

# ELECTRICAL TIMES

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## C.E.B. Statesmanship

With wise forethought the Central Electricity Board have made known their plans for new power stations and plant extensions for the first three years after the end of the war. Their action is a constructive contribution to post-war rehabilitation of the greatest value, and will be widely appreciated. All industries can now plan in the sure knowledge that, in peace as in war, there will be no power bottleneck, whatever their energy requirements; selected-station owners, and the supply industry generally, are relieved of uncertainty, they know where they stand; and manufacturers of turbines, generators, boilers, and ancillary apparatus and machinery will be enabled to organise their works and production programmes on a stable basis, and to estimate closely requirements of skilled personnel and labour. A great piece of industrial statesmanship.

## Britain's Three-Year Power Plan

In the first three years following the end of the war there are projected five new major power stations and an aggregate of over 3,000,000 kW of new plant to be installed, involving a capital expenditure of the order of £90,000,000. This, incidentally, works out at an average figure of £30 per kW of capacity. Some months ago we estimated Britain's early post-war power requirements at 4,000,000 kW of new generating capacity, and expressed the fear that the responsible authorities might not be taking a sufficiently broad view of the future electrical prospect. The Board's plans go far to confirm our forecast and to remove apprehension, the more so as the Board's plans, as published, relate only to post-war developments, and are exclusive of new stations and extensions carried out in connection with war requirements. For the same reason, war-time security, the schedules of station and plant extensions on page 581 are incomplete in that all developments directly associated with the war have been omitted.

## More Forethought ?

A noteworthy and welcome feature of the plant schedules is that there is no tendency evident to limit the size of new generating sets to any "utility" standard, such as 30,000 kW. On the contrary, a score of sets are listed of 50,000 kW and upwards, the largest being a further 100,000 kW machine for Battersea. Of all the extensions scheduled, however, the relatively modest 20,000 kW set for Bonnybridge, the only extension in the Central Scotland area, most tickles our fancy. If we read the signs aright, this station may put up some very good records in the post-war years. Well, isn't it common sense, when the price the C.E.B. must pay to the North of Scotland Hydro-Electric Board for surplus energy is based on the cost of production at the most economical station of the Central Scotland Electricity Scheme? It will have to be Bonnybridge or another that sets the pace.

## Cookers for Portal Houses

The Minister of Works has placed orders for the equipment of the first 90,000 Portal houses; 30,000 are to have electric cookers, 60,000 gas stoves. This two-to-one decision in favour of gas was taken, we understand, mainly on the advice of the Ministry of Fuel and Power, and despite strong representation that, to comply with expressed desires of the public, the ratio should be reversed, or at least changed to fifty-fifty. In view of the overwhelming evidence, accumulated in numerous surveys and reports, that what the majority of housewives to-day want is electric homes, the M.O.W. alone must be held responsible for any disappointment and dissatisfaction this ruling may provoke. Of course, initially it may be expected that the occupiers will be only too glad to have any home of their own, however equipped. Second thoughts will come for many with experience of working in a small kitchen, 7 ft. 6 in. high, into which a gas stove belches foul products of combustion. But why, it may be asked, cannot the tenants choose for themselves

what type of cooker they will have? Because the M.O.W. has determined otherwise. Local Authorities should note particularly that when the first supply of electric Portals is exhausted, the present intention is that they will have to accept the gas equipped type whether they like it or no.

### **Bureaucratic Ineptitude**

In fact, of course, there is no valid reason why the occupants of Portal houses should not be allowed freedom of choice between electric and gas cookers, and within limits of other equipment also. The only obstacle is bureaucratic ineptitude. The Government plan is to provide at least half a million of these emergency houses. Why not with the first 90,000 order 90,000 electric and 90,000 gas cookers, and proportion future equipment orders in the ratio of users' preferences? In another direction also the M.O.W. is being unnecessarily difficult, by insisting strictly on standardisation when alternatives in standard apparatus could be allowed without difficulty or complications. A choice between solid top and radiant heat tubular-element electric boiling plates is an example in point. Because the latter type costs 15s. to 16s. more, the solid plate is the Portal standard; out of public funds only what is cheapest can be provided. For this reason also electric kettles are not being supplied with Portal houses, though they are indispensable for quick boiling and economic service. The spoiling of a £600 ketch for the sake of a few shillingworth of tar is crass stupidity.

### **Local Authorities' Remedy**

Local authorities must see to it that the shortcomings of the Ministry of Works do not prejudice their service to consumers, or jeopardise the good name of electricity. From the outset Portal requisitions should reflect the local preference, whatever the ratio, for electric cookers; if desired, radiant type plates should be demanded, and the small extra cost paid out of local funds as a last resort; and in every Portal house an electric kettle should be supplied as a matter of course. Only by insisting vehemently will it be possible to secure for consumers the equipment they want,

in place of what the M.O.W., in consultation with the M.O.F., thinks they ought to have. One final point, Portal houses are new houses and do not by any stretch of the imagination come within the war-time stand-still agreement on customer canvassing between the electricity and gas industries.

### **As Others See Us**

The article from the pen of Mr. J. H. Deventer, President and Editorial Director of *The Iron Age*, that we reproduce on page 582, is deeply interesting; we specially commend it to the attention of readers. For the generous things said of Great Britain's war effort, we can only say Thank You; and for the shrewd and encouraging comments on our special economic problems, thanks again. Mr. Deventer's assurance that, despite sensational newspaper talk, America does not want to run Great Britain out of business post-war, and could not if she did, is welcome. And we share the view of responsible people in U.S.A. that for either country prosperity will be short-lived if the other also is not prosperous. America's advantage in mass production for her huge home market is obvious, but it is not generally realised that in the production of "small lots" we have a big pull. For example, Mr. Deventer points out that machine tool costs are 50% less here than in U.S.A., the principal reason being the more general use of incentive pay. It will probably be news to many that comparatively few concerns in the States apply the incentive system, because of the opposition of labour.

### **Whither Are We Drifting?**

In a provocative, and at times caustically critical, contribution in our later pages, Mr. Fredk. W. Purse asks this question. His answer we would summarise as "Into the hands of our enemies." And what else is to be expected when the response to the Minister of Fuel's invitation to the industry, to cooperate in shaping its own future, is a Tower of Babel chorus? And when the advice tendered to the Minister of Reconstruction on domestic electrification is a mass of contradictions, instead of a dominant electrical theme? We take no special credit that most of the follies

to which Mr. Purse directs attention have already been commented upon in these Notes; they have been obvious, as is also the fate towards which the supply industry is drifting, out of control. Unless the industry co-operatively determines, and very speedily, a post-war policy and plan to its own liking, a "political" scheme will unquestionably be imposed. Whatever its nature—largely subject to which Party wins the next General Election—this alternative must necessarily be a second best to an agreed industrially-sponsored re-organisation; and, being political, will not be final.

### **"T.V.A." and "Power Lines"**

At the invitation of the Enfield Cable Works Ltd., we last week attended a private showing of the two films "T.V.A." and "Power Lines." Both are excellent and should be seen by everyone to whom the opportunity is presented. The former was loaned by the U.S. Office of War Information; the latter has been produced by the British Council, primarily for overseas audiences. The Tennessee Valley film tells effectively the story of what is, perhaps, the greatest achievement in regional planning in the world to date, the transformation in ten years of an area as big as England and Scotland together, from poverty to plenty and prosperity. What most impressed us was not the grand scale of engineering reclamation work that changed completely a desolate countryside, but the rehabilitation of the derelict generation living in the Valley and the re-creation of the hope of a bright future, largely through the medium of electricity. It is a human story of vital significance. "Power Lines" shows the means to the end, the manufacture of the power arteries that carry the creative energy of all modern community development schemes. Every process, from the refining and rolling of the raw copper to the final serving of the finished cable, is illustrated. The presentation is, maybe, rather technical for the lay viewer, but the general impression of masterly engineering skill admirably fulfils the purpose of the films. Enfield Cable Works Ltd. have done good service to the British Cable manufacturing industry in co-operating in the production of "Power Lines," and deserve a full measure of thanks.

### **The Future Meter**

The discussion at the I.E.E. last Friday on the future electricity meter was not so lively as some may have anticipated; we interpret this as a good augury for agreement on a really workable British Standard Specification for meters. The need for some limitation of the diversity between the many different makes of meter is recognised by the majority as long overdue. Perhaps the most encouraging point of the whole discussion was Mr. Fawcett's raising of one corner of the curtain on the transformation scene that is being prepared by the Joint Meter Committee. Agreement, he revealed, has already been reached on the limiting dimensions of single-phase meters and on the fixing centres. It would appear also that the recommended standard sizes of meters will be limited to three. Many other features of the shape of things to come could be gleaned from the meeting. There were, however, some storm-threatening ripples on the surface of the discussion, sufficient to prompt us to express the hope that when a specification is agreed between the representative parties it will have a smooth passage and be accepted by all.

### **Re-glazing Electrically**

A small beginning, a very small one, has been made in the introduction of electric tools to speed up the repair of bomb-damaged houses. The M.O.W. and Croydon Corporation have been experimenting with the removal of old putty by electrical machines. Two types are being used, a chisel-hammer and a cutting head attached to an ordinary electric hand drill. Special coaches are being equipped and carry squads of ten men organised to do re-glazing as a team. Good results are reported.

### **Rebuilding Export Trade**

In our later pages Captain R. C. Petter states his views on this vitally important subject. Whether one agrees with him or no, on the fundamental suggestion that the future basis of foreign trade should be "reciprocal trade" rather than "most favoured nation" agreements, there will be few who will dissent from what he has to say on the need for closer support of exporters by the Government, and for "commercialisation" both of the Departments

concerned with trade and the Nation's overseas representatives. Great Britain, like every other nation, lives by industry and commerce, and there is no call for anyone, however highly placed in the political or diplomatic hierarchy, to be supercilious about the matter. Captain Petter correctly reflects the opinion of the vast majority of manufacturers and traders when he says that the Department of Overseas Trade, as the country's Sales Department, falls far below the standard required. His strictures on profit making by the Export Credit Department, and the unhelpful attitude in the past of some of our Ambassadors, and others, are also to the point.

### Co-operation the Key

In endorsing these criticism we are not unmindful that the D.O.T. and E.C.D. have both done useful work, also that there are commercially right-

minded Government overseas representatives; nor we imagine would Capt. Petter dissent from that view. The vital issue, however, is that if Great Britain is to increase its current level of exports five times, as is necessary to maintain the country's standard of living, then Government support of industry and commerce must be 100% efficient. To that end weak links in organisation and administration, and personnel, must be eliminated wherever they exist.

### Human Demolition

"Before leaving he shot the foreman of the power station, an act which he apparently regarded as a method of quick demolition."

This brief quotation from a recent article by the military correspondent of *The Times* speaks volumes. Elaboration is unnecessary. But remember, it could have happened here. **METEOR**

## BRITAIN'S THREE-YEAR POWER PLAN

*Five New Major Stations : 3,000,000 kW of New Plant ;  
Capital Expenditure of £90,000,000*

**T**HE Central Electricity Board have made arrangements for a large expansion of the generating capacity of the Selected Stations which supply the Grid, in order to meet the demand for electricity which is expected to arise after the end of the war.

A programme of new generating stations and extensions of existing stations comprising an aggregate of over 3,000,000 kW of new plant, and covering the period up till the winter of 1948, envisages an expenditure by the Selected-Station owners estimated to exceed £90,000,000.

During the past nine months the Board completed the arrangements necessary to meet the load in the winter of 1946 and also arranged for some of the extensions in anticipation of the increased demands during the following two winters. In accordance with the provisions of the Electricity (Supply) Act, 1926, and with the approval of the Electricity Commissioners, they have directed the owners of existing Selected Stations to proceed with the installation of new turbines, boilers and cooling towers

which will increase the generating capacity of these stations by some 900,000 kW by the winter of 1946, and by some further 340,000 kW by the winter of 1947.

The Board have also arranged for the construction of three new Selected Stations, the first sections of which will have an aggregate capacity of some 270,000 kW by the winter of 1947. In addition, the appropriate directions have been issued for the remainder of the extensions for the winter of 1947 and for some of those for 1948. Those directions are subject to the work of manufacture and construction being deferred pending the receipt of further authority from the Government. But in order that there shall be no delay in proceeding with the work immediately that authority is given, the Board have arranged with the Selected-Station owners concerned, including those who will provide two further new stations, to go ahead at once with the preparation of the necessary designs and specifications and provisionally to place the contracts. Discussions are proceeding in respect of the arrangements for the remainder of the programme for 1948.

TABLE I.—EXTENSIONS FOR WHICH DIRECTIONS HAVE BEEN GIVEN (Programme for 1946 and part of 1947)

Scheme Area	Name of Station	Owners	Generating Plant No. and Capacity kW.	Boilers No. and Capacity lb./hr.
Central Scotland ...	Bonnybridge ...	Scottish Central E.P. Co. ...	1 × 20,000	2 × 120,000
North-West England and North Wales	Bolton ...	Bolton Corpn. ...	1 × 31,250	1 × 180,000
	Hartshead ...	Stalybridge, Hyde, Mossley and Dukinfield Transport and Electricity Board	1 × 31,250	3 × 150,000
	Kearsley ...	Lancashire E.P. Co. ...	2 × 51,600	8 × 173,000
	Ribble ...	Preston Corpn. ...	2 × 31,500	4 × 190,000
	Stuart Street ...	Manchester Corpn. ...	1 × 61,500	2 × 400,000
	Trafford ...	Stretford and District Electricity Board	1 × 30,000	2 × 180,000
	Warrington ...	Warrington Corpn. ...	1 × 20,000	1 × 200,000
Mid-East England ...	Blackburn Meadows	Sheffield Corpn. ...	—	2 × 190,000
	Ferrybridge	Yorkshire E.P. Co. ...	1 × 45,000	4 × 150,000
	Huddersfield	Huddersfield Corpn. ...	1 × 20,000	2 × 120,000
	Hull	Kingston-upon-Hull Corpn. ...	1 × 30,000	2 × 190,000
	Kirkstall ...	Leeds Corpn. ...	2 × 30,000	3 × 250,000
	Lincoln ...	Lincoln Corpn. ...	2 × 20,000	4 × 120,000
	Neepsend ...	Sheffield Corpn. ...	1 × 50,000	3 × 190,000
	Prince of Wales	Rotherham Corpn. ...	—	1 × 200,000
	Valley Road	Bradford Corpn. ...	1 × 22,500	2 × 180,000
	Freeman's Meadow	Leicester Corpn. ...	1 × 31,500	2 × 175,000
	Hams Hall	Birmingham Corpn. ...	1 × 53,500	2 × 320,000
	North Wilford	Nottingham Corpn. ...	2 × 30,000	4 × 175,000
Central England ...	Ocker Hill ...	West Midlands J.E.A. ...	2 × 30,000	5 × 150,000
	Stourport ...	Shrops., Worcs. and Staffs. E.P. Co. ...	1 × 60,000	1 × 525,000
	Deptford East	London Power Co. ...	—	2 × 225,000
	Fulham ...	Fulham Borough Council ...	1 × 60,000	3 × 315,000
	Littlebrook	Kent E.P. Co. ...	2 × 60,000	4 × 265,000
South-East England and East England	West Ham	West Ham Corpn. ...	2 × 30,000	4 × 180,000
	Woolwich ...	Woolwich Borough Council ...	{ 1 × 30,000 1 × 750	2 × 165,000
	Hayle ...	Cornwall E.P. Co. ...	1 × 15,000	2 × 100,000
South-West England and South Wales	Newport ...	Newport Corpn. ...	1 × 30,000	2 × 180,000
	Portsmouth	Portsmouth Corpn. ...	1 × 30,000	To suit

TABLE II.—NEW STATIONS FOR WHICH ARRANGEMENTS HAVE BEEN MADE (Programme for 1946 and part of 1947)

Central England ...	Meaford ...	North-West Midland J.E.A. ...	4 × 30,000	6 × 240,000
South-East England and East England	Cliff Quay ...	Ipswich Corpn. ...	2 × 45,000	3 × 365,000
	Kingston ...	London and Home Counties J.E.A. ...	{ 2 × 30,000 1 × 3,000	3 × 260,000

TABLE III.—EXTENSIONS FOR WHICH DIRECTIONS HAVE BEEN GIVEN SUBJECT TO FURTHER GOVERNMENT RELEASE (Part of Programme for 1947 and 1948)

Scheme Area	Name of Station	Owners	Generating Plant No. and Capacity kW.	Boilers Nn. and Capacity lb./hr.
North-West England and North Wales	Agecroft ...	Salford Corpn. ...	2 × 50,000	To suit
Mid-East England ...	Prince of Wales	Rotherham Corpn. ...	1 × 30,000	To suit
	Thornhill ...	Yorkshire E.P. Co. ...	1 × 45,000	4 × 180,000
Central England ...	Valley Road	Bradford Corpn. ...	1 × 22,500	To suit
	Hams Hall	Birmingham Corpn. ...	2 × 53,500	To suit
	North Wilford	Nottingham Corpn. ...	1 × 50,000	To suit
South-East England and East England	Walsall ...	North-West Midlands J.E.A. ...	2 × 30,000	To suit
	Battersea ...	London Power Co. ...	1 × 100,000	To suit
South-West England and South Wales	Cliff Quay ...	Ipswich Corpn. ...	2 × 45,000	To suit
	Newton Abbot	Torquay Corpn. ...	1 × 15,000	2 × 100,000
	Portishead	Bristol Corpn. ...	1 × 52,000	To suit

TABLE IV.—NEW STATIONS FOR WHICH ARRANGEMENTS HAVE BEEN MADE SUBJECT TO FURTHER GOVERNMENT RELEASE (Part of Programme for 1947 and 1948)

North-East England	Mid-Durham ...	North-Eastern E.S. Co. ...	2 × 50,000	3 × 375,000
South-East England and East England	Croydon ...	Croydon Corpn. ...	2 × 52,500	4 × 300,000

# AS OTHERS SEE US

## Reactions of Mr. J. H. Van Deventer

*The writer of this article is President and Editorial Director of "The Iron Age" of America. He recently visited this country to study some of the aspects of the war effort of Great Britain. The article is reproduced by the courtesy of Mr. Barrington Hooper, managing director of "Industrial Newspapers, Ltd."—ED.*

IT has been my great privilege during the past six weeks to visit a cross-section of British industry as a guest of your Government. During this time I have had opportunity to examine plants in the steel industry, in light metals, heavy forgings, and castings, as well as some of your aircraft, machine tool and engineering works and shipyards. The purpose of my visit was twofold. First, to see what you had done in connection with your war effort and, second, to appraise your post-war economic problems with the view of promoting co-operative effort with American industry for our mutual benefit.

