ELECTRICAL REVIEW

VOL. CXLI JULY 4, 1947 NO. 3632

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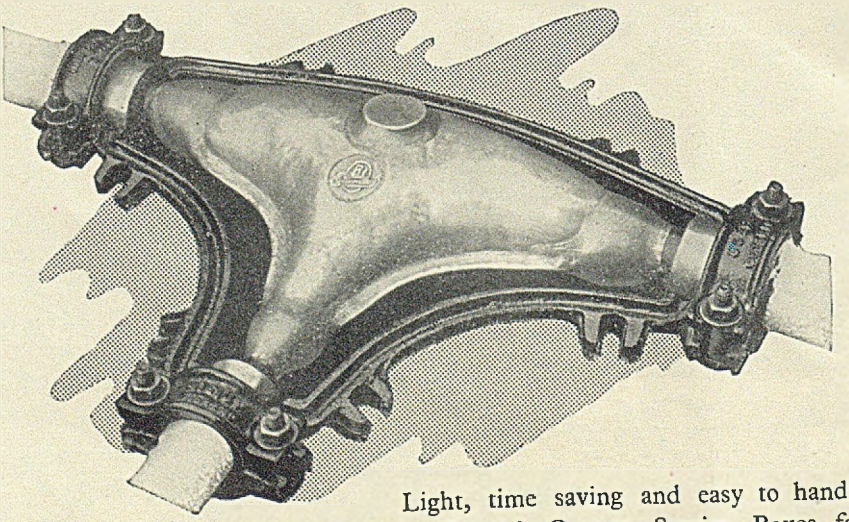

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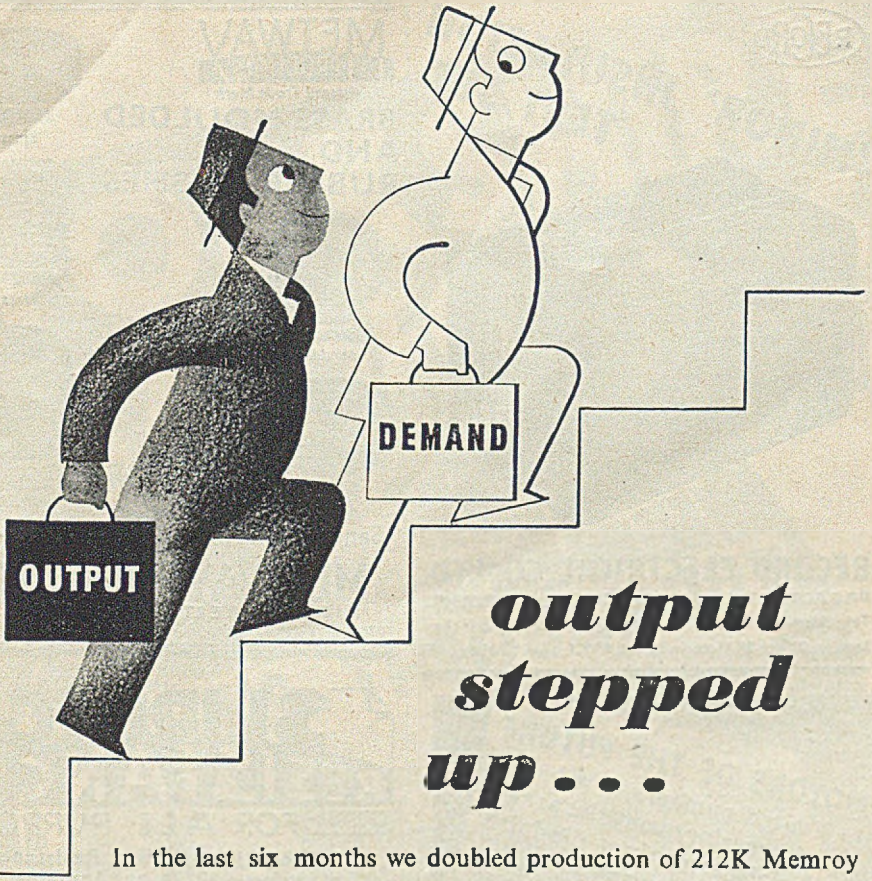

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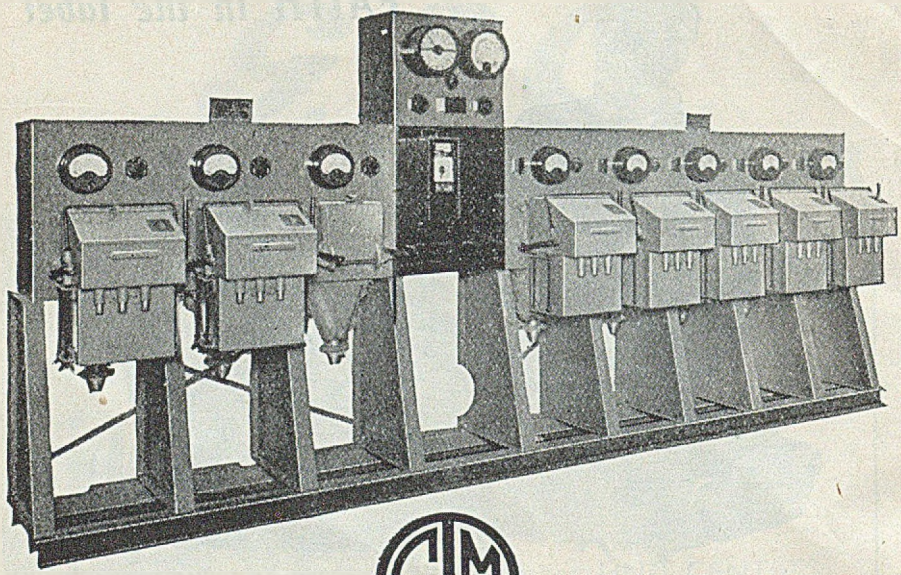

