RADIO GROUP.—At the Cavendish Laboratory. "Crystal Valves," by D. Bleaney, J. W. Ryde and T. H. Kinman. *6.30 p.m.*

Wednesday, May 14

I.E.E.—London. Transmission Section. "Recent Research and Development Work in Sweden on High-Voltage A.C. and D.C. Power Transmission," by Dr. Waldemar Borgquist. *5.30 p.m.*

BRITISH KINEMATOGRAPH SOCIETY.—London. "Some Special Purpose Arcs," by C. G. Heys Hallett. *7.15 p.m.*

LANCASHIRE, CHESHIRE RADIO AND ELECTRICAL GOLFING SOCIETY.—Reddish Vale. At the Golf Club. Competition for B.V.A. Cup.

I.E.E., LONDON STUDENTS' SECTION.—Visit to Asea Electric, Ltd., Walthamstow. *2.30 p.m.*

ILLUMINATING ENGINEERING SOCIETY.—London. At Grosvenor House, Park Lane. Annual Dinner. *6.30 for 7 p.m.*

ROYAL STATISTICAL SOCIETY, N. EASTERN GROUP.—Newcastle-on-Tyne. At the Newcastle Chemical Industries Club. "The Use of Statistical Methods in Steel Production," by G. Wortley. *6.30 p.m.*

Thursday, May 15

ROYAL STATISTICAL SOCIETY, TEES-SIDE SUB-GROUP.—Middlesbrough. At the Cavendish Scientific and Technical Institute. "Statistical Control and Factory Costs," by W. L. Sevens and J. T. Richardson. *6.30 p.m.*

ELECTRICAL WHOLESALERS FEDERATION.—London. At the Savoy Hotel. Annual Meeting and Luncheon.

I.E.E., IRISH BRANCH.—Dublin. At 1, Foster Place. Annual General Meeting.

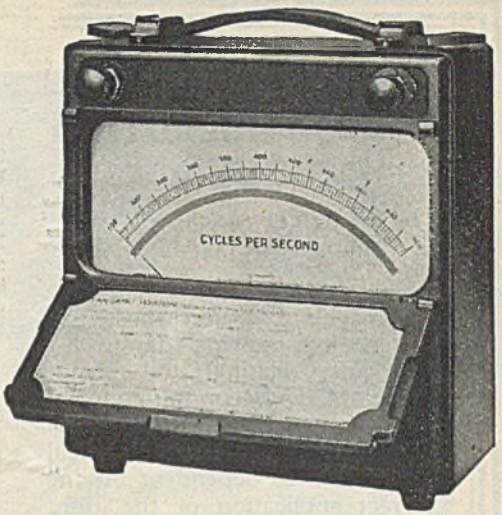
I.E.E.—London. In the Lecture Theatre. Annual General Meeting. "An Analysis of the Problems of Long Line Signalling," by T. S. Skillman. *5.30 p.m.*

Friday, May 16

WOMEN'S ENGINEERING SOCIETY.—London. "Women in Post War Engineering." *7 p.m.*

BIF 1947 BIRMINGHAM

STAND C 412



New Developments on view . . .

New developments shown by Sangamo Weston Ltd. for the first time at the B.I.F. Birmingham, include new 12″ scale Laboratory Standard Instruments, 6″ Sub-standards, ranges of Panel, Switchboard and Portable Instruments, Sensitive Relays, Radio Test Sets, Aircraft Instruments, etc. etc. These instruments will be available for inspection on Stand No. C412 together with comprehensive ranges of the well-known Sangamo Electricity Meters and Time Switches. Illustrated above is the new Weston model S105 Frequency Meter which operates on an entirely new principle and is enclosed in one of the latest pattern rectangular portable cases. We shall be pleased to demonstrate this and other devolopments to you.

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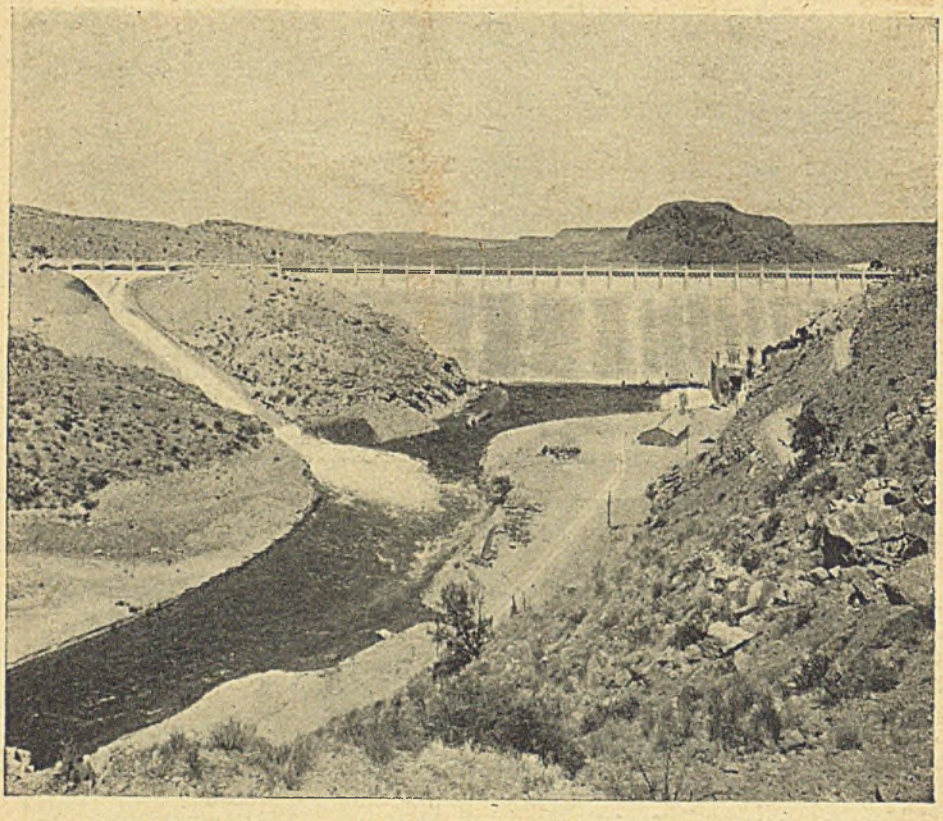

FAMOUS HYDRO-ELECTRIC STATIONS.

The Elephant Butte Dam on the Rio Grande, New Mexico, is of the straight gravity, rubble concrete type, and, when completed in 1916, was the largest artificial irrigation reservoir in the world. It supplies Mexico with 60,000 ac. ft. of water annually. Construction of the power plant was dependent on the completion of the Caballo Dam, 25 miles downstream, in 1938, and the Elephant Butte power plant was only completed in 1941. The total installed capacity is 32,562 H.P. and the total cost of the power system was 2,500,000 dollars.

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