Permit me first to say a few words about what you have done before discussing the future. It is difficult for an objective writer who has been trained to avoid superlatives adequately to express the accomplishment of British management and labour under circumstances that defy imagination. Suffice it to say that the attainment of your production goals in the face of five years of such handicaps as blitzing, buzz-bombing, blackout, deprivation of not merely the comforts, but also the very necessities of life, is a record of which you are entitled to be far more than proud.

Now a word as to the future. You have been, and must continue to be, primarily an exporting nation. I find among your industrialists and business men and in your public Press somewhat of a spirit of defeatism as to your possibilities of post-war export trade. I also find that this feeling is based upon the thought that the United States, with its enlarged plant capacity, will be a serious competitor for world trade.

Gentlemen, a feeling of defeatism is perfectly natural after the punishment that you have taken. But you are doubly wrong. Any nation which has shown the ingenuity such as yours has in producing the greatest engineering achievement of all time, namely, the "whales" and their kindred, which made D-Day possible and successful, need not fear competition of the mind and spirit, the only competition worth fearing.

In spite of what you may read in sensational newspapers, America does not want to run you out of business, and could not if it did. The responsible people of America

want to see in the post-war world a prosperous Britain, because we realise that our own prosperity will be short-lived if yours is also. And beyond this, we want to see a strong Britain, because we realise that our own national security is inextricably linked with yours.

America, with its large consuming population, has never been primarily interested, as you must by nature be, in export trade. Our average pre-war exports have never exceeded 10 per cent. of our total production. And even should some of our more individualistic producers wish to adopt the ruinous policy of exporting their unemployment by dumping goods abroad, it will be most improbable that they will be permitted to do so. For in the extremely unbalanced condition of exchange that will persist until the world is again upon its feet, it is inevitable that exports and imports will be regulated by Governments, and not by individuals, for some years to come.

As for the much-talked-about superior efficiency of American production, I find that it applies to those mass-production products where demand is such as to permit of integrated mechanisation. This is possible for a limited number of products where demand is of the order of 130 million people, but not possible where the population is but 40 million. Thus, with a market of 5 million automobiles per year, we can manufacture more cheaply than you with a market for 500,000.

On the contrary, on small lots, as witness machine tools, your costs are but 50 per cent. of ours, type for type. Part of this is due to a somewhat lower wage scale than in the States, but the principal reason lies in your general use of incentive pay. You pay for work put out; we pay for time put in. Comparatively few concerns in the States apply the incentive system because of the opposition of labour.

After spending considerable time in your country, and most pleasantly, too, I am convinced that you can overcome the handicap of a comparatively small domestic demand by proper Empire economic planning. That will mean the subordination of politics to statesmanship, but you are quite capable of that, as history shows. It may mean some quite drastic reorganisation of certain industries and further consolidations to secure larger volume per unit. It will mean concentrating on what you can do better than others and finding and filling your real supremacy areas. That you may do this, and with utmost success, is my sincere hope and the wish of all right-thinking Americans.

# WHITHER ARE WE DRIFTING ?

By Fredk. W. Purse, M.I.E.E., M.I.Mech.E.

**T**HE time appears opportune to review how we stand in the electricity supply industry after five kaleidoscopic years of the biggest and most terrific war in history.

Doubtless coming events cast their shadows before them, and the upward curve of progress showed a flattening tendency immediately prior to the outbreak of war. The demands for war output have naturally made a temporary steepening of the curve, but what it will drop to in the post-war period remains to be seen.

The talk of reorganisation, following the McGowan Report, seemed to flow and ebb like the tide, only to provoke those whose position seemed to be in danger to take measures of defence, and indeed of offence, to prove their individual ability to withstand any storm.

The outbreak of war appeared to herald the pouring of oil on the troubled waters of reorganisation, which in fact was the case, only it happened to be inflammable oil in the form of a request by the Minister of Fuel and Power, in June, 1942, to the Electricity Commissioners to get the views of the electricity supply industry on post-war reconstruction, and other allied questions so far as the future of that industry is concerned. The resulting spontaneous combustion has been beyond the power of any water, troubled or otherwise, to quench.

**Reorganisation Schemes.**—What has been the response to the Minister's request? Briefly, as far as my information goes, the following:—

(1) A memorandum by the Incorporated Association of Electric Power Companies submitting that there is no need for immediate legislation affecting electricity distribution, except that at or before the termination of the war legislation should be passed to suspend the exercise of the rights of purchase by local authorities; that future legislation should proceed generally on the lines recommended by the McGowan Committee; that forms of tariffs, voltages and systems should be standardised; with a number of administrative matters.

(2) A joint memorandum of the I.M.E.A. and various Company Associations, recommending a policy of organised co-operation through the ægis of area committees; suspension of purchase rights; an obligatory national form of tariff; compulsory standardisation of systems and voltages at the expense of the individual undertaking concerned; together with other matters of lesser importance.

(3) A separate memorandum by the I.M.E.A., recommending the transfer of all

generating stations to the Central Electricity Board; a national standard bulk supply tariff; where local authority purchase rights mature the undertaking should be transferred to public ownership as soon as practicable.

(4) A report by the Electrical Power Engineers' Association, recommending the setting up of a National Electricity Supply Board with powers to acquire all statutory electricity undertakings in the country and be responsible for all generation, transmission and distribution; standardisation of systems and voltages; uniformity of charges throughout the country; the establishment of a national proving house and the absorption of the Electrical Development Association.

(5) A report by the Association of Municipal Corporations, recommending that generation and distribution should be dealt with in general accord with the findings of the McGowan Committee and should be organised on an area basis; that standard systems of voltage, uniform methods of charge and service should be obligatory; and that the Government be urged to initiate legislation for the compulsory re-organisation of generation and distribution under public authority control.

(6) A report by the London and Home Counties Joint Electricity Authority, recommending as the most effective solution of the problems in their district the setting up of a new Board in place of the present Authority, to whom should be transferred all the undertakings within the district at the earliest possible date, if practicable before the termination of the war.

(7) A report issued under the auspices of the Fabian Society by Mr. A. M. F. Palmer, recommending that existing undertakings should be grouped on an area basis; all selected stations to be owned and operated by the Central Electricity Board; a National Planning Authority to be created to plan the industry; all undertakings to become public property within a stated period of years.

**Recommendations Cancel Out.**—Allied to, but not directly associated with, the foregoing reports is the report of the Post-War Planning Committee of the I.E.E. on Electricity Supply, Distribution and Installation, which recommends standardisation of low voltage and distribution systems as a national industrial plan; financial aid for rural electrification; free services; and uniformity of forms of tariff.

I think the advice tendered to the Minister by all those claiming to be interested parties could be best summed up in the equation  $0 + 0 = 0$ .

Each and all, however, have left themselves defenceless by their recognition that alteration, improvement or reorganisation, call it what you will, of our industry is desirable. This will be an ace trump for any Government scheme; a general admission that something should be done without a general solution by the industry of how to do it will leave the Government with no alternative but to enforce its own solution.

**Internal Dissension.**—In the face of this general disorder within our ranks, is it to be wondered that we have been prone to attack from outside? Despite our limitations, the demand for our commodity has caused serious concern in the camps of our competitors in the coal and gas armies. Our advance must be stopped, and so the battle flag of "Freedom of Choice" has been raised.

Again a flood of reports is produced, and another bewildered Minister is floundering between coal stoves, gas fires, electric light, built-in cupboards, insulated walls, and so on, all expected for ten shillings a week rent in the new houses when built.

We are so torn with internal dissension that we cannot speak with a bold united front and say this is the electric age, there must be the electric home, and a general expansion in many other ways. We are to be left with the crumbs of lighting (yes, even this is installed in the Northolt demonstration house labelled "all gas"), radio and possibly a vacuum cleaner.

Where will be the outlet for the millions of units to be produced by the N.O.S. Hydro-Electric Board and the Severn Barrage? Why not tell the Welsh M.P.'s that they are lunatics in advocating a "Tennessee Valley" scheme of electrification in their great coal-producing country?

The very progressive Electrical Association for Women issued, as long ago as March, 1943, their point of view on post-war reconstruction, and a very thorough and forthright report indeed; then, covering more or less the same ground as the E.A.W. report, but lagging well behind it, the Electrical Development Association have just issued a booklet with a number of pretty looking drawings dealing with electric kitchen plans, with the astonishing statement that preference should be given to an open grate in the living-room.

And so after sixty years of existence we are still dreaming of the future which will fully justify our industry being described as "still in its infancy" on the next occasion when we are "toasted" at a public function.

**Points of Criticism.**—Now as a knock-out blow to all we have hoped and worked for, we are told, on no less an authority than the Chairman of the Transmission Section of the I.E.E., that (1) he "would deprecate any move that would seriously accelerate the rate of growth of electricity supply"—well, his confrères at the Ministries of Works and Health

are effectively keeping goal for him in this direction; (2) he estimates a "future consumption of 1,550 to 1,800 units per consumer"; there is no hope for really low price electricity on this basis, and the E.A.W. are fully seized of this point in their report when they quote the late Sir William Bragg as stating that whereas standards of civilisation were once determined by the amount of soap used per head, the modern criterion is the amount of electricity consumed per person; (3) "The advertisement value of small power loads is much more important than the revenue they produce." What a statement in 1944 after the millions we have spent on E.D.A. and other general publicity! (4) He says "the supply industry can take rehousing after the war in its stride." It will have to be some stride if we have to live on the pittance that will be left to us in the shape of lighting with an odd vacuum cleaner or washing machine included for its advertisement value; (5) To rub it in he further adds, "it is not reasonable or expedient to treat each extension as a financial unit that must pay its full quota." I imagine this explains how we are to take rehousing in our stride; (6) The something for nothing idea running through his address is clear when he states "there are certain commercial risks that an undertaking should be prepared to take" and "minimum guarantees in excess of what the farmer can usefully employ are a source of annoyance." Obviously, it is no guarantee at all if it only amounts to what he can usefully employ, but who is to make up all the deficiencies and take all the risks? Only the existing consumers, and consequently their charges have to be kept inflated for this purpose, and their hope of low-priced electricity indefinitely delayed because it is, as rightly stated by Sir William Bragg, the consumption per person (or consumer), not not the number of consumers, is the acid test.

**Compulsion or Co-operation.**—So I repeat the title of this article, "Whither are we drifting?" There has been too much small talk on big issues and too much big talk on small issues, resulting in splendid isolationism on the big issues and miserable compromises on the small issues. I can see no unity of purpose or clear-cut drive in our industry.

I have pleaded in and out of season that apart from fundamentals or high policy many things could be done by voluntary co-operation and, even now, whatever small amount of agreement there may be as to what should be done rests upon its being done by compulsion; compulsion means Government action and we have had many examples in the past as to what that entails.

Electricity has progressed by reason of its own value and not by our drifting policy. What could have been and what would be its achievement if we agreed to co-operate instead of agreeing to differ?

# REBUILDING OUR EXPORT TRADE

## *Government and Industry in Partnership*

By Captain R. C. Petter,\* M.I.Mech.E., M.I.Mar.E.

THE success of the Allied armies in the field makes it reasonable to anticipate an early return to peace-time conditions with all its problems. One of the chief of these problems will be the restoration of our export trade. Unfortunately, it will not be sufficient to regain our pre-war figures, but we shall have to reach a far higher level. Our whole future existence depends on our ability to re-establish our export trade and on our measure of success will depend the standard of living which we will be able to afford in this country in the future.

**Department of Overseas Trade.**—This question, being a National one, is the responsibility of both the Government and Industry. How this responsibility should be shared is a matter of individual opinion. In the writer's view it is for Industry to plan and carry out the campaign and for the Government to prepare the ground and give all the assistance which is possible. In other words, the Government should lend its help wherever possible, without attempting to control Industry. Where such help calls for financial assistance, the Government must of course have the right to protect the interests of the taxpayers.

What is then the nature of the help which is required from the Government? In the first place, a real commercial outlook is required from the Departments interested in the trade of the country. The Department of Overseas Trade is the country's Sales Department, but I am afraid, in the opinion of the vast majority of manufacturers and traders, it falls far below the standard required.

Individual firms or industries can do little to meet the problem and it is the Government's responsibility to see that Industry has a fair field and that the countries who sell us the vast majority of our imports should, in return, as far as possible, balance the account by taking our exports. This can only be done if we have salesmen in charge of affairs, and the Head of the Department of Overseas Trade must not be a politician but a man who has proved himself in commerce. The position will have to be made attractive to draw the right type of man, but it will be money well spent. The appointment will also have to be a permanent one to ensure continuity of sales policy, although of course the Department would have to conform to the political policy of the Government in power.

**Exports Credit Department.**—The Exports Credit Guarantee Department will be

urgently required after the war, but, again, it must be remodelled on business lines. The vital importance of this Department is that it shall make its decisions with the minimum delay of time. There comes a moment in a sales negotiation when an order can be taken or refused, and too often in the past this moment has arrived before the firm in question had the information required, as to whether the Government was prepared to give its backing.

Our export trade has to be maintained against the fiercest possible competition. Competition is good and no one should fear it, provided it is fair. Before the war, however, we had to fight competition which was subsidised by the foreign Government concerned. We do not want subsidies, but equally we cannot afford extraneous profits to be made out of our export trade. It is conceivable that some profits will accrue to the Exports Credit Department in times of prosperity, but, equally, during times of depression, these reserves must be made available to be spent generously to ensure the maximum amount of business coming to this country.

A sales organisation must have its propaganda and market research department, and manufacturers expect these services from the Government. People in high places have, in the past, been too careless in their speeches and much too fond of criticising and ridiculing industry and its sales efforts. Such speeches do irreparable harm overseas.

Many of these criticisms do not bear investigation. Some years ago, one of our Ambassadors to a South American Republic was particularly caustic in his remarks regarding our sales efforts, and said that we did not study markets or deliver products suitable for such markets, comparing us especially unfavourably with American manufacturers. Yet every American taxicab in the city where he lived had the driving seat on the wrong side for the rule of the road operating in that country.

**Government Representatives Overseas.**—Finally, industry requires much more direct sales help from our Government representatives overseas. Our Trade Commissioners, Commercial Secretaries and Trade Representatives must be first-class men recruited from industry with experience in selling. Here again, they will have to be paid much higher salaries than have ever been thought

\* Director, The Brush Electrical Engineering Co., Ltd. Loughborough.

necessary in the past, but when a manufacturer goes abroad to secure business, he must be sure he will find waiting for him a man of experience and local knowledge, whose duty is to bring the negotiations to a successful conclusion for the benefit of the Nation. Even our Ambassadors must understand that the Diplomatic Corps is not above commerce and must use their whole weight in the drive for export trade.