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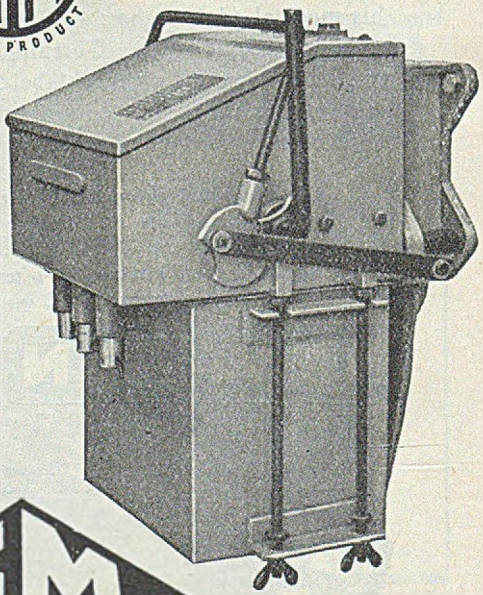

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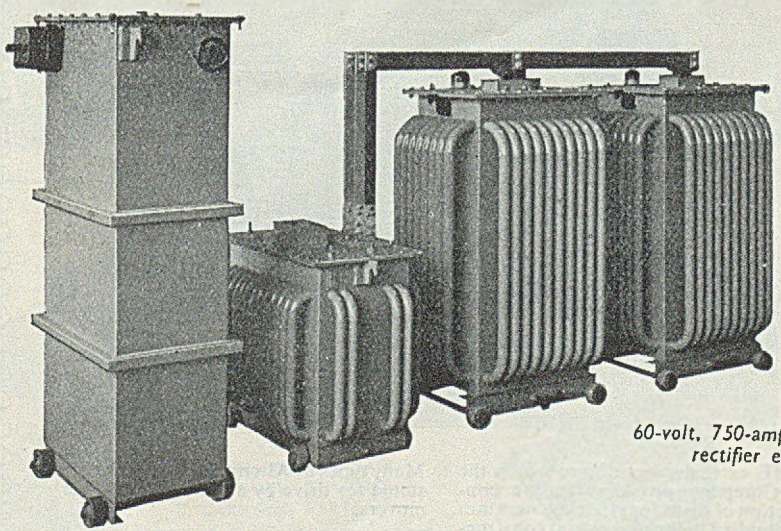

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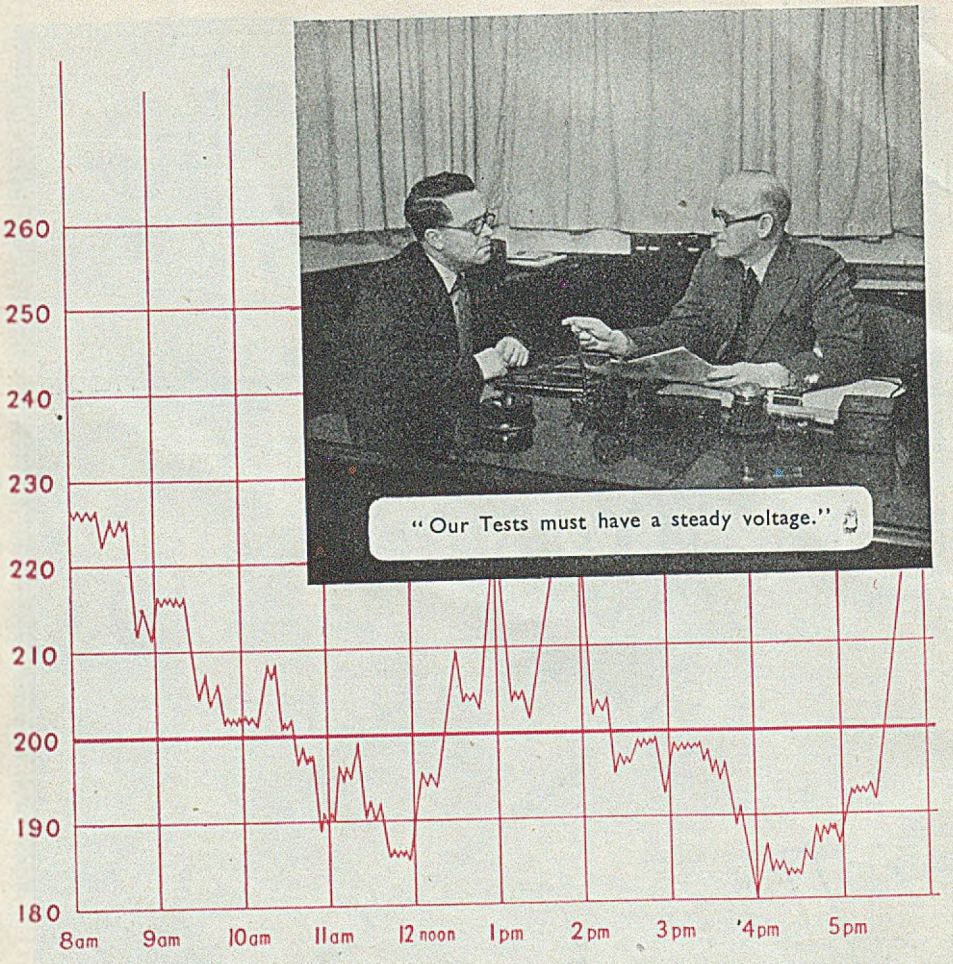