There is abundant proof of the necessity for the closest co-operation between the Government and Industry in the future. Industry is confident that it has the brains and craftsmen to produce the finest goods. All it asks is for open markets in which to sell these goods. What is wanted is not "Most Favoured Nation" agreements, but Reciprocal Trade Agreements. This is the Government's share of the responsibility.

## THE FUTURE ELECTRICITY METER

A TIMELY subject and one giving much scope for discussion was brought before the I.E.E. Measurement Section last week by **Mr. G. M. Moore**, of Sunderland Corporation, in a paper with the title "Planning the Future Electricity Meter." A surprising variety of bodies is concerned with the meter industry, and these may be involved in post-war changes; thus manufacturers may be forced to consolidate. For this and other reasons the Author avoided particularised statements.

Altogether the meter engineer has had a choice of over twenty makes of meter. Also, because of the 600 dispersed undertakings, work is carried on in meter departments under far from uniform conditions. The meter world is therefore too loosely, even inefficiently, composed. There is every reason for both sides to be improved jointly and for undue individualism to be discouraged. The Electricity Supply (Meters) Act of 1936, like the earlier Acts, insisted on the electricity meter being an instrument of integrity. This Act led to improvements in test rooms, but one could not be confident as to the meter itself. More makes, and therefore more peculiarities, appeared; too large a proportion of new meters were delivered in a faulty state or soon showed failings. The fact that construction and pattern were approved by the Electricity Commissioners has given no assurance of stability in design, material, treatment or adjustment. At this period also there were a number of important developments, principally the all-insulated meter, new permanent magnet steels and a better understanding of pivot materials.

The prospect of a national-practice meter is attractive, but when would it appear? Post-war conditions will be supremely difficult and the supply industry must remain largely bound by established things, and millions of meters must perforce remain in use for some years. That is no reason why such a meter should not be projected, but a policy of graduation for both maker and user is unavoidable.

**The National Meter.**—Sustained accuracy and complete stability form a twin condition

for a meter. Instability has been caused because treatments and materials had never been proved over a period of years. In the Author's experience rotor bearings were generally disappointing. There was insufficient belief in the oriented cut stone; with the pivots there was even less assurance than with the jewels. There must be positive assurance that every new brake-magnet will be stable. The virtue of a long range is undoubted, but the meter should not be marked with a mid-load current. The Author advocates a speed of 46 r.p.m. at full load for such a meter. As regards size, a case 12 cm. cube was favoured, together with a strong transparent cover. The electricity meter cannot be regarded as having ceased development, but vital changes are infrequent and eventually one distinctive form of good quality meter must be produced.

B.S. No. 37, 1937, was out of date at its appearance, but might well form the basis of a modernised and broadened edition. The Author suggested alterations to certain clauses of the specification, together with additions dealing with quadrature and low load compensation circuits, rotor bearings, braking and other matters.

The standard of the National meter should be drawn up by a National Electricity Meter Committee and should be kept immune from passing manufacturing fashions. A 10-yearly revision should suffice. This meter would not be made by the State or by one private concern. The Author envisages a few experienced British competitors and he looks to voluntary Rationalisation in the meter manufacturing industry. Production of the National meter will be approached gradually and should be possible two or three years after publication of the specification. Replacement of existing meters with that National meter will take many years.

### DISCUSSION

**Mr. E. Fawssett** said his only serious criticism of the paper was that the Author set out his ideas without, in many cases, giving any good reasons for them. Never-

theless, in the main, they were good ideas. B.S. No. 37 came in for severe criticism, and that was not surprising, but it was not entirely the fault of the Committee. It was rather that at that time no specification could go beyond the performance of the weaker manufacturers in the industry. He hoped to see this drastically altered in the future. A little progress has been made already. As was generally known, a Joint Committee of all the makers and most of the users had been sitting for some time to discuss the possibility of rationalising future design. They had so far tentatively agreed the dimensions for fixing holes and terminal centres and their relation to each other, and also the maximum size of the meter, namely, height  $8\frac{1}{4}$  in., width  $6\frac{1}{4}$  in. and projection  $5\frac{3}{4}$  in. He was pleased the Author had put forward the m.c.r. basis of rating, as that was the unanimous view of the Joint Committee. There seemed to be a considerable body of opinion in favour of a wider accuracy range than the Author's suggested 40:1. Certain makers in this country were prepared to offer 60:1 and this corresponded with the range over which the small house meter had to work, viz.,  $2\frac{1}{2}$  kW down to 40 W. It was thought that 80 A was about the maximum desirable for a straight-connected meter. With these two sizes, one other intermediate size was all that was needed. Before long he hoped it would be possible to call the B.S. Committee together to draft an entirely new specification for the "National Electricity Meter," with certain vital dimensions standardised, as well as improved performance. Mr. Fawssett said that if the Author's suggestion that magnets were to stay two years "in bond" and then be submitted to an equally lengthy "approval" test was adopted, it would be four years before a new design could be purchased. The storage room for, say, 4 million magnets was a serious matter for the manufacturer.

**Mr. A. Felton (N.P.L.)** agreed that we have far too many types of meter and suggested that some system of manufacture such as the Post Office used for telephone apparatus might be adopted. Under that system, apparatus was made by several manufacturers and that made by one firm was indistinguishable from that made by another. He had been told that this did not stultify progress in design, nor did it unduly limit competition. The Author was a little optimistic in thinking that improved approval tests on meters would be the panacea for instability. Type approval had never professed to do more than ensure that meters were capable of being adjusted to give the performance within specified limits, and it could not do more than that.

**Mr. S. H. Richards (Electricity Commission)** thought that sufficient credit had not been

given to the Board of Trade meter testing department. Certification at no time could guarantee stability. If the ideas of the Author in this respect were put into practice it would mean such a staff at such a cost that most undertakings would weep with despair. He said the work now being done was that which must naturally be carried out when people forgot their responsibilities. There was no need for a Meters Act nor for a staff of examiners until meter makers and supply undertakings forgot that there was such a thing as accuracy of consumer supply. Many people failed to appreciate the financial importance of improved accuracy. Whether there would be any change in accuracy because of certification, he did not know, but during the past seven years there had been an increase in accuracy in meters generally of at least 50%, but there was still lacking in many places an appreciation of the value of accuracy to the supply industry.

**Mr. C. W. Hughes (London and Home Counties J.E.A.)** expressed the view that only two parties should consider meter design, the makers and the supply undertakings, and not the large number suggested by the Author for his suggested National Electricity Meter Committee. He suggested that meters should be rated on the basis of the kW they would carry continuously at 230 V.

**Mr. L. J. Matthews (Electrical Apparatus Co., Ltd.)** said the value of the paper would have been increased considerably if there had been given technical arguments and statistics based on performance of meters in service. Manufacturers looked to standardisation to reduce cost, but if the Author's proposals were adopted they would result in an increased cost. Special requirements had been one of the manufacturers' chief troubles for many years, and in 1939 there were between 50 and 60 non-standard prepayment meters being demanded by undertakings.

**Mr. J. E. Foster (South Wales E.P. Co.)** said he had a strong detestation of what he called the wrist-watch type of meter. The glass cover was very nice and for certain meters he liked it, if the glass was clear enough, but it might involve thicker edges to the case. The preference for a single disc polyphase meter might or might not be technically sound, but surely the adjustments could not avoid being crowded. The use of wax seals instead of lead and string had much to commend it.

**Mr. E. W. Hill (Aron Elec. Meter Co.)** welcomed the Author's revolutionary proposals because at all times revolutionary proposals prevented us from getting into a state of stagnation. Nevertheless, he would not like to see one type of meter made by all manufacturers. That would be a fatal mistake. The storage of magnets for two

years would be a serious matter. He gave a word of warning to anybody who expected that it was possible to take all meters and adopt the best feature or features of each and incorporate them into one standard meter. This just would not work.

**Mr. L. B. S. Golds (Edmundson's Elec. Corp.)** emphasised that consumer goodwill and revenue depended entirely upon an efficient meter and an efficient meters department. The Author was rather hard on the manufacturers because it was really up to the user to say what standard of performance he required.

**Mr. J. Prince (Ferranti, Ltd.)**, remarking that the paper expressed the hopes and disappointments of a meter engineer, said we were still in the midst of the most intensive research period of all time and that would have a profound effect on electrical measuring devices of the future.

**Mr. F. H. Batt (Measurement, Ltd.)** said that in general it would be found that the stability of the present day type of meters was proportional to their works cost, labour and material, and that was often seriously influenced by special ideas formulated by supply engineers.

**Mr. G. S. Clarke (Wessex Elec. Co.)** said that one of the troubles of the meter en-

gineer was that maintenance of meters was regarded more as a running cost and therefore the endeavour was made to do it as economically as possible. As a consequence the premises used for the meter testing department were not what they should be and very often the staff had to work under very indifferent conditions.

**Mr. J. Pike (Electricity Commission)** said the ideal would be to get the users, the makers and the supply authorities together to deal with this problem of meters, but there seemed some difficulty. He suggested that in deciding which type of meter should or should not be used in the future, the makers and the manufacturers should send their representatives, and the consumer should be represented by the Electricity Commission. The important thing now was not so much technical performance, which already was high, but stability. On the question of "approval," he said a difficult point was that meters which had been approved 30 or 40 years ago were still in use. Therefore he suggested that approval should be for 10 years only. If there was not satisfactory evidence of good performance, the original approval should be revoked. On the other hand, it could be renewed if the meter's history warranted this.

## PLANNING OF ENGINEERING SERVICES

**T**HE present state of affairs with regard to underground utilities is far from satisfactory, and attention was drawn to the possibility of proper planning of engineering services in a lecture by **Mr. J. Paton Watson** before the Institution of Civil Engineers last week. It was now obvious, he said, that the utilities' engineers had to co-operate with the town planner and become one of the town planning team. The engineers of the utilities should also assist each other in obtaining the best records possible in simplifying each other's problems. There should be a centralisation of all records in one office from which copies could be supplied to each undertaking, with standardisation of plans, codes, notices, etc. Under the guidance of the surveyor it might be possible to improve on reinstatement methods and to watch costing more closely.

In the new Town and Country Planning Act there would appear to be better prospects of planning schemes to which the exclusion of their application to the land and buildings of statutory undertakings had hitherto acted as an awkward obstacle. Experience showed that the life of mains was greatly in excess of the life of the road surface along main traffic routes. Therefore, there was no weighty reason why trunk mains should follow such routes provided sufficient branch connections were made for service feeders.

The highways seemed to be the only workable location for mains in urban areas, preferably under the verges or pavements. The difficulty seemed to be restriction of space. The solution lay in planning of the surface and distribution system and perhaps by providing wider pavements.

For the four utilities, the cost of road reinstatement appeared to average about £40 per thousand of population per annum. To that should be added the cost of repairs, excavation and refill at high rates due to contending traffic. It should be considered whether better results could not be obtained by better location of the utilities or the provision of more space, even at a higher installation cost, if that were thereby offset by reduced annual maintenance charges. The cost of extra land was a small item and the adequate footpath width would improve the amenities. The high cost of land in central areas might prove to be greater than the cost of subways. There was as yet no general acceptance of the basic principle that a subway could be occupied by each utility in company with its fellows. An authoritative investigation of the problems involved and a final expression of opinion by some representative committee would be of great value and settle the conditions and occupants for which subways should be designed.

# BUSINESS ANNOUNCEMENTS

Official Notices ; Tenders Invited ; Situations Vacant and Wanted ; Etc.\*

## TENDERS INVITED

### City of Manchester

#### ELECTRICITY DEPARTMENT

Tenders are invited for the supply, delivery and erection of:—

2 5½ tons and 1 100 tons **ELECTRICALLY DRIVEN TRAVELLING CRANES**, with trolley wires and switchgear.

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

Tenders to be delivered by 10 o'clock a.m. on Friday, 8th December, 1944.

PHILLIP B. DINGLE,

Town Hall, Manchester. Town Clerk.  
17th November, 1944.

## APPOINTMENTS VACANT

### City of Bradford

#### ELECTRICITY DEPARTMENT

#### APPOINTMENT OF POWER STATION SUPERINTENDENT AND ASSISTANT POWER STATION SUPERINTENDENT

Applications are invited for the positions of Power Station Superintendent and Assistant Power Station Superintendent at the Valley Power Station, Bradford, from persons, preferably not more than 45 years of age, qualified to carry out the duties of the respective posts, and having had a sound technical and practical training in all branches of engineering associated with large Electric Power Stations.

Applicants must be Corporate Members of The Institution of Mechanical Engineers and/or The Institution of Electrical Engineers.

The salaries for the positions will be those attached to the following Class and Grades of the National Joint Board Schedule of Salaries for Technical Engineers:—

Power Station Superintendent—Class H, Grade 3 (at present £654 rising to £694 per annum).

Assistant Power Station Superintendent—Class H, Grade 5 (at present £554 rising to £574 per annum).

The selected candidates will be required to pass a medical examination and to contribute to a Superannuation Scheme under the provisions of the Local Government Superannuation Act, 1937.

Applications, to be made on forms which can be obtained from the undersigned, are to be forwarded to him, accompanied by copies of not more than three recent testimonials, and endorsed "Power Station Superintendent" or "Assistant Power Station Superintendent" as the case may be, in time to reach him not later than Tuesday, 12th December, 1944.

Canvassing, either directly or indirectly, will disqualify.

T.H. CARR,

Electrical Engineer and Manager.  
27 Bolton Road,  
Bradford.  
23rd November, 1944.

## Borough of Brentford and Chiswick

#### ELECTRICITY DEPARTMENT

#### APPOINTMENT OF DEPUTY BOROUGH ELECTRICAL ENGINEER

Applications are invited from suitably qualified and experienced candidates for the post of DEPUTY BOROUGH ELECTRICAL ENGINEER at a salary in accordance with Grade 1 Class D of the N.J.B. Schedule of Salaries, which at the present time is £674, rising to £703 per annum.

Candidates not exceeding 45 years of age should possess an Engineering Degree or its equivalent and must be Corporate Members of the Institution of Electrical Engineers. Extensive experience with a modern and progressive undertaking with sales development and commercial experience is also essential.

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

Applications, stating age, details of training and experience, present position regarding liability for service with H.M. Forces, and accompanied by copies of not more than three recent testimonials must be delivered not later than Monday, the 11th December, 1944, to A. E. Jeans, Esq., M.I.E.E., Borough Electrical Engineer, Electricity Showrooms

**APPOINTMENTS VACANT—Continued**

and Offices, 197/199 Chiswick High Road, London, W.4.

Canvassing directly or indirectly will be deemed a disqualification.

JOHN SKINNER,  
Town Clerk.  
Town Hall,  
Chiswick, W.4.  
15th November, 1944.

**City and Royal Burgh of Edinburgh****ELECTRICITY DEPARTMENT****TECHNICAL ASSISTANT**

Applications are invited for the above position from persons available now or immediately after the war in the West.

Preferred qualifications: Honours degree or the equivalent in electrical or mechanical engineering; apprenticeship with one of the larger electrical manufacturing companies, one of the main-line railway companies, or one of the large-scale chemical or petroleum industries. The applicant's subsequent experience should have been concerned with the development of electric power generation and distribution in these industries or in the electric power supply industry.

Salary according to National Joint Board Schedule, Class J, Grade 4 (£642-£657-£673 p.a.).

Applicants should mention names of professional engineer referees under whom they have worked. Testimonials may also be submitted if available.

J. F. FIELD,  
Engineer and Manager.  
1 Dewar Place, Edinburgh, 3.  
November 17, 1944.

**County Borough of Eastbourne****ELECTRICITY DEPARTMENT****CHIEF DRAUGHTSMAN AND  
CONSTRUCTIONAL ASSISTANT**

Applicants must have had training and practical experience in the design, preparation of estimates and specifications, and the supervision of the erection of substations and other buildings associated with an electricity undertaking and be capable of supervising building repairs, etc. The candidate would also be required to take charge of the Mains Drawing Office, and must be fully conversant with modern methods of preparing and keeping Mains records. The salary will be in accordance with Class "F," Grade 8A, of the N.J.B. Schedule (at present £361 p.a.). The appointment is subject to the provisions of the

Local Government Superannuation Act, 1937, and the selected candidate will be required to pass a medical examination. Applicants should write quoting D.976XA to the MINISTRY OF LABOUR AND NATIONAL SERVICE, Room 432, Alexandra House, Kingsway, London, W.C.2, for the necessary forms, which should be returned completed on or before 5th December, 1944.

**Borough of Dover****ELECTRICITY UNDERTAKING****APPOINTMENT OF SECRETARY**

Applications are invited for the above permanent appointment from persons not over 45 years of age, at a basic salary of £450 per annum rising by annual increments of £25 to £500 per annum.

Applicants must be members of either the Chartered Institute of Secretaries or of one of the professional Institutes of Accountants, and be experienced in the keeping and preparation of the financial accounts of an Electricity Undertaking.

The person appointed will have charge of, and be responsible to, the Electricity Committee for the whole of the financial side of the Undertaking up to the final accounts, the control of the clerical and meter reading staff and such other analogous duties as the Committee may require.

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

Applications, stating age, experience, qualifications and position under National Service Acts, accompanied by copies of not more than three recent testimonials, must be delivered to the undersigned not later than the 2nd December next.

Canvassing of any description will disqualify.

S. R. H. LOXTON,  
Town Clerk.  
Town Clerk's Office,  
Brook House,  
Dover.  
10th November, 1944.

**SALES AND WIRING SUPERINTENDENT** required by an Electricity Supply Undertaking in the Midlands. Applicants must have had practical experience in industrial power and domestic installations. Applications should state, age, particulars of training and experience, salary required, and be accompanied by three recent testimonials] addressed to Box No. 8379  
**THE ELECTRICAL TIMES.**

## North West Midlands Joint Electricity Authority

### SHIFT CHARGE ENGINEER

Applications are invited for the position of Shift Charge Engineer, as a war-time appointment, at the Stafford Generating Station.

Candidates must have had a good practical and technical training in mechanical and electrical engineering, and experience in the operation of boiler and turbo-alternator plants.

The salary and conditions of service will be in accordance with the N.J.B. Schedule, Class E, Grade 8, at present rising from £361-£378 per annum.

Applications stating age and giving full particulars of experience and training, accompanied by not more than three testimonials, are to be endorsed "Shift Charge Engineer," and sent to the undersigned.

F. FAVELL, Esq., M.I.E.E., M.I.Mech.E.,  
Chief Engineer and Manager,  
North West Midlands Joint  
Electricity Authority,  
York Chambers,  
Kingsway, Stoke-on-Trent.  
8th November, 1944.

JUNIOR wanted in Kingsway office (age 14 to 16); good pay and prospects.—Apply, in own writing, stating age, to Box No. 8365, THE ELECTRICAL TIMES.

Vacancy occurs for a SHIFT CHARGE ENGINEER in Industrial Power Station. Salary according to E.P.E.A. Schedule, Class E, Grade 8.—Write Box No. 8395, THE ELECTRICAL TIMES.

AGRICULTURAL EQUIPMENT: The Advertisers wish to contact an experienced SALES REPRESENTATIVE for the Post-War development of Electrical Equipment for Agricultural Applications. Please send particulars of qualifications to Box No. 8397, THE ELECTRICAL TIMES.

SALES REPRESENTATIVE required to work in the Home Counties. The objective will be the preparation of an area in readiness for the establishment of a new branch; this appointment affords an opportunity for initiative. Please apply by letter addressed to: THE MANAGING DIRECTOR, ALLIANCE WHOLESALE, LTD., 62/3 Gt. Russell Street, London, W.C.1.

STOREKEEPER required to take charge of Sheffield Depot. Permanency and good prospects for right man. State age and experience to WALSALL CONDUITS, LTD., 22 Castle Gate, Nottingham.

SHIFT ENGINEERS wanted for Power Station. Permanent position. Salary in accordance with Grade 8, Class F of N.J.B. Schedule. Reply, giving age and technical training and experience to WEST GLOUCESTERSHIRE POWER COMPANY, LTD., 126 London Road, Gloucester, endorsing envelope "Shift Engineer."

ELECTRICAL ENGINEER required as WORKS MANAGER, approx. 200 hands, must have had a thorough and practical training and have knowledge of Mains Transformers and Chokes up to 25 KVA, instrument and small electro-mechanical manufactures. Must be capable organiser and disciplinarian. State experience, connection, age and salary required in confidence. Permanent and progressive position to right man. Employment subject to Ministry of Labour restrictions.—Box No. 8405, THE ELECTRICAL TIMES.

### APPOINTMENT WANTED

YOUNG MAN with 14 years' cable jointing, and huge network experience, including super-tension, seeks position as Mains Foreman or Assistant. Four years as Deputy Mains Foreman on large undertaking.—Box No. 8403, THE ELECTRICAL TIMES.

### WORK WANTED

ARMATURE WINDING AND REWINDING. We are specialists in small motor winding and repairs, particularly electric tools. Prompt attention and guaranteed work.—SOUTHERN IGNITION Co., LTD., 190 Thornton Road, Croydon. Phone: THORNTON HEATH 4276 (3 lines).

ARMATURE, ROTOR & STATOR WINDING. We specialise in the repair and rewind all types of electrical machines from fractional H.P. upwards. Special departments for vacuum cleaners, driers, portable tools, etc. All work fully guaranteed.—WALTER CRANE, Greencoat Electrical Works, Westgate, Wakefield. Telephone 2172.

VACUUM CLEANER armatures and field coils rewound. Quick service. ANDERSON'S, Circus Yard, St. Ebbe's, Oxford.

STURDY REWINDS. Transformers and Coils, all sizes to 5 K.V.A. Special department for Radio Transformers.—STURDY ELECTRIC Co., LTD., Dipton, Newcastle-upon-Tyne.

ARMATURE, ROTOR and STATOR REWINDS and REPAIRS; fractional to 60 h.p. Prompt deliveries.—T. A. BOXALL & Co., Horley, Surrey. 'Phone: 654.

PLASTIC MOULDING. Capacity available.—BENDIX & HERBERT, LTD., 270, Neville Road, London, E.7.

**WORK WANTED—Continued****MEASURING INSTRUMENT REPAIRS.**

All makes of meters and instruments skilfully repaired by experts. Prompt service for essential purposes.—**RUNBAKEN ELECTRICAL REPAIRS**, Meter Dept. (S 52), Manchester, 1.

**VACUUM CLEANERS:** Armatures, Field Coils Rewound, Dryers, Portable Tools, Radio Transformers, etc. Quick deliveries. Work guaranteed.—**E.I.B. Co.**, 112 Alum Rock Road, Birmingham, 8.

**SPECIALISTS** in Light Sheet Metal Work to any limits required. Large output of Water-tight and other boxes and their components. Hand and Power Presses, Arc, Gas and Spot Welding, Sub-Assemblies, Surface Grinding on B. & S. No. 2. Expert Tool-makers. Fully A.I.D. approved. Prompt attention given to all enquiries.—**TETRA ENGINEERING CO., LTD.**, 1/3 Redhill Street, London, N.W.1. Telephone: EUSTon 3707-8.

**WANTED**

**SCRAP COPPER, Lead, Cable, Old Machinery and Plant, and any description of ferrous and non-ferrous metals and residues purchased for cash.**—**W. & H. COOPER, LTD.**, Brady Street, Bethnal Green, E.1. 'Phone: Bishopsgate 7288-9.

**Wanted, ROTARY CONVERTERS, any size.**—**UNIVERSAL**, 221 City Road, London, E.C.1.

**ENAMELLED COPPER WIRE WANTED;** please state quantity, make, gauge and price.—**Box No. 8387, THE ELECTRICAL TIMES.**

**COIL WINDING Machines** wanted for essential work.—**Box No. 8391, THE ELECTRICAL TIMES.**

**LAMINATIONS, SCOTT No. 203, wanted;** state quantity and price.—**Box No. 8389, THE ELECTRICAL TIMES.**

**Wanted, large quantity of 4 in. outside dia. TUBES** from the dismantling of old Babcock Water-Tube Boilers. Best prices paid. Prepared to purchase Babcock & Wilcox Water-Tube Boilers for dismantling.—Apply, giving full details, to: **MIDLAND IRON & HARDWARE Co.**, Cradley Heath.

**SCRAP ACCUMULATOR PLATES** and Sediment wanted, any quantities. Also Storage Batteries purchased and dismantled. 'Phone or write **ELTON LEVY Co., LTD.**, 18 St. Thomas Street, London Bridge. 'Phone: HOP 2825-6.

**AGENCIES**

**SALES ORGANISATION** having connection with wholesalers and multiple stores, would consider agency from first-class manufacturers of heating and cooking apparatus, electric fittings, clocks and appliances.—**Box No. 8401, THE ELECTRICAL TIMES.**

**SALE BY TENDER****City of Bradford****TURBO-ALTERNATOR FOR DISPOSAL**

The Electricity Committee of the Bradford Corporation invite tenders for the purchase and removal of—

**ONE 15,000 kW (M.C.R.) PARSONS TURBO-ALTERNATOR,** exclusive of Condensing Plant.

The alternator is of the 3-phase type, suitable for 6,600 volts between phases, 50 cycles per second.

The set is in running condition, and, by appointment, can be seen in operation at the Valley Power Station.

Form of Tender and further particulars may be had on application to **Mr. T. H. Carr, A.M.Inst.C.E., M.I.Mech.E., M.I.E.E., Electrical Engineer and Manager, 27 Bolton Road, Bradford,** to whom all enquiries respecting the set should be addressed.

Tenders, on the forms provided, must be delivered to the undersigned not later than 10 a.m. on Wednesday, the 13th December, 1944, and no tender will be received unless enclosed in a plain, sealed envelope bearing the words "Tender for purchase, etc., of Turbo-Alternator," but not bearing any mark or name indicating the sender.

The highest or any tender will not necessarily be accepted.

**N. L. FLEMING,**

Town Hall, Bradford.

Town Clerk.

November, 1944.

**FOR SALE**

*Traders buying and selling hereunder must observe the Restriction of Resale Order S.R. & O. 1942, No. 958.*

**TWO 200 kVA TRANSFORMERS** for disposal, 2000/550 volts, 3-phase, 50 periods, Delta-Star, with plus and minus tappings, complete with trifurcating boxes and armour glands.—**Box No. 8399, THE ELECTRICAL TIMES.**

**FOR DISPOSAL—25 D.C. CIRCUIT BREAKERS** mounted on Slate Panels, capacities from 500-2000 amps., all with magnetic blow-outs. Enquiries: **CHIEF ENGINEER, Trafford Power Station, Trafford Park, Manchester, 17.**

For Sale, ROTARY CONVERTER A.C. input, D.C. output, 110 V, 1,000 amps, with switchgear. Transformer—6,000 V., A.C. input also available. Good condition.—BEMROSE & SONS, LTD., Midland Place, Derby.

A.C. MOTORS, 1/50th h.p. to 3 h.p. from stock. Also many D.C.—JOHNSON ENGINEERING, 5, Spencer Street, Leamington Spa, and 86, Great Portland Street, London, W.1. Museum 6373.

FOR SALE.—1,000 KW TURBO-ALTERNATOR SET, made by Metropolitan-Vickers in 1920, 3-phase, 50 period, 400 volts. Steam pressure 200 lb., Jet Condenser. Apply—PATONS & BALDWIN, LTD., Halifax, Yorkshire.

Motorised  $\frac{1}{2}$  in. BENCH DRILLING MACHINE, 13 speeds, £11 11s.—JOHN E. T. STEEL, Clyde Mills, Bingley. 'Phone 1066.

STURDY TRANSFORMERS. 50 watts to 5 K.V.A. Air-cooled or oil immersed. Prompt deliveries. Quotations by return.—STURDY ELECTRIC Co., LTD., Dipton, Newcastle-upon-Tyne.

Heavy-duty ARC - WELDING PLANTS, 200 amps. Price £31 10s. complete. Also Spot Welders, £36 15s.—JOHN E. T. STEEL, Clyde Mills, Bingley. 'Phone 1066.

#### TIMBER SECTIONAL BUILDINGS

Mostly in excellent condition, otherwise thoroughly reconditioned in our works. Over 30 buildings available from 8 ft. to 100 ft. long  $\times$  7 ft. to 20 ft. wide. Also 3 bungalows. No Purchase Licence required. Suitable for Hostels, Offices, Canteens, Workshops or Storage Purposes. Send for full list and prices. Many of these buildings are available for immediate dispatch ex our works or sites in East Anglia.—D. McMASTER & Co., Mount Bures Works, Bures, Suffolk. Tel. : Bures 251.

ELECTRIC Motors, Control Gear, etc., for disposal; all classes of Electrical Repairs, Rewinds, etc.—OLDFIELD ENGINEERING COMPANY, LTD., 96 East Ordsall Lane, Salford, 5. Telephone Blackfriars 6821.

Self Priming ELECTRIC Pumps, 300 g.h.p., £11 11s.—JOHN E. T. STEEL, Clyde Mills, Bingley. 'Phone 1066.

NEW AND SECOND-HAND BATTERY CHARGERS. Several good second-hand battery chargers, various makes, from £3 10s. h.p. terms. Also new models. All makes repaired and converted to metal rectification. — RUNBAKEN ELECTRICAL PRODUCTS, Manchester, 1.

BELT GRINDERS or Sanders 4 in. wide Belt, £5 5s.; 6 in. wide Belt, £10 10s.—JOHN E. T. STEEL, Clyde Mills, Bingley. 'Phone 1066.

A largest Stock SURPLUS FIBRE, T.R.S. and other Cables, etc., Searchlights (sale or hire), Mirrors, Signal Lamps, Carbon Rods, Ebonite, etc.—LONDON ELECTRIC FIRM, Croydon.

#### PATENTS

The Proprietor of British Patent No. 434,849 for "AN IMPROVED ELECTRIC HEATING RESISTANCE," desires to enter into negotiations with a Firm or Firms for the sale of the Patent, or for the grant of licences thereunder.—Further particulars may be obtained from MARKS & CLERK, 57 and 58 Lincoln's Inn Fields, London, W.C.2.

#### MISCELLANEOUS

ENGINEERING TECHNICAL BOOKS (New or Secondhand) wanted in any quantity. Attractive cash offers. Call third floor, 356 Oxford Street, W.1, or "Stoneleigh," St. George's Avenue, Weybridge.

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## COMMERCIAL INTELLIGENCE LONDON GAZETTE

### Companies Acts

The Registrar announces that the following company will be struck off the register at the expiration of three months from November 17 unless cause is shown to the contrary: Ray Electric, Ltd.

### Winding-Up

**Barlborough Electric Supply Co.**—Meeting on December 14, 1944, to receive liquidator's report on voluntary winding-up.—Place: Barlborough Schoolhouse, Derbyshire, at 4.15 p.m.

### Partnerships Dissolved

Between **Charles William Phillips** and **Arthur Alan Newbery**, in business at Broadstone, Dorset, as auto-electrical service station. As from September 14, 1944. Business continued under same title by C. W. Phillips, who will be responsible for all debts.

### Voluntary Liquidation

**Industrial Electroplant, Ltd.**—Meeting at 81 Cannon Street, E.C.4, on December 14, at 11 a.m., to receive report of liquidator.

### Bankruptcy Acts

#### Adjudications

**Brighton and Lewes.**—Etherington, James Henry, lately 6 South Road, Newhaven, electrical, wireless and cycle dealer.—Date for hearing, January 8, 1945, at 11 a.m., at County Hall, Lewes.

#### Applications for Discharge

**Wrexham.**—H. C. Jeffery, T. H. Carter and Daisy Carter (Wrexham Electrical & Cycle Co.), 8 Town Hill, Wrexham, electrical and cycle dealers. Day for hearing, December 20, 1944, at 10.30 a.m., at County Hall, Wrexham.

#### Orders on Discharge

**Plymouth.**—Axworthy, Wm. Henry, John Lane, Cobourg Street, Plymouth, electrical contractor. Date of Order, October 18, 1944. Discharge granted, subject to consent to judgment for sum of £98 10s. and £1 10s. costs, payable £10 per quarter, first payment November 1, 1944.

#### Intended Dividends

**Bridgend.**—Woodhouse, Thos. Henry Geoffrey, 10 Bridgend Road, Aberkenfig, radio engineer and cycle dealer. Last day for proofs, December 1, 1944. Trustee: R. Betts, official receiver, 10 St. Mary's Square, Swansea.

**Bridgend.**—Carter, Arthur Robert, 2 Priory Avenue, Bridgend, electrical contractor. First dividend, 1s. 3d. in the £. Payable November 28, 1944, at Official Receiver's Office, 10 St. Mary's Square, Swansea.

**Derby and Long Eaton.**—Whiteman, John Anthony, lately Northfields Radio, 4 Northfields, Kilburn, Derby, wireless dealer. Last day for proofs, December 2, 1944. Trustee, Official Receiver, 22 Regent Street, Park Road, Nottingham.

**Chelmsford.**—Harrison, John, 93 Princes Street, Southend-on-Sea, electrical engineer.—Last day for proofs, November 28, 1944. Trustee, Arthur Harold Ward, 42 Tavistock Square, W.C.1.