ELECTRICAL REVIEW

July 4, 1947

Contents :—

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER — ESTABLISHED 1872

Vol. CXLI. No. 3632 JULY 4, 1947 9d. WEEKLY

Making Nationalization Work

Essential Need for Co-operation

WITH the third reading of the Electricity Bill in the House of Commons last Monday the nationalization of the electricity supply industry, for some time now a foregone conclusion, has reached a further stage in its relentless progress. As in the recent case of the Transport Bill, there will no doubt be considerable opposition in the House of Lords to certain clauses in the Bill and amendments are to be expected aimed principally at "softening the blow" both to municipalities and companies. There seems little prospect, however, of there being any real conflict with the Government over the main issue.

Legislation and its Operation

The imminence of nationalization focuses ever-growing attention on the problem of the transition from the existing state of affairs to the new regime. Of few phases in the history of our national evolution could it more aptly be said that legislation is simple compared with its administration. Everyone engaged in the electricity supply industry, whatever may be his views on the merits or demerits of nationalization, has firmly fixed in his mind the main objective, namely the widest possible availability of electricity at the lowest price.

That being the case, with nationalization close upon us, it is incumbent upon all organizations and individuals associated with the industry to sink their differences and make the new scheme work. Without this co-operation the unenviable task of the recently appointed Organizing Committee would be rendered almost intolerable. By his own obvious eagerness to co-operate and learn, Lord Citrine, the chairman of this Committee, made a very good impression at the I.M.E.A. Convention at Bournemouth last week when he made his first public contact with the industry since his appointment. Stressing the avowed willingness of the Minister of Fuel and Power to be guided by the Committee in the matter of appointments to the Central Electricity Authority and the Area Boards, he dispelled a good many of the fears and uncertainties as to the future. His emphasis on the necessity for, and the difficulty of, retaining initiative and zeal in the new set-up further makes it clear that his Committee, as one would have expected from the records of its members, is working on the right lines.

Possible I.M.E.A. Survival

Even though nationalization sounds their death knell, electricity supply organizations can be counted on for the maximum co-operation to ensure the least disturbance during the possibly prolonged transitional stage. If local authorities are not satisfied with their representation on the Consultative Councils they are in a position, as is already contemplated, to amend the constitution of the I.M.E.A. to meet the situation. Such a reconstituted body, while helping to smooth out the many difficulties which are bound to occur during the change of ownership, could also play an invaluable part in keeping a watchful eye on the local interests of consumers. Inevitably its

character would have to change to a certain extent. All local authorities, whether they had operated an electricity undertaking or not, would presumably have to have the right of membership, but means must be found for the continuance of the representation of the engineering side. The overcoming of this and similar difficulties will provide plenty of scope for thought within the next few months.

Progress of the Bill

After a long debate on report, in the course of which a number of new clauses were added and amendments made, the Electricity Bill passed its third reading in the House of Commons on Monday last and now goes to the Lords. It is the Government's intention to place the measure on the Statute Book before the summer recess. An interesting addition is a clause providing for the transfer of non-statutory undertakings to the Central Authority on a "going concern" basis. In this they are more fortunate than their statutory brethren. Attempts to secure compensation to local authorities for loss of rate relief were, properly, unsuccessful. An account of the alterations and additions is given on page 33 of this issue.

Winter Prospect

LITTLE hope of improvement in the fuel and power situation can be derived from the latest official pronouncements. Coal production is not rising at the hoped-for rate and the achievement of the output of 200 million tons considered in the "Economic Survey for 1947" to be the minimum figure for safety is doubtful. And so is the saving of 2,000,000 tons this summer by economies in the use of gas and electricity. Sir Guy Nott-Bower of the Ministry of Fuel and Power said last week that only 270,000 tons had been saved since the beginning of May. He also said that there would be a discrepancy of 2,000,000 kW between the demand for electricity and the plant capacity next winter. This will be no better than it was last winter when the adverse margin was about the same.

"Staggered" Industry

INSUFFICIENT enthusiasm has been shown by either industrialists or trade unionists for the proposals that demand next winter should be spread more evenly throughout the day by adjustment of working hours and heavy loads. The main obstacle has been lack of agreement upon nightwork and overtime payments; some of the unions were not wholeheartedly in favour of night work, but arrangements covering these points have now been made for the engineering industry. The General Council of the Trades Union Congress has urged an early special meeting of the National Joint Advisory Council to consider the problems involved.

Industrial Power Supply

IN our issue of June 6th we commented on allegations that electricity supply undertakings were pursuing "restrictive practices" by insisting on high prices for stand-by and supplemental supplies and endeavoured to show that there was some justice in these charges, unfortunate though it appeared. The Electricity Commissioners have had under consideration industrialists' representations on this subject, and on charges during restricted or "staggered" hours and for adjusted loads, and have made a number of proposals to supply undertakings; these are set out on p. 21 of this issue. Although the adoption of the proposals will mean a loss of revenue, we think that most undertakings will agree that they are reasonable and will bear the loss with equanimity.

Development in Uganda

MR. C. R. WESTLAKE'S report on the development of hydro-electric resources in Uganda reviewed on page 17 was "released" appropriately enough just after the Colonial Secretary's announcement of the Government's intention to establish a Colonial Development Corporation with total borrowing powers of £100 million. Mr. Westlake's proposals have been favourably received by the Government of Uganda which (with the approval of the Colonial Office) is seeking the Legislative Council's approval to their adoption. It will then negotiate for the acquisition of the Ugandan assets of the East African Power & Lighting Co. It agrees that only a Government-sponsored body could face the losses which would be incurred for some years. This scheme of development would seem to be an appropriate subject for assistance from the proposed Development Corporation if assistance is needed.

I.M.E.A. Convention

Further Report of Proceedings at Bournemouth

REFRESHED by the previous day's outings in perfect weather delegates to the Incorporated Municipal Electrical Association Convention at Bournemouth turned up in good numbers on Thursday last week to listen to Mr. R. Birt's paper on "The Law Relating to Electricity Supply." This does not sound a very promising subject for a bright summer morning but nobody who was present will consider his time ill-spent. Mr. Birt's lucid exposition of the complex structure of electricity supply legislation, which surely can have no equal in any other industry, was presented in such a way as to be interesting as well as informative and his efforts to make his audience *au fait* with last-minute developments in the House of Commons were much appreciated. In this latter respect he was handicapped by the fact that, with the final day of the Report Stage of the Bill being only the day before, the fate of some of the amendments was still unknown. It was therefore a happy suggestion on the part of Mr. J. Eccles, the vice-president of the I.M.E.A., that Mr. Birt should be allowed to include in the final version of his paper a report of the decisions of Parliament.

A separate report of the discussion appears on another page but it may be mentioned here that most of the speakers agreed with Mr. Birt as to the present complexity of the law and the need for some codification of its various provisions. As Mr. F. Newey (Lincoln) pointed out, the law had to be resorted to so infrequently in the electricity supply industry that nobody knew where to look for the relevant clauses. Mr. Eccles, who is a member of the Electricity Supply Organizing Committee, agreed that legislation was "still in a bit of a tangle" and registered an appeal that "as soon as may be" what was left of existing legislation should be grouped together.

Attention was also drawn to various anomalies that existed in present legislation, and Mr. Norman Elliott (London J.E.A.), supporting Mr. Birt's contention that in local enactments there were provisions which could with advantage be extended to cover the whole country.

Pointing out the appropriateness of the time of the presentation of the paper, Mr. R. A. S. Thwaites (Manchester) emphasized two points that received special approval. One was the necessity for ensuring that in the new legislation consumers were adequately covered with regard to the obligations of undertakings to supply electricity; the other related to precautions against undue preference.

Those who complained of the excessive speed with which the Electricity Bill was being passed through Parliament were invited by Mr. Eccles to ponder on the rapidity with which some of the earlier Bills became law.

He also echoed the President's hope that in the new electricity supply organization there would be full scope for the initiative and zeal for all engineers and administrators to work for the public good.

Mr. Eccles was right to point out that the I.M.E.A. had never been in conflict with the main principles of the Bill, if by that he meant a general improvement and extension of the service electricity could render to the community, but it was obvious that some of his audience had to do a bit of quick thinking before they grasped the purport of his words. If the same remark had been made last year it is possible that there might have been some quite different interpretation.

The £5,000,000 "global sum" has been the cause of much speculation and Sir William Walker, the immediate past-president, voiced the desires of all to know how it was to be distributed.

While these discussions were taking place, the more observant of those present might have noticed on the platform a new face which they might not have recognized, and it was a pleasant surprise when the president introduced Lord Citrine, chairman of the Electricity Supply Organizing Committee set up by Mr. Shinwell. Lord Citrine had been invited previously to attend the convention but at the time thought it would be impossible for him to do so. When he was finally able to be present he expressed the wish to come unobtrusively and without fuss and it was a great pleasure to delegates therefore when he was persuaded to say a few words.

Lord Citrine is not without previous contacts with the industry and in 1935 gave evidence on behalf of the T.U.C. to the McGowan Committee. He said he was anxious to learn and anxious to co-operate. Mr. Pickles' example in Dumfries of rural electrical development should provide a useful object lesson for the new Authority. The legislating phase was in some sense easier than the organizing phase and the latter could only be effectively carried out by establishing contacts with the men of the industry.

He wanted the transition to be made with the minimum of disturbance and he did not want the uprooting of the organization but the evolution of the best kind of organization. He assured the I.M.E.A. that any proposals it might make would be welcomed to ensure a smooth transition. There was general approbation when he concluded with the remark that when the Bill became law it would be their job to make it work.

After Mr. Birt's reply to the discussion Alderman G. B. Brooks (St. Marylebone) proposed a vote of thanks.