## CONTRACTS OPEN

The date mentioned is the last day for the receipt of tenders or for making applications for forms of tender, etc., the name and address at the end is the person from whom or the place where forms of tender, etc., may be obtained.

Nov. 23.—**Chichester T.C.**—Underground cables, accessories and roadwork.—Messrs. Mackness & Shipley, constructional engineers, Parliament Mansions, Abbey Orchard Street, S.W.1. Advertised in Nov. 9 issue.

Nov. 27.—**West Midlands J.E.A.**—Outdoor static transformer. Mr. F. Favell, chief electrical engineer, York Chambers, Kingsway, Stoke-on-Trent, Deposit £2, Advertised Nov. 2 issue.

Nov. 30.—**Tredegar U.D.C.**—Two kiosks, with e.h.t. and l.t. control gear, etc.; e.h.t. 3-core cable; l.t. cable. Council's electrical engineer, Mr. W. Davies, Bedwelty House, Tredegar. Advertised Nov. 2 issue.

Nov. 30.—**Manchester T.C.**—500 weldless steel lamp columns and fittings. Mr. R. A. S. Thwaites, chief electrical engineer and manager, Town Hall, Manchester. Advertised November 16 issue.

Nov. 30.—**Belfast T.C.**—Two electrically-operated petrol pumps; fishplates and solid copper rail bonds.—Acting general manager, Transport Dept., Sandy Row, Belfast.

Dec. 7.—**Belfast T.C.**—Portable d.c. welding set. CO<sub>2</sub> fire extinguishing equipment for substations.—City electrical engineer and general manager, East Bridge Street, Belfast.

No date.—**Linlithgow T.C.**—Electrical work, 20 houses.—Mr. N. S. Main, town clerk, Linlithgow.

Dec. 8.—**Manchester T.C.**—Two 5½ ton and one 100 ton electrical travelling cranes, with trolley wire and switchgear. Mr. R. A. S. Thwaites, chief engineer and manager, Electricity Department, Town Hall, Manchester. Deposit £1 1s. Advertised in this issue.

## CONTRACTS CLOSED OR RECOMMENDED

Where it is stated that tenders are accepted by a Committee it will be understood that this is subject to confirmation.

**AIR MINISTRY.**—Electrical work: **Standard Telephone & Cables, Ltd.**, London.

**SHEFFIELD.**—Recommended for erection of cooling tower at T.C.'s power station. **Mitchell Engineering Co., Ltd.**, £69,448.

## TRADE MARK APPLICATIONS

Amongst recent applications for British trade marks are the following. This information is extracted from the Official Journal by permission of the Controller.

**Powalastik.** B624,971. Class 7. Machine tool driving units. Oliver Douglas Smith, 4 Amesbury Road, Moseley, Birmingham, 13; and Christopher Webb, 39 Rocky Lane, Perry Barr, Birmingham, 22. August 26, 1943.

**Fencemaster.** B626,035. Class 9. Electromagnetic induction apparatus for electrifying wire fences. The Cooper-Stewart Engineering Company, Ltd., 136/137 Long Acre, W.C.2. October 28, 1943.

**Clang.** 627,273. Class 9. Electric instruments and apparatus not included in other Classes, photographic and optical instruments and apparatus, and parts (not included in other Classes)

of all such goods; but not including cinematograph films, apparatus for projecting or exhibiting cinematograph films, and goods of the same description as any of these excluded goods, and not including instruments, apparatus, or devices for producing sound. Clang, Ltd., Crown Yard, Cricklewood, N.W.2. January 19, 1944. To be associated with No. 627,269 (3457) i and others.

**Orophon.** 629,736. Class 9. Supersonic apparatus for detecting flaws in metal. Henry Hughes & Son, Ltd., 107 Fenchurch Street, E.C.3. June 6, 1944. To be associated with No. 629,737 (3477) ix.

**Philistat.** 628,460. Class 10. Ultra-violet and infra-red apparatus and lamps for use therein, electro-therapeutic instruments and apparatus, electric instruments and apparatus; all being goods for surgical, medical, dental or veterinary purposes. Philips Lamps, Ltd., Century House, Shaftesbury Avenue, W.C.2. March 28, 1944. To be associated with No. 566,517 (3033) xiii and others.

**Caldwell Heaters**—"Built like a Battleship" (illustration of Battleship). 625,703. Class 11. Electric immersion heaters. Percy Graham Caldwell, trading as Caldwell Heaters, 448 Barking Road, E.6, manufacturer. October 8, 1943.

**Carblox.** 628,749. Class 11. Shapes wholly or principally of refractory material for the construction and lining of furnaces, furnace parts, muffles, muffle slabs, annealing boxes and of like furnace equipment. Thomas Marshall and Co. (Loxley), Ltd., Storrs Bridge Works, Loxley, Sheffield, 6. April 17, 1944. To be associated with No. 622,848 (3402) xix and another.

**Minite.** B629,681. Class 11. Lighting apparatus and installations, and parts thereof not included in other Classes. Henry Hughes & Son, Ltd., 107 Fenchurch Street, E.C.3. June 5, 1944.

## PROSPECTIVE BUSINESS

The information given below is compiled from various sources, and while every care is taken to see that it is accurate no responsibility is taken.

**Inverness.**—T.C. is to provide a site for erection of 500 houses by Scottish Special Housing Association.

**Leicestershire.**—County Council has approved in principle provision of a farm institute, on a site at Lutterworth. Cost estimated at £35,000.

**Llanelly.**—Board of Management, Llanelly and District General Hospital, is considering a plan for extension and reconstruction of hospital.

**Manchester.**—The T.C. is to have 3,000 bungalows under the M.O.H. temporary housing scheme.

**Scarborough.**—Borough engineer is to submit to the T.C. schemes for construction of swimming baths.

**Twickenham.**—T.C. is to consider erection of four-storey flats, by Mr. W. J. Marston; erection of 24 bungalows, 48 flats and five detached houses, has been provisionally given—the scheme is that of New Ideal Homesteads.

**Wednesbury.**—T.C. has received approval to provision and equipment of a British restaurant. Cost £2,375.

## COMPANY REGISTRATIONS

(Extracted from the Register issued by Jordan and Sons, 116-117 Chancery Lane, W.C.)

**Instructional Equipment, Ltd., Worsley Street, Salford 3.**—Electrical, mechanical and consulting engineers, etc. Capital £100. Directors: A. C. Mallinson, Springhill, Chelford Road, Prestbury; H. P. de Looze, 486 Wilmslow Road, Manchester.

**Mallinson & Eckersley (Engineers), Ltd., Worsley Street, Salford 3.**—Electrical, mechanical and consulting engineers, etc. Capital £5,000. Directors: A. B. Mallinson and A. C. Mallinson, both of Springhill, Chelford Road, Prestbury.

**British Eastern Technical Services, Ltd.**—Technical experts, agents for promoting trade with Turkey and other countries, etc. Capital £10,000. Directors: not named. Subscribers: G. Conrad, 103 Phyllis Avenue, New Malden, Surrey; E. W. Rosier, 1 Grunhurst Road, S.E.27.

**Clifford King, Ltd.**—Takes over business of an electrical engineer and contractor carried on by Clifford King at Templar Street, Leeds 2. Capital £1,000. Directors: C. King and Mrs. L. King, both of 78 Gipton Wood Road, Leeds 8.

**Walter Harding, Ltd., 8 Stone Buildings, Lincolns Inn, W.C.2.**—Wireless and electrical engineers, etc. Capital £1,000. Directors: G. D. Stewart, Warren Farm, Nightingale Lane, Chalfont St. Giles; W. C. Harding, 2 Warren Farm Cottages, Chalfont St. Giles.

**Commercial & Agricultural Engineers, Ltd., Northgate Street, Oakham.**—Motor, electrical and agricultural engineers, etc. Capital £1,000. Directors: A. A. Scott, 55 West Road, Oakham; A. F. Eayrs, 25 Barleythorpe Road, Oakham.

**Gardners Refrigerators, Ltd., 6 Fazakerley Street, Liverpool.**—Capital £1,000. Directors: E. Gardner, 81 Liverpool Road, Birkdale; Kathleen V. Finucane, 8 Seabank Road, Southport.

## NOTES AND QUERIES

We are constantly receiving inquiries from readers on all sorts of matters. Technical questions are dealt with in *Electric Plant Problems* and by Megohm. Most questions we are able to answer right away by letter or telephone, but occasionally we are at a loss. We shall be pleased to insert questions of this kind under the above heading in the hope that readers possessing the information will assist in the solution. Publishers' names are in brackets. Where samples are sent which it is desired should be returned the cost of postage must be prepaid.

(13667) "**Pyrotenax**" cable, makers of? G. S. P. Pyrotenax, Ltd., Hebburn, Co. Durham.

(13668) **Buck & Cartwright**, address of? G. & D. —You probably mean Buchan, Cartwright & Co., 2 Bridge Road, N.W.10.

(13669) **Post-War Building Studies No. 11, Electrical Installations**, where obtainable? P.—H.M. Stationery Office, York House, Kingsway, W.C.2., price 1s. 6d.

(13670) **Berry's Electric, Ltd.**, address of? L. H. —85-86 Newman Street, W.1.

(13671) "**Newmode**" vacuum cleaners, makers of?—N.M.—H.—The business of Newmode Electric Appliances, Ltd., was taken over by Hotpoint Electric Appliance Co., Ltd., 24 Newman Street, W.1.

(13672) "**Thermat**" electric pads and blankets, makers of? G.R.M.—Thermat, Ltd., Peveril Street Works, Nottingham.

(13673) **Pluslite pendant fitting**, suppliers of? G.S.P.—L. G. Hawkins & Co., Ltd., 30 Drury Lane, W.C.2.

(13674) "**Hivac**" valve, makers of? W.E.—Hivac, Ltd., Greenhill Crescent, Harrow.

## MEETINGS TO NOTE

- Nov. 23.**—I.E.E., London.—Special meeting to consider alterations in by-laws. I.E.E. Building, Savoy Place, W.C.2.—5.30 p.m.
- Nov. 23.**—Iron and Steel Institute.—Autumn General Meeting. — Institution of Civil Engineers, Great George Street, S.W.1.—11 a.m. and 2.45 p.m.
- Nov. 24.**—E.P.E.A., Southern Divisional Meter Engineers' Group.—“Polyphase Meter Testing,” X. H. Balfre. Room 19, Livingstone House, Broadway, S.W.1.—6.30 p.m.
- Nov. 24.**—Junior Institution of Engineers (Inc.).—Chairman's Address, J. Calderwood. 39 Victoria Street, S.W.1.—6.30 p.m.
- Nov. 24.**—Iron and Steel Institute.—Autumn General Meeting.—Institution of Civil Engineers, Great George Street, S.W.1.—10.30 a.m.
- Nov. 24.**—Institute of Fuel (Scottish Section).—“Mining of Coal,” Dr. W. Reid.—Royal Technical College, Glasgow.—5.45 p.m.
- Nov. 24.**—Manchester Association of Engineers.—“Influence of Hydraulics on the Design of Machine Tools,” H. C. Town.—Engineers' Club, Albert Square, Manchester.—6.30 p.m.
- Nov. 25.**—Institute of Physics (Scottish Branch).—Symposium entitled “Industrial Physics in Scotland.”—University of Glasgow (Natural Philosophy Building).—3 p.m.
- Nov. 25.**—Association of Mining Electrical and Mechanical Engineers (Yorkshire North-West Branch).—Technicolor Films on Fire Fighting. Queen's Hotel, Barnsley.—3 p.m.
- Nov. 27.**—I.E.E., North-Eastern Section.—“Electrostatic Precipitation from Boiler Flue Gases,” J. Bruce.—Neville Hall, Westgate Road, Newcastle-on-Tyne.—6.15 p.m.
- Nov. 27.**—I.E.E., London Students' Section.—“Some Hydro-Electric Possibilities and Achievements,” W. A. Hatch.—I.E.E. Building, Savoy Place, W.C.2.—7 p.m.
- Nov. 27.**—British Institution of Radio Engineers (London).—“Magnetic Dust Cores,” E. R. Friedlaender. Institution of Structural Engineers, 11 Upper Belgrave Street, S.W.1.—6 p.m.
- Nov. 28.**—Institute of the Plastics Industry.—“Heat Utilisation in the Moulding Shop.” Dr. A. C. Dunningham (non-members should apply to the Secretary for tickets of admission before the meeting). Waldorf Hotel, Aldwych, W.C.2.—6.30 p.m.
- Nov. 29.**—I.E.E., South Midland (Students' Section).—“Cathode Ray Tube and its Applications,” Dr. W. Wilson.—James Watt Institute.—7 p.m.
- Nov. 29.**—Institute of Welding.—“Hardsurfacing by Welding,” M. Riddihough.—Institution of Civil Engineers, Great George Street, S.W.1.—6 p.m.
- Nov. 29.**—British Institution of Radio Engineers (Midland).—“The Super-regenerative Detector,” G. F. Knewstubb. University of Birmingham.—6 p.m.
- Nov. 30.**—I.E.E., London, Installations Section.—Discussion on (a) the Installation Section of the Report on Electricity Supply Distribution and Installation and (b) Report of the Installation Committee.—I.E.E. Building, Savoy Place, W.C.2.—5.30 p.m.

## ELECTRICAL TIMES

Registered at the G.P.O. as a Newspaper.

### SUBSCRIPTION RATES

(payable in advance)

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**Official Notices :** Tenders Invited ; Plant for Sale ; Legal ; Patents ; Sale by Tender ; Educational ; and Miscellaneous, 1/6 per line (as printed, average 6 words to line, 9 lines to inch).

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**CLOSING TIME** for receipt is 10 a.m. **WEDNESDAYS**

### COMMUNICATIONS AND REMITTANCES

These should be addressed to THE ELECTRICAL TIMES, Sardinia House, Sardinia Street, Kingsway, W.C.2. Tel : HOL 6016. Tele : “Equivolt, Estrand, London.”

\* Where applicants for posts advertised under box Numbers do not wish their letters to be forwarded to any specific advertiser (such as their own employer) and notify us to that effect, secrecy will be observed by us and the applications destroyed in this office. Applicants applying for positions should not send original testimonials

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The fact that goods made of raw materials in short supply owing to war conditions are advertised in this journal should not be taken as an indication that they are necessarily available for export.

## RATING SCOTTISH HYDRO UNDERTAKINGS

IN the House of Commons on November 12 Mr. Johnston, Secretary of State for Scotland, presented the Hydro-Electric Undertakings (Valuation for Rating) (Scotland) Bill, to amend the law of Scotland with regard to the valuation for rating of hydro-electric undertakings. It was made clear some time since, and particularly at the time the North of Scotland Hydro-Electric Act was under consideration, that the method of assessing hydro-electric undertakings in Scotland (and elsewhere) was unfair when compared with the rating of thermal generation concerns. Suggestions concerning the rating found a place in the report of the Cooper Committee and in the outcome Mr. Johnstone set up a Committee last June to review the position. The terms of reference were: (1) The law and practice in Scotland in relation to the valuation and rating of hydro-electric undertakings; (2) the effect of the existing system of rating on the provision of houses, and whether it is practicable and desirable to limit the maximum amount payable in respect of owners' rates; and (3) the liability for rates in respect of empty or unused houses.

The Committee issued an interim report, and its main recommendations are embodied in this Bill.

The general effect of the Rating Com-

mittee's findings was that hydro power works have been at a considerable disadvantage in the basis of assessment compared with the steam stations; to relieve them of the heavy burden of local rates the Committee recommended any one of three ways by which the rating law and practice should be modified. One, by an adjustment of the valuation of the generation works in accordance with the proportion which £30 per kilowatt installed at the generating station, bears to the cost per kW installed.

It was also suggested by the Committee that in the case of the Grampian Company consideration should be given to the possibility of making the relief conditional upon the extension of the Company's distribution system to its maximum economic limits and thereafter upon application of the produce of the concession to tariff reduction.

Another suggestion made was that no reduction in the valuation of the existing lands and heritages of a hydro-electric undertaking situated in any major rating area should become effective until other subjects of rateable value, equal to that which was being lost, had been created either by the undertaking itself or by another hydro-electric undertaking.

This would obviate the risk of local authorities losing revenue from the rates.

## PATENT LAW REFORM

TO the Board of Trade Committee on Patent Law Reform evidence has been submitted by the Chartered Institute of Patent Agents, and a summary of the principal points is given below.

The complaints that British patents are used to the detriment of public interest for forming cartels for suppressing competitive developments are not considered to be justified. Many of the abuses said to occur in the U.S.A. have not appeared in the United Kingdom largely owing to the different outlook on patents in the two countries. There is some evidence of a tendency for holders of a considerable number of patents, including research associations, only to grant licences which include clauses which might discourage development and individual research by private firms. Also the royalties may necessitate unduly high selling prices.