The Mayor of Bournemouth welcomes the members of the Association at the opening of the convention

The E.A.W. luncheon is always one of the high spots of the Convention and this year's function was no exception. At a luncheon Mrs. F. N. Rendell-Baker presided and welcomed those present on behalf of the Electrical Association for Women. Referring to the recent honour of Dame Commander of the British Empire conferred on Miss Caroline Haslett, director of the E.A.W., she said there was no other woman in the Empire who better deserved this title.

Proposing the toast of the E.A.W., Mr. Pickles said he was glad of the opportunity to pay tribute to the valuable work of the Association during the past twenty-three years. Its most important service was to express the views of women to the electrical industry, but it had also established a

The President, Mr. J. S. Pickles, delivering his address

recognized standard of training for women engaged in the industry. He was glad that an appropriate scale of salaries had recently been approved for women demonstrators.

Adding his congratulations to Miss Caroline Haslett on the honour bestowed on her, Mr. Pickles said that the supply side of the industry was very grateful for the help she had given and he himself had benefited by her influence. He was proud of the fact that it was in Dumfries that she had had her early electrical training.

Turning to the question of rural development, Mr. Pickles declared that it was one of the prime objectives of the new legislation. A very great deal had been done already—much more than was commonly credited, and he claimed that our country's progress was as good as any other country's and better than most. It had caused him much satisfaction and pleasure to be instrumental in bringing happiness to villages and hamlets by the provision of electricity, which, by the elimination of drudgery and even suffering, was such a boon that it should be further and further extended.

The Mayor and Mayoress of Bournemouth welcome Mr. and Mrs. A. W. Barham (Watford) at their reception

Replying on behalf of the Association, Alderman Mrs. Gregory said that its co-operation with the I.M.E.A. dated back many years. They owed a great debt of gratitude to Sir William Walker not only for his recent work in connection with the salary scale for women in the industry but also for his assistance over a great number of years. She also thanked Mr. F. Newey, who was chairman of E.D.A. when the salary scale was being prepared.

Mrs. Gregory asserted that women no longer required convincing of the advantages of electricity in their homes but needed only the opportunity of using it.

At the conclusion of the speeches Mr. Eccles, deputizing for Mr. H. F. Carpenter, chairman of E.D.A. who had that morning set off from Poole on the first stage of a flight to Australia, presented to Mrs. Pickles on behalf of E.D.A. an electric coffee percolator in token of the industry's esteem. In the afternoon many of the ladies as well as men took the opportunity of paying a visit to the electrical exhibition, which attracted a good attendance throughout the week.

At the banquet in the evening, in proposing the toast of the I.M.E.A., Professor J. D. Cockcroft gave an enthralling picture of latest developments in atomic energy. While this new source of power may be "just round the corner" it seems that there is a good deal

of research and development work still to be done before the atomic power station becomes a *fait accompli* and that we must think in terms of a decade or two before there is any possibility of atomic energy ousting steam or water as the main source of electrical energy. Of more immediate commercial interest were Mr. Eccles' remarks on a subject that has been causing a good deal of speculation and anxiety on the part of manufacturers, namely the central purchasing of electrical equipment under nationalization. A full report of the speeches appears on another page. With the toasts taking rather longer than was expected little time remained for dancing before an excellent cabaret.

At the E.A.W. Luncheon: Miss Caroline Haslett, Lord Citrine, Mrs. J. D. Cockcroft, Mr. J. S. Pickles and Mrs. F. N. Rendell-Baker

Going to bed under cloudless skies, delegates were somewhat disagreeably surprised to find it pouring with rain for the annual general meeting on Friday morning. Still the change in the weather tempered to some extent the sad feeling that this was the last day of perhaps the last of the series of I.M.E.A. conventions which have come to be looked upon as the high-spot of the electrical year. As if to emphasize that this was indeed a momentous occasion there was an early surprise at the meeting. The Council's annual report was adopted without a single question, which as Mr. Pickles pointed out must be a record. Mr. Dalton having relented since Councillor A. E. Wills (Newport, Mon.) put down his motion, it was possible to omit " cookers " from his proposal that efforts should be made to get purchase tax removed from cookers, wash boilers and water heaters. The motion was carried, with an addendum to include refrigerators.

A proposal by Alderman A. E. Gough (Cardiff) for the continuance of the Association after nationalization had been put into effect provided an opportunity for the Council to make known its own deliberations on the matter. The President said that counsel's opinion had been taken and it was apparent that the Association would have to be either reconstituted or dissolved. The motion to continue the Association was carried unanimously and an extraordinary general meeting will be held in due course to discuss what further steps shall be taken.

There was considerable opposition to the motion of Councillor G. S. Hyde (New Mills) seeking further compensation under the Electricity Bill for undertakings whose losses had been met out of the general rate fund. The president remarked that this was a double-edged sword and might result in there having to be " two-way traffic." but the proposal was carried by a substantial majority.

Professor J. D. Cockcroft, Mrs. Pickles, Mr. Harold Hobson, Alderman Mrs. Gregory and Sir Johnstone Wright at the E.A.W. Luncheon

The meeting neared its close with the investiture of the new president, Mr. Eccles, with his chain of office and with tributes to the valuable and unstinted work of Mr. Pickles during this most momentous year in the history of the electricity supply industry. The new vice-president, Councillor J. Selwyn-Jones, J.P. (Newton-le-Willows) was also welcomed, and Mr. W. P. Lilwall, who has recently retired from the position of electrical

engineer and manager of Fleetwood, a past-president of the Association, was elected an honorary member.

Ending on the note "that it be left to the Council to decide where the next convention should be held" the meeting sent delegates away with a gleam of hope that they might still look forward to similar functions by which the valuable contacts and services built up will be retained.

1. Dancing at the Pavilion Ballroom.
2. By coach to Cheddar and Wells.
3. Waiting to board the "Bournemouth Queen" for the Isle of Wight

4 and 5. Coach trips to the New Forest, Swanage and Corfe Castle

Annual Dinner

Professor Cockcroft on Atomic Power

THE annual banquet, dance and cabaret was held in the Pavilion on June 26th, when there was a company of some 600 delegates and visitors. The President was in the chair and the principal guest was Professor J. D. Cockcroft, F.R.S.

PROFESSOR COCKCROFT, proposing the toast of the Association, mentioned that the President and himself were very old friends, both having been born on the borders of Lancashire and Yorkshire. They both studied electrical engineering together at the Manchester College of Technology under Dr. Miles Walker, whose methods should find a still wider acceptance in engineering education to-day.

During the next few years, the structure of the industry was to be changed to extend the principle of public ownership to the whole of it. Its future success would depend on how far the new Area Boards would draw on the time and energies of public-spirited men as the municipalities had done in the past.

(Top) Professor J. D. Cockcroft, (Centre) Mr. J. Eccles, and Mr. V. Z. de Ferranti speaking at the banquet

This year's fuel crisis had had the good effect of forcing us to think seriously about our fuel supplies, which were the basis of our whole economy. There had been a tendency to look for salvation to atomic or nuclear energy. It was true that from the burning of one ton of uranium fuel—the lighter form of uranium—in a nuclear furnace we could obtain the same energy as from 3 million tons of coal. It must be remembered, however, that it took electrical science and technology over fifty years to develop from Faraday's discovery of electromagnetism to the first electricity undertaking, and a further fifty-one years from the date of the foundation of the Association to develop the industry to its present state of perfection. Although the rate of development had increased enormously since Faraday's time, we must not expect miracles now. We should rather ask what was the present state of our knowledge, what were the technical problems to be solved, before a full utilization of nuclear energy could be made and, finally, what would be the capital cost of changing over to nuclear power and how could such a programme be integrated with our expanding needs for power.

Much of the pioneer work leading to the release of nuclear energy was due to the British school of nuclear physics and particularly to the late Lord Rutherford. At the beginning of the war its potentialities became apparent but owing to our limited resources, having regard to our other war commitments, the job was turned over to the Americans. In 2½ years the sum of £500 millions was spent in its application not to the production of power but to the atomic bomb. During the course of this development, a number of atomic piles or nuclear boilers were built, which generated more heat than the largest of power stations. The piles were built to produce a nuclear explosive, plutonium, and the heat was wasted.

(*Continued on page* 10)

Key to pictures on page 9

(1) Lord Citrine, Mr. J. Eccles, Mrs. Eccles, Mr. C. G. Morley New (Electricity Commissioner) and Mrs. Morley New. (2) Sir Johnstone Wright (general manager, Central Electricity Board), Mr. G. L. Wates (chairman, Cable Makers' Association), Mrs. Drake, Mr. R. H. M. Drake (President, Electrical Contractors' Association) and Sir John Dalton. (3) Councillor Selwyn-Jones, Sir George Nelson (chairman, B.E.A.M.A.), Mr. W. N. C. Clinch (chairman, Electricity Supply Joint Committee) and Mrs. Clinch. (4) Mr. H. W. Swann (Senior Electrical Inspector of Factories) and Mr. J. C. Grant. (5) Mr. T. Corrie, Miss Haslett (Director, E. A. W.), Mr. V. Z. de Ferranti, Mr. N. MacPherson, M.P., Mrs. de Ferranti and Mr. H. Hobson (chairman, C.E.B.) (6) Mr. H. Nimmo (Electricity Commissioner), Mrs. Lee, Mr. R. Lee (chairman, E.R.A.), Mrs. D. Peattie and Alderman Sir William Walker.

AT THE I.M.E.A. BANQUET

Key at foot of opposite page

The nuclear boiler consisted essentially of many bars of uranium metal, sheathed in aluminium, embedded in a pile of many hundreds of tons of pure graphite. The uranium rods got hot and would generate as much heat as the engineer was able to remove. It was possible to remove heat in the conventional way by compressed gas or other coolants, but as long as we were limited to rods sheathed with aluminium, the emergent gas temperatures could not exceed about 300 deg C or 570 deg F., and this was unduly low for efficient power generation. The first experimental power generating plants would, however, probably operate in this region of temperature. One of the major problems to be investigated would be the problem of fuel replacement. If Nature had no troubles in store for us, we could leave a nuclear boiler containing, say, 100 tons of uranium to run for 20 years until the 1 per cent of the light uranium, which constituted the real fuel, was burned. During this time it would provide the thermal output of 3 million tons of coal. But our actual operating problems were likely to be much more difficult, for at intervals it would almost certainly be necessary to take out the uranium, dissolve it up, extract certain radioactive products which tended to damp down the nuclear fire, and put the uranium metal back into the furnace. These operations were likely to result in the greater part of the fuel cost, but without operating experience it was not possible to make any good prediction of these costs.