The Council does not favour the proposal to endorse all patent "Licences of right" either at the time of grant or after a period of years. Neither should the Comptroller be empowered to take into account lack of invention, prior user or lack of utility. Matters that should be improved are the relatively restricted search, the failure of examiners to use their existing powers in dealing with ambiguity and their occasional

failure to deal thoroughly with sufficiency and clearness of description.

A revolutionary change is suggested with regard to the method of trying patent actions. An entirely new specialist tribunal, independent of the Patent Office and High Court, should be set up as the tribunal of first instance for trying actions relating to infringement and revocation of patents and registered designs, hearing applications for prolongation such as are now made by petition and for hearing appeals from the Patent Office in place of the Patents Appeal Tribunal. The tribunal should be selected from barristers with suitable technical training and experience. Actions should be modelled on opposition proceedings in the Patents Office. The new tribunal should be of equal status to the High Court with appeals to the Court of Appeal and House of Lords. Patent agents should have the right to instruct counsel. Exchange of affidavits forming the parties' evidence-in-chief should be made obligatory. Other suggestions were made concerning amendments to specifications and it was recommended that in hearings before the Patents Appeal Tribunal no decision or judgment should be used unless it has been previously reported.

## NOTES ON WIRING

### CONTROLS

IT hardly needed the statement made by Mr. Churchill in the House of Commons last Thursday for us to realise that Government control of every branch of industry will continue for many many months after the termination of the war in Europe. We must perforce remain in ignorance for the time being to what extent these controls will be relaxed during successive periods, and whether the controls will remain to be exercised chiefly by Government departments or be delegated. The continuance and nature of these controls must have a major effect on the electrical contracting industry which is bound up with the housing problem, and these in turn, the Government considers particularly to be in its own dominion. Yet one cannot but sympathise with the question asked by a Labour member: "Is it not necessary that we should stop discussing and get on with the legislation to get the job done?" Sir John Anderson's reply, although almost to be expected, was none the less disappointing: "There will be no final decision until the whole matter has been fully discussed in this House."

The existing controls are threefold. A licence is needed for any building work exceeding £10 in value whether it be for new housing, war damage reinstatement or ordinary maintenance and repairs which have become necessary whatever their urgency; and electrical installation is included as building. Then, once a licence has been obtained, we are up against the control of material. Armed with a licence number or a job number we shall have to get a permit for this, and perhaps, as we have so frequently had to do during the past few years, cruise around until we have found a manufacturer who can supply it (or promise to do his best to supply it) within a reasonable time. Thirdly, there is the question of labour which we may find can still only be allowed to work when and where specifically directed.

It is clear that if rapid and efficient progress is to be made so that there may be no unnecessary delay in the actual completion of such building work as may be licensed from time to time, a certain amount of control in matters of detail will have to be expunged and the interchange of paper documents through various Government departments judiciously curtailed.

The bulk of the building work, it is to be presumed, will be done by contract, and the latest M.O.W. report, summarised on p. 553 of last week's ELECTRICAL TIMES, indicates that the electrical portion will, for the smaller buildings at any rate, remain as a sub-

contract. The building industry, supported by the architects and quantity surveyors in this respect, has hitherto clung tenaciously to the sub-contracting system. Possibly, however, their ideas may undergo a change if the recommendations of the report are implemented in full. "Payment of the general contractor by means of what is called a 'cash discount' is unsound and should be discontinued"! Another recommendation is that the sub-contract should be tripartite, the main employer (that is to say the "purchaser" in the usual wording of specifications) should be the guarantor of payments to the sub-contractor. It may perhaps eventually be realised that, if the main contractor is to receive no subsidiary benefit from the sub-contractors and can no longer receive payments for the same service simultaneously from his employer and the sub-contractor whom he employs, he has little to gain by the sub-contract system. From the purchaser's point of view too, be he a Government department, a local authority or the prospective tenant or owner-occupier of the house, dependence on the supervision by the main contractor of the electrical work is unsatisfactory.

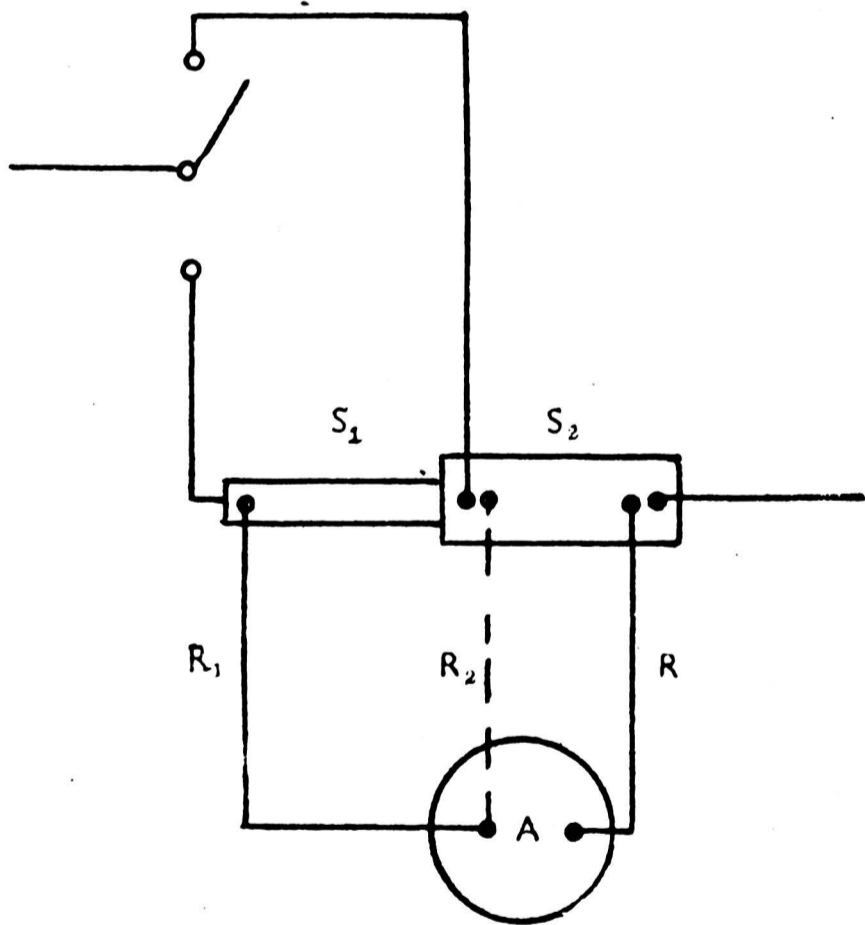
In the large majority of cases, the builder is not sufficiently expert in such matters to exercise beneficial supervision even if he has contrived to have a detailed specification drawn up for him. The burden of electrical inspection, if there is to be any such inspection at all, now virtually rests with the local authorities in all housing schemes, and, so far as I can see, will have to remain with them unless this professional work is delegated to a professional man. To specify conformity with the Manual for Housing, and other reports issued by the M.O.W., basic I.E.E. Regulations and Codes of Practice will not be sufficient without expert supervision during construction, for although each individual electrical installation may be small, the enormous number of them will invite the risk of bad work getting through. At present, the "passing" of electrical work in most houses of small and medium size depends only on a cursory inspection and test by the supply authority, who in some cases is not the Local Authority itself. Power to reject is limited, and, moreover, inspection is not compulsory. If Local Authorities do not possess powers to issue by-laws as some have for the actual building work, and cannot automatically assume responsibility for inspection, should not these powers be vested in them and their exercise made compulsory, with the right to delegate them to the supply engineer or to an independent professional man if they deem it expedient? **MEGOHM**

## CHARGE ENGINEERS' NOTES

### DOUBLE RANGE MOVING COIL AMMETER

THE diagram shows a well-known method of using two shunts in series for a double range of readings of an ammeter so that the change of range is made without interfering with the connections of the instrument. A double-throw switch enables a main lead to be connected to either terminal of the lower range shunt  $S_1$ . If the ratio of the ratings of the shunts is 10:1, then, using the lower range, the full load drop in the shunt  $S_1$  must be  $9/10$  of the standard value if the instrument is to read with the simple multiplier of  $1/10$ , and this shunt must either be non-standard or be altered to give the non-standard millivolt drop.

By amending the instrument connections, and using an additional connection from one terminal to the common junction of the shunts, as shown by the dotted line in the diagram, the necessity for a non-standard shunt can be avoided. Let the resistances of the three leads be as marked,  $R$  being that of a lead used for the usual direct connection, and suppose that the ratio of



the shunt ratings is 10:1 and that the full-load current of  $S_1$  is passing. It is not difficult to determine the values of  $R$  and  $R_2$  to give the required multiplier of  $1/10$  for the instrument readings. If the instrument  $A$  and the lead  $R$  are removed from the circuit, then the voltage across the gap must be 75 mV, the standard full-load drop, and, hence,  $R_2 = 9R_1$ .

Further, by Thevenin's theorem, the correct current in  $A$  when connected will be obtained if the parallel resistance of  $R_1$  and  $R_2$  is equal to  $R$ , the resistance of

a lead used for normal connection. Thus  $\frac{9R_1}{10} = R$ , so that  $R_1$  must be equal to

$\frac{10}{9} R$  and  $R_2$  equal to  $10R$ . When the

high range is in use,  $A$  is connected to the larger shunt  $S_2$  by  $R_2$  in parallel with  $R_1$  and  $S_1$  in series, and neglecting the resistance of  $S_1$ , the combined resistance of this combination has the correct value  $R$ . As the resistances  $R_1$ ,  $R_2$  and  $R$  are proportional to the lengths of lead it is easy by measurement to adjust  $R_1$  and  $R_2$  to the correct values. In the general case when the ratio of the shunt ratings is  $n$ , it is easy to see that

$R_2 = (n - 1) R_1$  and  $\frac{n - 1}{n} R_1 = R$ , so that

$R_1 = \frac{n}{n - 1} R$  and  $R_2 = n R$  if the low range

multiplier is to have the value of  $\frac{1}{n}$ .

**DELTA**

### WATERLOO BRIDGE

It is now five years since we gave some particulars of the construction of the new Waterloo Bridge; it is of interest that on Tuesday last it was completely opened for traffic. We visited it in November, 1939, and at that time suggested that much overtime would have to be worked to get the Bridge open by July, 1940, the date then suggested. Actually, of course, wheeled traffic did not roll across it until August, 1942, nor pedestrians use its footways until December in that year. That there has been so long a delay in getting the full benefit of this fine structure is no fault of Peter Lind & Co., the builders, or of anyone else of British blood—the cause is wholly due to the exigencies of the present all-in war. That it has been possible to finish the work at all is highly creditable to all concerned—for the Bridge has had its "incidents" of enemy origin.

### "GLASS HOUSES"

The Dramatic Section of Callender's Cable & Construction Co. (Belvedere Works), wages war with success against war-time difficulties. Recently it enhanced its reputation, giving two fine performances of "Glass Houses" (a comedy by Walter Ellis), at Brook Street Schools, Erith. Local charities and the firm's own Prisoners of War "Cheerio" Parcel Fund will benefit appreciably as a result. It is intended to give repeat performances to Service personnel in the district.

## THE BUYERS' COLUMN

### Starter and Magneto Testing

Two specially designed transportable pieces of testing equipment have been developed by the City Electrical Co., Ltd., Theobalds Road, W.C.1. The first of these is for providing a l.v. direct current for testing aero engine starters. It provides a d.c. output up to 1,000 A with a voltage variable between 7 and 26 V. The starter is accommodated on an adjustable bracket with a brake drum for torque tests. Instruments are fitted and there is an electric clock for recording test periods.

The second unit is for magneto testing and has a driving motor suitable for coupling to any type of magneto. The speed of the motor is infinitely variable between 50 to 11,000 r.p.m. The speed is transmitted from the driving motor to a large scale indicator. Adjustable ball type spark gaps are mounted in columns above the bench, and variations of the arrangement can be made to suit individual requirements.

### Midget Grinder and Polisher

A neat midget grinder and polisher for bench mounting is one of the latest productions of Runbaken Electrical Products,

Manchester,1. The motor used is similar to the one driving the midget drill recently described in *Buyers' Column*. It is of one-twentieth horse-power, with a speed range from 10,000 r.p.m. when running light to 3,000 r.p.m. when on load. It has a dust-proof casing and is fitted with ball bearings. The shaft has extensions at each end and on one is mounted a mop and on the other a 2 in. diameter grinding wheel.

### Springs for All Purposes

Users of springs will be interested in a new technical brochure that has been recently issued by Geo. Salter & Co., Ltd., West Bromwich. This is intended solely to assist in the selection and ordering of the right type of spring. The various forms of spring, together with the standard types of ends, are shown. The necessary information when ordering springs is specified, whether they have been designed by the buyer or are to be designed by the firm. For the former a chapter has been included on the basic principles of spring design and at the end of the brochure are some twenty pages of tables of reference.

## NEW LITERATURE

**Radio Technique.** By A. G. Mills. Published by Chapman & Hall, 11 Henrietta Street, W.C.2. Price 12s. 6d. net.

In writing this book the Author has set a good pace, covering in some 170 pages basic electrical and radio theory, together with the principal valve circuits. But the book goes beyond that, for many special and less common circuits are included, which make the book valuable for reference purposes. In the treatment, mathematics have been avoided; in consequence it should gain popularity. The book should also prove useful to electrical engineers who wish to acquire a knowledge of radio.

**Radio Receivers and Transmitters.** By D. W. Amos and F. W. Kellaway. Published by Chapman & Hall, 11 Henrietta Street, W.C.2. Price 21s. net.

The object of this work is to bridge the gap between books on pure science and those on applied radio which avoid the requisite standard of theory. It is intended for the more serious students of this particular branch and requires a previous knowledge of radio and mathematics. Chapters of particular interest are those on aerials and propagation of radio waves, amplification, oscillation and transmitters for A.M., F.M. and television.

**Talks About Export.** Published by the Institute of Export, Royal Empire Society Building, Northumberland Avenue, W.C.2. Price 2s. 6d. net.

With more attention being directed to exports in preparation for post-war developments, a proper understanding of the commercial mechanism of export is essential. To provide this basic knowledge this book can be thoroughly recommended. It is a reproduction of a series of lectures given under the auspices of the Institute of Export, covering shipping practice, finance of exports and marine insurance by authorities on the subject. In most of the chapters the lecture style has been preserved, which lightens a difficult subject. A further recommendation of the book is that it deals with present conditions of shipping and war risk insurance. An appendix is included giving the Institute Cargo Clauses, but for the assistance of those unfamiliar with export practice it is regretted that a representative selection of shipping documents was not included.

**Quality Control Chart Technique.** By B. P. Dudding and W. J. Jennett. Published by the General Electric Co., Ltd., Kingsway, W.C.2. Price 2s. 6d. net.

The application of statistical analysis to manufacture has been dealt with by these Authors in B.S. No. 600R and is also the subject of B.S. No. 1,008. The former deals more with general principles. The present book considers the subject in more detail, with special reference to articles machined to dimensional tolerances and is intended to assist production to specification requirements.

# LETTERS TO THE EDITOR

*We cannot be responsible for the opinions and expressions of our Correspondents*

## Plugs and Sockets

SIR,—In his article in your issue of November 9, *Megohm* rightly points out that to date fused plugs have not been popular. Surely the explanation is self-evident:—the business of replacing fuses in such models has been far too complicated for the ordinary consumer. Incidentally, in the past such fuses have had a maximum rating of 5 A if they comply with the appropriate B.S.S.

It would be interesting to know the source of *Megohm's* information that all manufacturers (except one) are solidly against the imposition of a new standard universal socket-outlet gauge. That statement is incorrect; but had it been accurate it would have proved only that manufacturers possess no greater degree of altruism than other sections of this far-from-perfect world.

Nov. 10. THOMAS ATHERTON,  
Dorman & Smith, Ltd, *Managing Director*,  
Salford.

## Radio Frequency Heating

SIR.—Some of Mr. L. L. Langton's remarks on eddy-current heating ("Radio Frequency Heating: Basic Principles," THE ELECTRICAL TIMES, September 14, 1944), seem to call for comment.

His statement that "Since the Curie point need not be passed providing the quench is applied before cooling occurs, efficient conditions are maintained during the entire heating cycle with E.C.H." does not, in general, seem to hold in practice. I would refer him, for example, to a description of apparatus for "Casehardening Large Gears with High Frequency Currents," in the *American Metal Progress* for July, 1943, a special feature of which was control equipment for automatically regulating the current throughout the heating cycle by adjusting it in three steps "as the metal in the gear's surface passes through the transformation and loses its magnetism."