Two Five-Year Periods

It would also be necessary to face the problem of increasing the temperature of the emerging gas in order to obtain improved efficiencies, and this, in turn, depended on metallurgical advances. He felt, therefore, that five years would be required to build experimental power producing plants, and a further five years' experience of their operation was likely to be required before we could begin to make useful assessments of the potentialities of nuclear power. In the interim period we should obtain some benefits which were likely to be of first importance, for in these nuclear boilers we could produce radioactive elements which had been proved to be most valuable tools for medical, biological and industrial research, and their use was likely greatly to extend. Other benefits predicted by the Press, such as the atomic car and the atomic aeroplane, we must be prepared to forgo.

The general conclusion was that whilst nuclear power had great potentialities and was worth a determined effort, it was yet far from certain how important it would be in the next ten or twenty years. We should not therefore be distracted by its rather dazzling promise from a search for economy in our present standard fuels. The overall efficiency of thermal utilization of coal was probably below 15 per cent, and contributing to this low figure were many well known sources of loss. First, was the large percentage of heat going uselessly into our rivers. It was to be hoped that district heating schemes would, in time, remove some of this waste. There was also, he believed, a very large difference in fuel consumption between that of the electricity supply industry and the average consumption of other power producers over the whole country. Thirdly, our domestic heating system, in which over 20 per cent of the coal used, had certainly a low thermal efficiency—something of the order of 10 per cent. This could be largely improved by the new designs of household heating units and by the better thermal insulation of buildings. In the field of space heating, too, there were possibilities in the use of the heat pump and a really large scale use of electricity might be developed in that connection.

The electricity supply industry was in a key position in regard to the fuel situation and would be equally so in any future developments from atomic energy. Whatever the changes, he felt sure it would continue to attract men of ability and to keep in the van of technical progress.

Municipalities' Services

THE PRESIDENT expressed great satisfaction that Professor Cockcroft had mentioned the great services rendered to electricity supply by the municipalities and their unpaid members of committees, and said it would be a great pity if that aspect were lost during the change-over. After welcoming Lord Citrine, Mr. Pickles said that during the war there were several Presidents who had not had the pleasure, as he had had, of presiding over a Convention. He mentioned Mr. Mould, Mr. Handley, Mr. Newey, Mr. Townley and Mr. Lilwall in this connection and said he wished to express appreciation of the work which they did for the Association under very difficult circumstances.

It seemed certain that the Electricity Bill would become an Act before the end of this Session and it appeared to him that during the next few years the difficulties of the electricity supply industry would not be on the administrative side. The great danger was that of losing, or having checked, that tremendous spirit in the industry which had made it so successful up to the present. Everybody in the industry should resolve to maintain the same relations and spirit of cordiality in the difficult period which was ahead of the industry.

MR. J. ECCLES (president-elect) proposing "The Guests" speaking first of the future, said he would be very surprised if those now associated with the I.M.E.A., did not find some excuse for meeting and enjoying their old social contacts—and he said that, he added, with Lord Citrine sitting on his right. Giving a cordial welcome to all the guests, he specially mentioned Professor Cockcroft and Lord Citrine and referred to a number of others by name. He welcomed also representatives of associations

outside the supply industry, particularly mentioning the manufacturers of plant and apparatus. These organizations, he said, were all enduring and when the electricity supply industry had crossed its Rubicon, it was to be hoped that the quality of the manufacturers' products would remain high, their prices moderate and their temperatures low when they came to discuss matters with the one customer of the supply industry! E.D.A. had done magnificent work. There was no product so good that it would sell itself—not even electricity—and therefore the industry, under whatever form of management it might be, would need a strong and virile educational and publicity association. A special welcome was given to Miss Caroline Haslett, who was congratulated on the recent honour conferred upon her. Finally, he referred to the Institution of Electrical Engineers and coupled with the toast the name of Mr. Ferranti, its President.

MR. V. Z. DE FERRANTI emphasized the fact that he was present as President of the Institution of Electrical Engineers which was not concerned with politics or matter of trade or the improvement of the personal lot of its members. Had he been speaking as a manufacturer, he might have said much in amplification of what Mr. Eccles had said about keeping a low temperature in the "single-customer" phase of the supply industry on which we were about to enter! On behalf of the guests, he praised the work of the secretary (Mr. Simpson) and his staff.

Upon the conclusion of the speeches Mr. Pickles presented an electric hot-plate to the Mayoress of Bournemouth as a mark of appreciation of all she had done to welcome the delegates. He also presented to Mr. C. H. Downing of British Electric Meters, Ltd., the G. P. Dennis Golf Trophy.

Annual General Meeting

Hopes for Association's Future

AT the annual general meeting held in the Pavilion on June 27th the annual report of the Council and the accounts were unanimously adopted without discussion.

COUNCILLOR A. E. WILLS (Newport, Mon) moved a resolution expressing the Association's concern at the reimposition of the purchase tax on domestic electrical appliances and urging the Government to remove the tax entirely from washboilers and water heaters.

The President said that the Council accepted the resolution and an amendment to include refrigerators was also accepted and the motion was unanimously adopted in that form.

ALDERMAN A. E. GOUGH (Cardiff) moved a resolution asking the Council, in view of impending legislation designed to alter the structure of the electricity supply industry, to consider the future of the Association. He said that it had been stated by the President and others that there was a future for the Association in some form. It was obvious that the engineers would have to go but he believed in local authority control. He thought the proposed representation of local authorities on the Consultative Councils was inadequate.