On page 286 there is a misprint. In the expression for  $W_{cc}$ , the power unit volume,  $Z$  ( $ka$ ) should, of course, be

$\text{ber}(ka) \text{ber}'(ka) + \text{bei}(ka) \text{bei}'(ka)$ .

Mr. Langton's derivation of an "optimum frequency" is, I believe, misleading. While it is true that for a fixed  $f$  (and constant  $H$ ) his expression for  $W_{cc}$  takes a maximum value for a certain radius  $a$ , it is not the case that for a charge of given radius there is a frequency for which the power input is maximum, which is what would seem to be implied by an "optimum frequency."

What is of interest in determining the conditions for optimum power input to the charge is the efficiency from inductor to

charge. This has been treated theoretically by Burch and Davis (*Phil. Mag.*, Vol. 1, 1926, p. 768), and they find that the efficiency increases rapidly with increasing  $ka$  until  $ka=3$ , approximately, after which it stays substantially constant. Thus, we have not an optimum but a minimum frequency below which it is undesirable to operate. Just how far above this minimum we should choose our frequency depends on other considerations.

This minimum frequency does turn out to be given approximately by Langton's expression:

$$f = \frac{7.9\rho}{\mu a^2} \times 10^7 \text{ c/s.}$$

For steel, at room temperature, it becomes  $20/a^2$  roughly, and at  $800^\circ\text{C}$ . it is  $4,500/a^2$ , where  $a$  is in centimetres. The larger value should, of course, be taken if optimum efficiency throughout the heating cycle is to be maintained.

Nov. 16. R. G. MEDHURST,  
Research Laboratories,  
The General Electric Co., Ltd., Wembley.

## Post-War Wiring and Socket-Outlets

SIR,—*Megohm's* résumé of Post-war Building Studies No. 11, Electrical Installations, in the recent issues of your valued journal, will have been read with considerable interest by many. The disadvantages which he associates with the Ring Main system of wiring, and his logical conclusions, should receive much support from those whose job it will be to plan, supervise, or carry out wiring work in the post-war era.

Mr. W. J. Brasher's statement in your November 2 issue is very welcome, and will clear the misunderstandings which have arisen regarding the new standard 3 kW, 230 V socket-outlet and plug. One may hope that, even at this stage, the outcome of the exploratory discussions referred to will be unfavourable to the proposed new standard accessory. One may also hope that these discussions will reveal that in the interests of standardisation, it will be unwise to undo the good work of those who have consistently supported the B.S.I. and have so far contributed so much to existing standardisation, which before the war was showing very promising results.

It seems obvious that the decision of the Electrical Installations Committee to approve the proposal for a new standard socket-outlet and plug has been governed very largely by the support which has been given by the Committee to its associate, the Ring Main system; it would plainly be unwise and unsafe to create a situation where existing standard unfused plugs could

be so easily used on a wiring system protected by a comparatively highly-rated fuse. No logical case has yet been made out for the Ring Main system. *Megohm* has very forcibly drawn attention to the danger of overloading, and in describing my investigations in your issue of December 16 last, I enumerated other disadvantages and suggested the Room Circuit system as a more suitable alternative.

Paragraph 79 of the publication referred to above gives a figure of 25% saving in favour of the Ring Main system, as compared with an installation carried out in accordance with pre-war practice. No comparative saving, however, is given in favour of the Room Circuit system, but as three socket-outlets are proposed for the principal rooms, and two for other rooms, it is obvious that the saving cannot be less than 25%, and bears out my previous investigation that there is little, if any, difference between the costs of the two systems. These deductions are fully supported by the inclusion in the Ministry of Works Housing Manual of the Room Circuit as the recommended alternative wiring system.

As the case then for the Ring Main system has thereby been considerably weakened, on what possible grounds can the introduction of a new standard socket-outlet be supported? Let us consider the possible grounds.

(a) Paragraph 85 of the Report points out that fusing at each point of outlet is only "desirable" on the Room Circuit system, but that it is "necessary" on the Ring Main system. Paragraph 6, Section 10 of the Appendix, recommends plug fuses of 3 and 13 A, but as in practice a blown 3 A fuse will in many cases be replaced by a 13 A fuse, which to my mind need not give cause for alarm, the term "desirable" would seem to be rather superfluous.

(b) It has been suggested that a further reason for the introduction of a new standard socket-outlet is that the existing 15 A B.S.S. 546 outlet is too large. It is very difficult to see how this can be substantiated by reference to the flush type socket-outlets already available, if one compares them with the proposals relative to the new type. Some flush plates are larger and probably not quite so neat as others, but this could easily be remedied and provides no justification for the suggested change.

(c) The proposed new socket-outlet, rated at 3 kW, 230 V, does not allow for 3 kW portable appliances used for supply voltages of 200 and less, otherwise its rating would, of necessity, be higher. Whilst the aim of standardisation of voltages at 230 throughout the country is presumably very desirable, and will doubtless in time become an accomplished fact, the lower voltages, which form no mean proportion, will presumably be with us for a number of years. It surely cannot be in the interests of future electrical development, or of service to consumers, that the use of portable appliances be limited in this manner.

One socket-outlet for all purposes is very desirable and necessary, and as the existing B.S.S. 546 15 A socket-outlet is the only accessory which will meet this requirement, I am firmly convinced that this should be continued as the recognised standard. The figure of 15 millions of 15 A socket-outlets has been given by a responsible authority

as a conservative estimate, as the number in use at the present time. Standardisation, therefore, already has a good start, and the adoption of this outlet for the 4 million post-war houses would at long last put the socket-outlet question on a sound footing.

Nov. 11.

A. J. HEELIS,  
*Installation Superintendent.*  
City of Coventry Electricity Department.

### T.V.A. Methods for Wales

SIR,—Your leading article, November 9, mentions the attention electrical development is now having in Wales, and the attention which T.V.A. hydro-electric aspects are receiving in the National Press.

The Economic correspondent of *The Observer* in calling for a T.V.A. for Wales, and also most of the Welsh papers, however, realise that it is the developmental activities and the policy of promotional tariffs of the T.V.A. which is all-important.

Wales is a region to which, all agree, T.V.A. methods are vitally necessary.

Nov. 18. G. R. JONES.  
11 Bryn Teg, Denbigh, N. Wales.

### Future of Social Service

SIR,—Those who have not gained first-hand experience of social service work may be wondering whether the Government's proposals for social insurance, if implemented, would mean that there would be no call for the work of the various benevolent funds and social service bodies which is such a creditable feature of English life.

Closer reflection, however, should indicate that, valuable as are the proposals of the White Paper, a widow with three young children cannot live on 39s. a week even if it were possible to exist on that sum, and that 20s. a week for an old widow, whose husband died a few years after retiring, only partially solves her problems. It will be seen, therefore, that there will still be a need for benevolent funds to give considerable financial help in many deserving cases.

It is equally important to realise that properly established benevolent organisations are doing an immense amount of social service work which would abundantly justify their continued existence even if the distribution of grants were not a part of their functions. It is this kind of work which it is so difficult for the general public to appreciate, but if those who have had experience of the domestic problems of a family of four or five will consider the magnitude of the work of dealing with "families" running into hundreds, scattered over the length and breadth of the land and involving many different temperaments and backgrounds, it will be clear not only that

social service bodies deserve continued support but that, with the readjustments and complexities which will come in the next few years, they will need even greater support.

Nov. 18.

H. SENIOR FOTHERGILL,  
Secretary, Electrical Industries Benevolent Association.

W. K. BRASHER,  
Hon. Secretary, The Benevolent Fund  
of the I.E.E.

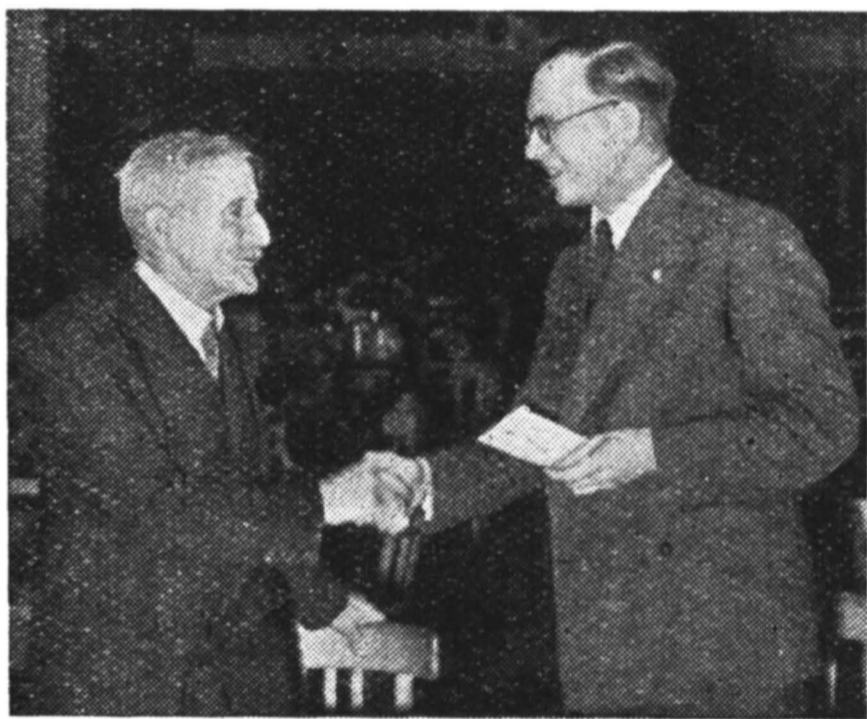
W. A. JONES,  
Secretary, Electrical Power Engineers'  
Association.

A. BRAMMER,  
Secretary, Association of Supervising  
Electrical Engineers.

## PERSONAL

It will interest many to hear that **Mr. W. H. Taylor**, general manager of the West Australian Government Tramways and Electricity Supply, arrived in London on November 13. He has come to England in connection with the establishment of a new 50,000 kW power station in Western Australia.

On September 29, members of the staff and operatives of the G.E.C.'s Union Works gathered to honour **Mr. Jack Roberts**, who has retired after completing 50 years' service with the Company. Mr. Roberts is the first member of Union Works to complete a half century, and he had previously been presented with savings certificates on behalf of the Company. The cheque, presented on September 29, was a parting gift from all his colleagues, with whom he had so long



Presentation to Mr. Jack Roberts.

been associated. Mr. Roberts had been with the Company almost from its inception, starting work at Chapel Street, Salford, and progressing *via* Peel Works to Union Street in 1909, when the Department came from Manchester to London. Presenting the cheque, Mr. H. G. Cheel, the present manager of Union Works, assured Mr. Roberts of the warm regards of all and their hopes for his happiness in retirement.

The directors of Electric and Musical Industries announce that **Sir. Ernest Fisk**, who is vacating his position as chairman and

managing director of Amalgamated Wireless (Australasia), has accepted the appointment of managing director of Electric and Musical Industries. He will assume his new duties immediately on arrival in this country early in the New Year. Sir Alexander Aikman, deputy-chairman, will continue as managing director pending the arrival of Sir Ernest Fisk.

The Institution of Mechanical Engineers has awarded the 1945 James Watt International Medal to **Dr. F. W. Lanchester, F.R.S.**, inventor and pioneer in motor car and aeroplane development.

**Obituary.**—We hear with regret of the death of **Mr. Kenneth Gordon**, at the age of 64 years. Mr. Gordon was, for many years, on the staff of Siemens Brothers Dynamo Works, Ltd., and subsequently with the English Electric Co., Ltd. Mr. Gordon was first engaged as an assistant at the Sheffield Branch of Siemens; in 1909 he was posted to their Bombay branch and later transferred to Calcutta. Early in 1915 he returned to this country and joined H.M. Forces. After his war service he joined the staff of the English Electric Co., Ltd., and in 1920 returned to India, being appointed manager of the Company's Madras branch, which position he held until 1936, when he returned to England. He remained an active member of the Export Department, Stafford, until retiring from the service of the English Electric Co., Ltd., on September 30, 1940.

At the early age of 44 years, **Mr. J. P. Ellis**, manager of the Steel Conduit Works of the General Electric Co., Ltd., Witton, died on November 1. Mr. Ellis was apprenticed to the Company in 1917, and, except for a few months, he served with the G.E.C. continuously until his death; a total of over 26 years. At the conclusion of his apprenticeship he joined the Estimating Department of the Witton Works, proceeding later to become engineer at the Dublin Branch. After four years' service in that position he returned to Witton, and was appointed personal assistant to Sir Harry (then Dr.) Railing, who was at that time director and general manager of Witton Works. In September, 1940, Mr. Ellis became manager of the Steel Conduit Works. Mr. Ellis had a great gift for organising;

he could reduce the most complicated problem to simple terms. Socially, his many friends found him a brilliant and versatile conversationalist. He leaves a widow and daughter.

**Sir Henry Herbert Couzens, K.B.E.**, of Sidmouth, who died on November 17, was vice-president and a director of the Brazilian Traction, Light and Power Co., Ltd., the City of Santos Improvements Co., Ltd., and the São Paulo Electric Co., Ltd.

The death occurred on November 16, at

Reading, of **Mr. Robert H. Bryans, M.I.E.E.**, aged 82 years.

The announcement has been made of the death, on November 18, in London, of **Sir Charles Worthington Craven, Bt.**, in his 61st year.

**Wills.**—**Mr. A. Vaughan**, of Wimbledon, director of the Revo Electric Co., left £97,114, with net personalty £92,958.

**Mr. Frank Dudley Docker, C.B.**, left £887,692, with net personalty £861,533.

## E.D.A. INTERIM REPORT

**A** BUSY time has been had by all at the British Electrical Development Association during the current year. Such a lot of this work is of the helpful but non-spectacular variety, that it is implied rather than publicised in the "Interim Report on Development Work" for January to October, 1944, which has lately been issued. Even as regards the high lights of the period the report is brief almost to the extent of curtness, but then one economises in time and paper in England, especially Southern England, in these disturbed days.

**Personnel.**—The Association lost the services of its Press and Local Advertising officers; new appointments are:—Press Officer, Mr. John Fraser, Mr. J. Osborne, F.R.I.B.A. (part-time); Publicity, Mr. N. de Brath; Local Advertising, Mr. J. A. Godfrey. Mr. Stedman is released from the R.A.F., and the Association has had the benefit temporarily of the services of Mr. R. S. Wallace, from a London undertaking.

**Other Items.**—Seven new members have joined the Association; the chairman or vice-chairman attended all area annual meetings; there were informal dinners to the Minister of Works and the Minister of Fuel and Power; closer co-operation with the Electrical Association for Women is being promoted. A joint E.D.A.-E.L.M.A.-B.E.A.M.-C.M.A. Committee has been established and meets regularly to recommend joint action by the Associations where desirable. A Medical Advisory Panel has been established, with an eminent physician as chairman. The panel, *inter alia*, will consider a plan on Public Health in Connection with Industry. The E.D.A. is closely collaborating with Government Departments, particularly in connection with housing (exhibitions, etc.), and in North Ireland, as a result of representations, a group of Ministry of Supply houses were all equipped with electric cookers. The Treasury (Great Britain) has been approached with regard to removal of purchase tax on cookers. Questions connected with absorption of women in post-war industry have been taken up in

collaboration with the E.A.W., with Education Authorities and with the Women's Service organisations.

**Housing.**—The Association can claim some credit for the satisfactory degree of "electrical penetration" in the Northolt M.O.W. houses; an illustrated brochure is being prepared. The Association also pays great attention in varying ways to the post-war kitchen—by publications, by advice in connection with houses to those responsible for their erection, small-scale card models, etc.

**Advertising.**—Publicity by advertising in the National, technical and trade Press has continued; also large panel hoarding publicity, van-side publicity, etc., has been used.

**Films.**—Two E.D.A. films have been completed and shown. "Too Easy" in connection with fuel economy and "Cooking for the Million" for large-scale electrical cooking. There are other plans in the making or in prospect.

**Other Work.**—Exhibitions, window displays, the re-establishment of the E.D.A. Street Lighting Committee, establishment of a testing station, information as to school feeding kitchens, industrial heating, agreement as to interchangeability of cooker parts, lectures and demonstrations to women's and other organisations, the Building Centre Exhibit, design of a Standard Service Kit—these are but a few of the other items dealt with. One could mention also the good work of the Electric Vehicle Association and preliminary work in connection with a Rural Advisory Committee.

**Silver Jubilee.**—Well, this is the Association's Silver Jubilee year—its vigour is as great as any 25-year-old's should be—it promises, unlike *genus homo*, to get stronger as time goes on; it should be a power in the land indeed when its jubilee takes on the golden tinge.

The signature to the Report is that of Mr. V. W. Dale, General Manager and Secretary; when penning its last paragraph one may imagine he thought with pride—"Silver Jubilee"—well, I've pulled *my* full weight throughout the 25 years."

# NOTES AND NOTICES

## I.Mar.E. Examinations

We are informed that the next examinations for admission to the Institute of Marine Engineers will be held next year—those for students (Common Preliminary Examination), from April 10 to 13 and October 2 to 5; for graduates (Section A of Associate Membership Examination) on June 4, June 6 and 8; and for associate members from June 4 to June 11. All particulars are obtainable from the Secretary, 73 Amersham Road, High Wycombe, Bucks.

## I.E.E. London Students

The London Students' Section of the I.E.E. at its meeting on November 7, heard Mr. C. C. Barnes deliver his Chairman's Address; 100 were present. The speaker spoke on "The Design and Manufacture of Paper-insulated Power Cables." He outlined the development of insulated conductors for power distribution. The basic requirements for a satisfactory design of cable were, he said, (1) copper conductor adequate to carry the specified load; (2) sufficient insulation for continuous operation at the working voltage; (3) the cable must be sufficiently robust to withstand transport and handling; and (4) suitable external protection must be applied. The last part of the address contained a detailed description of the various manufacturing operations involved in the production of paper-insulated cables, each operation being illustrated by lantern slides. A lively discussion ensued. Much interest was displayed in the merits of the continuous extrusion press as opposed to the more usual vertical ram-type sheathing press; on this point, Mr. Barnes expressed the view that further experience was necessary before either one or other method could be deemed the more satisfactory.

## "Electricity for Everywoman"

Readers of THE ELECTRICAL TIMES will appreciate that the Electrical Association for Women believes that the story of electricity in all its aspects should be clearly presented to those whom it will vitally affect. A large proportion of these will be those now in the Women's Services when they take up new careers or are reinstated at home. Hence they should be given a true and comprehensive picture of all the opportunities which await them and detailed information on how to make the best use of them. A photographic exhibition entitled "Electricity for Everywoman" has been prepared for this purpose. It consists of seventy photographs mounted on fourteen panels, each illustrating one of the contributions of electricity to modern living. Art work and letterpress emphasise the message of the photographs. Each panel measures 24 in. by 36 in., and the whole is

easily handled and packed to facilitate transport. Subjects illustrated are generation of electricity by coal and water power, with a chart showing the house circuit, and electricity in use for the household daily round; photographs show also plastic surgery; X-ray work; power station control room; cable repair in mid-ocean. Comfort and beauty in the home is another theme; and others the opportunities for careers which electricity opens up to women, and the use of electricity in industry, agriculture and transport. W.A.A.F. personnel are shown on the construction and maintenance of aircraft, which leads on to "Electricity Knows no Frontiers"—photographs of great electrical engineering projects or domestic amenities in Holland, Poland, Russia, China, the U.S.A., and urban and rural Britain. There is a panel on "Telecommunications." The Exhibition was prepared for the E.A.W. by Susan Lander; it was presented by the President, the Dowager Lady Swaythling, to the Women's Auxiliary Air Force, at the E.A.W. Headquarters, in London, on November 17, 1944, being accepted for the W.A.A.F. by the Deputy Director, Group Officer Woodhead, deputising for the Air Chief Commandant, Lady Welsh, who was prevented at the last minute from attending.

## Electrical Course for W.V.S. Officers

On November 13 the opening session of an instructional course for Regional Officers of Women's Voluntary Services was held at the premises of the Electrical Association for Women. The course, arranged by the Ministry of Fuel and Power, dealt with the efficient use of electricity and the maintenance of electrical appliances in the home. Miss C. Haslett, Director of the E.A.W., welcomed the W.V.S. members, and was followed by Lady Hillingdon, vice-chairman of the W.V.S., and Mr. Nott-Bower, joint deputy secretary of the Ministry of Fuel and Power, who each gave short addresses. The session was divided into two parts: a talk on "Installation," by Mrs. E. E. Edwards, E.A.W., Area Organiser for S.E. England, followed by practical work on "Accessories" generally illustrating the maintenance and best use of apparatus; thereafter came an explanation and demonstration by Miss V. Norvick, assistant secretary, E.A.W., and Mrs. Bingham, Central London Electricity, Ltd., of cookers, vacuum cleaners, etc.

## Electrical Association for Women

In the E.A.W. Club Room on November 14 there was a pre-view of a bust of Amy Johnson, recently completed by Mr. Siegfried Charoux. Mr. Johnson's short address culminated in the presentation to Miss

Haslett, for the Women's Engineering Society, of a gold medal awarded to Amy by the Society of Engineers. Amy Johnson was a former President of the Women's Engineering Society. Many distinguished people were present.

### Sheffield Tramways

The Minister of War Transport has made an Order extending for three years the time limited by the Sheffield Corporation Act,

1937, for completion of sections of tramway construction.

### Discussion Group

The 1944-45 season of the London Supervisors' Discussion Groups—North-East Centre—commences on November 28 (7 p.m., South-West Essex Technical College), the guest speaker being Mr. G. F. Sinclair, A.M.I.E.E., chief engineer trams and trolley buses, London Passenger Transport Board; he will speak on "Civilian Transport on Military Lines of communication."

## PARLIAMENTARY

**Agricultural Supply.**—On October 31 **Colonel Ropner** asked the Minister of Fuel and Power what steps were being taken by his Department to popularise and extend the use of electricity in agricultural districts generally. **Major Lloyd George** said that during the war it had been necessary to restrict development of electricity supplies to cases of hardship and the requirements of the war effort, which had included those of agriculture. For post-war development he would refer Col. Ropner to answer given on June 20 by the Joint Parliamentary Secretary to the Ministry of Agriculture.

**Trade: Electrical Industry.**—On Nov. 2, **Mr. Quintin Hogg** asked the Secretary to the Overseas Trade Department what steps he had taken and what consultations he had held with a view to promoting British electrical exports after the war. **Mr. Harcourt Johnstone** said the Overseas Trade Department maintained constant touch with the B.E.A.M.A. as well as with a number of leading individual manufacturers for export. Contacts with the industry made it clear that the electrical industry was planning all possible efforts to resume and expand its export trade as soon as war conditions permitted. **Mr. Hogg:** Is Mr. Johnstone aware that the British electrical industry was one which was able to compete in the world market immediately before the war; and would he therefore pay particular attention to the development of this industry in the export world after the war? **Mr. Johnstone** said he had stated in the House that the hopes of the Board of Trade and his Department rested very largely upon the development of the electrical industry, which was one of the most promising we had in the country. All steps were being taken to maintain the closest possible contact with them.

**London Lighting.**—On November 9, as has already been announced, **Mr. H. Morrison** stated that the Government had decided that the higher standards of street lighting allowed in all other parts of the country, except special coastal areas, might be used in the London area. Lighting authorities would be informed that they could install

the improved standards as soon as possible.

[Fulham claims to have been the first to take advantage of the permission—we see that Piccadilly now comes into the "moonlight" also.]

**Fuel and Power Advisory Council.**—On November 14, **Mr. Keeling** asked the Minister of Fuel and Power whether he could now name the members of the Fuel and Power Advisory Council. **Major Lloyd George** said he had already informed the House of his intention to set up this Council and that he had secured the services of Sir Ernest Simon as chairman. He had now appointed the Council as follows:—Sir Ernest Simon, M.Inst.C.E., M.I.Mech.E. (chairman); Mr. Geoffrey Crowther; Sir John Greenly, K.C.M.G., C.B.E., M.I.Mech.E., M.I.E.I.; Dr. E. S. Grumell, C.B.E.; Sir Harold Hartley, K.C.V.O., C.B.E., M.C., F.R.S.; Professor C. N. Hinshelwood, F.R.S.; Professor John Jewkes, C.B.E.; Viscount Ridley, C.B.E.; Sir Robert Robinson, F.R.S.; Mr. Geoffrey Summers, C.B.E.; and Secretary—Mr. R. N. Quirk.

The terms of Reference were:—

"To consider and advise upon questions, referred from time to time by the Minister to the Council, concerning the development and utilisation of the fuel and power resources of the country in the national interest."

**London Tube Station Lighting.**—On November 15 **Sir Stanley Reed** asked the Parliamentary Secretary to the Ministry of War Transport whether he would concert, with the L.P.T.B., measures to improve the lighting at the principal tube stations. **Mr. Noel-Baker** said that in order to save fuel, the lighting of tube stations had been reduced, but he hoped that, in general, it was not inadequate. Any stations at which improvements were considered to be required, he would gladly consider with the London Passenger Transport Board.

**Full Employment Policy.**—It is very much regretted that the name of the author of the contribution on this subject last week, page 552, was incorrectly spelt. He is Mr. J. B. Lees, Borough Electrical Engineer, Sale.

# ELECTRIC SUPPLY NEWS

**Brierfield.**—The Urban District Council has informed the Electricity Commissioners that its expenditure in first five years after the war will be about £41,400.

**Dalkeith.**—The Town Council lately considered a judgment given by the Law Lords in a case which raised the question of whether a local authority should pay, under a street lighting contract during the war, although under black-out regulations the streets were unlit. Dalkeith Council has been paying the Lothians Electric Power Company an annual sum of £188 12s. without receiving any light in return; the decision to pay this sum was arrived at following meetings with the power company, which based its claim on two English decisions in 1916 and 1917. It was arranged that the opinion of counsel be obtained to a joint memorial, and this was submitted on behalf of Dalkeith, Bonnyrigg and Lasswade, Penicuik, and Loanhead burghs. Counsel's opinion, now received, points out that the Company undertook to supply electricity for the lighting of street lamps, and the Burgh of Dalkeith undertook to pay for this current at a rate based on the size of the lamps used in the streets. In so far as it related to street lighting, the contract became impossible of performance for an indefinite period by the effect of the Lighting Restrictions Order. The result of this frustration was to excuse both parties from further performance of their obligations. In the case of the Burghs of Bonnyrigg and Lasswade, Penicuik and Loanhead, the contract was solely for the purpose of street lighting, and no question arose as to whether or not the contract was severable; and Counsel was of opinion that the effect of the Lighting Restrictions Order was to excuse both parties from further performance.

**Durham.**—Local enquiries ordered by the Minister of Town and Country Planning and the Electricity Commissioners into the proposal of the North-Eastern Electric Supply Company to erect a new generating station near Durham, are to open at Durham on December 5. The inquiries will be held by Mr. G. L. Pepler for the Ministry of Planning and Mr. C. G. Morley New for the Electricity Commission.

**Plymouth.**—The Minister of Fuel and Power (Maj. Lloyd George) paid well deserved tribute to the electricity supply staff (and the gas staff also) at a recent exhibition of economy methods in use of fuel. As to the electric supply in the town, he said that there had been something like sixty raids on Plymouth, and although the supply of electricity had been interrupted, half had been restored in 24 hours and the remainder in 48 hours. The mutual aid scheme of the

public utilities had been of great advantage.

**St. Austell.**—Variations in the electricity tariffs in its area are announced by the St. Austell & District Electric Lighting & Power Company. The alterations, which operate as from the commencement of the first quarterly cycle of meter readings for 1945, are: Flat Rate for heating and for domestic power purposes to be reduced from 3d. to 1½d. per unit (flat rate for cooking is already 1½d.); small industrial power users (up to 10 h.p. connected load), a new tariff introduced; the first 500 units per quarter at 3d., and all further units per quarter at 1½d. per unit.

**Selby.**—Post-war housing has been occupying the attention of the Urban District Council. It is proposed to start building 200 houses. The Council's method of dealing with the problem does not, it would appear, appeal to some of the organisations in the town. Joint recommendations submitted for consideration of the Council by the Selby and District Trades and Labour Council and the Abbey Fellowship of Marriage, were that for the first post-war year a building programme of 300 houses should be submitted to the Ministry of Health, and that this should be increased to a minimum of 500 by the end of the second year, and that the houses should have such amenities as electric light and power points, and a large kitchenette and other amenities. The Council's Property Committee, it was stated by the Council's chairman, had fully considered the suggestions of the bodies named. The Council suggested that 200 was a reasonable number of houses to start with, with more to follow if needed. In regard to electricity the Council had already decided that the houses should be wired, in spite of the view of some people that it was a wrong policy as the Council sold gas. The Council agreed that it must not be narrow-minded on this point, but certain other amenities were more in the nature of luxuries, and the post-war rents would be high.

**West Hartlepool.**—The Town Council is to enter into an agreement with the South Durham Steel & Iron Co., Ltd., for the supply of additional electricity to the works for a period of 15 years. Application is to be made to the Electricity Commissioners for sanction to borrow between £1,500 and £2,000 for supplying electricity to a factory site. Following a report by the borough electrical engineer, the Town Council has decided that for the period of hostilities no change shall be made in assessments for the business rate fixed charge, but that a maximum rate of 4d. a unit should be applied to all consumers on this tariff.

# ELECTRICAL COMPANIES

**Dividends.**—*Delhi Electric Supply and Traction Co.*—Interim dividend 4%, tax free.

*Broadcast Relay Service.*—Interim dividend of 3½%, tax free, on ordinary stock.

*Drake & Gorham.*—Dividend of 5% for year to June.

*Tube Investments.*—Final dividend of 12½%, making 22½% for the year ended October.

*Newman Industries.*—Interim dividend of 7½%.

**General Cable Manufacturing Co.**—The directors propose to increase the capital to £250,000 by the creation of 400,000 ordinary shares of 5s. each, ranking *pari passu* with the existing ordinary capital. A special meeting has been called for December 7.

**Calcutta Tramways.**—The Corporation of Calcutta has accepted the recommendations of its Public Utilities and Markets Committee to purchase the entire tramways undertaking on and from January, 1945. The Committee expected the Tramways company to transfer all benefits from contracts that the Company had at present with the Government, various municipalities of Greater Calcutta, and the Howrah Bridge Commissioners, so that the whole system might remain intact and no inconvenience be caused to the public.

**Ultra Electric (Holdings).**—In consequence of the expansion of the operating company, Ultra Electric, which makes radio apparatus, have decided, with Treasury permission, to issue to the Holding company, 65,000 £1 ordinary shares at *par*. In order to finance the subscription of these shares and to provide for the expenses incurred by the following issue, the directors of the Holding company are offering 200,000 5s. ordinary at 7s. each in the proportion of one for every four held. The list will close on November 24.

**Adelaide Electric Supply Co.**—In considering the raising of funds in connection with the construction of the Osborne "B" power house at Adelaide it was found that the capital structure of the Company was unsatisfactory in that the preference capital and debenture stock was out of proportion with the ordinary capital, and that it was desirable to increase the latter. So a special meeting was held at which it was agreed to increase the capital from £3,625,000 to £4,750,000 by creation of 1,125,000 £1 ordinary shares, and to convert the preferred ordinary stock into ordinary stock. The new ordinary shares are to be offered at *par* to holders of the preferred ordinary stock in the proportion of two new ordinary shares for each £3 of preferred ordinary stock held; and to holders of existing ordinary stock in the proportion of one new ordinary share for each £1 of ordinary stock held. With

Treasury consent issue of part of the new ordinary shares is now being made—11,448 of the shares—acceptance to be made by December 1 next. When fully paid up the shares will be converted into stock. The Adelaide Co. is a most progressive one; it has its difficulties as readers may have gathered from our notes on the Leigh Creek coal situation; but it supplied 241 million units and had a net surplus of £260,311 in 1943. (See E.T., March 30, 1944, pp. 382, 383.)

**Aron Electricity Meter Co.**—The directors have allocated from the profits of the company for the year to March 31 last a sum of £5,000 to general reserve and recommend a dividend on the ordinary stock of 15%, leaving to carry forward £17,379.

**Ferranti.**—For the year ended June this Company reports a trading, etc., profit of £160,490. After provision for depreciation, deferred repairs, war damage insurance and directors' fees, there remains £96,237, plus £75,734 brought in. It is proposed to place £60,000 to contingencies reserve and to pay 6%, tax free, on the ordinary stock, leaving £76,471 to go forward.

**Isle of Thanet Electric Supply Co.**—The directors have advised shareholders that in the event of the acquisition of the undertaking by the local authorities the liquidation of the company will be recommended. They state that they understand from the Press that the Margate Corporation and the Broadstairs and St. Peter's U.D.C. have decided, subject to the consent of the Electricity Commissioners, jointly to acquire the undertaking in accordance with the terms of the Company's Acts, on December 31, 1945. They stress that the company has not received any official communication on the subject.

**Peto Scott Electrical Instruments (Holdings).**—A meeting to consider adoption of new articles of association is to be held on November 27. It is also proposed to drop the word 'Holdings' from the title.

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