(Top) Mr. J. Eccles (Liverpool) receives the President's chain of office from Mr. Pickles; (Centre) Past-President's badge being presented to Mr. Pickles; and (Bottom) Councillor Selwyn-Jones (Newton-le-Willows) receives the Vice-President's badge

The motion was seconded by ALDERMAN W. DOBBIE (York). The President said that the matter had been considered by the Council. It would have to be decided whether to reconstitute the Association, which he believed would mean enlargement to bring in all local authorities, perhaps, or whether the Association should be dissolved. Counsel had expressed the

view that if the Association desired to continue, an application would have to be made to the Courts for an alteration of the Articles of Association, which might not be sanctioned, and if it was decided to dissolve, an application would have to be made to the Courts with regard to the transfer of the assets to a suitable body. In Counsel's opinion the Association could not pay compensation to the officers of the Association for loss of office. It appeared that other associations were in a similar position and an amendment to the Electricity Bill had been prepared to enable Associations such as the I.M.E.A., that might be dissolved, to devote funds for the purpose of compensation to the staff. He understood, unofficially, that the proposal would be accepted at a later stage. At some time between the announcement of the vesting date and the actual date it would be necessary to call a special meeting of the Association to discuss the whole matter. Therefore the Council accepted the motion and the members would be consulted again at the appropriate time.

COUNCILLOR G. S. HYDE (New Mills) moved a resolution calling upon the Association to take steps to obtain an amendment of or addition to the compensation clauses of the Electricity Bill to provide that a local authority should be entitled to receive payment of an amount equal to the net amount paid out of the general rate fund to meet losses on its electricity undertaking.

A Just Claim

Councillor Hyde said that his own undertaking, which was established only in 1930, had incurred a net loss of £3,745. An application to increase tariffs in 1942 was refused. Had the undertaking been allowed to continue, it would have made profits which would have offset the balance of loss and he maintained that no more just claim on the sum of £5,000,000 set aside by the Government could be made than in the case of his, admittedly, small authority and others like it.

ALDERMAN B. BRAMMER (East Retford) seconded the motion and spoke of the cost, in his case, of extending the supply to a large rural area of some 230 sq miles. It now appeared that his authority would be made to pay for its ambition, losses having fallen upon the rates. However, the undertaking was now established on a sound financial footing but his authority would reap no benefit from it and, under present conditions, would have to bear the losses incurred.

The President said the Council had approached the Ministry whose reaction had been sympathetic although it was maintained that there must be a "two-way traffic." In other words, if councils were to be paid for losses the Government would expect to get the gains, i.e., amounts received by the rates over and above the amounts taken from them. However, there might be some substance in Councillor Hyde's claim because there had been a refusal to allow an increase in charges. As to the "global sum" of £5,000,000 it was laid down that it should be paid to individual local authorities in such manner and in accordance with such principles as might be prescribed. Within these words there was scope for the Council to deal with such cases as had been mentioned. At the same time, he could not encourage them to be optimistic as to the outcome because there were so many counter-arguments. He was going to advise the Council to accept the resolution and they would do whatever they could to get a decision in the matter.

ALDERMAN R. MATTHEWSON (Chester) spoke against the motion but the resolution was carried by 344 votes against 142.

New President

The President then announced that Mr. J. Eccles, city electrical engineer, Liverpool, had been elected President for the ensuing year. MR. ECCLES expressed his appreciation of the honour done him and presented Mr. Pickles with the past-president's badge, at the same time moving a vote of thanks to him for his services which COUNCILLOR W. J. HEBDEN (Shoreditch) seconded.

MR. PICKLES acknowledged the vote of thanks and expressed his appreciation of the help and assistance he had received from the vice-president and members of the Council, and from Mr. Simpson, the secretary, and his staff.

COUNCILLOR W. M. MACDONALD (Dumfries County Council) responded to an expression of thanks to his Council and ALDERMAN A. CRITCHLEY expressed the appreciation of Liverpool at the election of Mr. Eccles as President.

It was decided to leave the venue of the next Convention in the hands of the Council. A cordial vote of thanks was given to the Mayor and Mayoress of Bournemouth.

Council Elections

The President announced that Councillor J. Selwyn-Jones (Newton-le-Willows) had been elected vice-president, and invested him with the vice-president's badge. The election of members of Council resulted as follows:—

Group A.—Local Authority Representative: Alderman Capt. C. Saer (Fleetwood); Engineers: Mr. A. J. C. de Renzi (Newcastle-under-Lyme), and Mr. Dawson Thomas (Abertillery).

Group B.—Local Authority Representative: Councillor B. J. Watson (Maidstone); Engineers: Mr. R. Birt (Ealing) and Mr. W. A. Royle (Sunderland).

Group C.—Local Authority Representatives: Ald. Sir William Walker (Manchester) and Ald. G. B. Brooks (St. Marylebone); Engineers: Mr. C. T. Melling (Luton) and Mr. J. W. T. Townley (West Ham).

The President announced the election of Mr. W. P. Lilwall as an honorary member.

Discussions on I.M.E.A. Papers

Power Station Practice

Recent Developments and Future Prospects

THE discussion on the paper by MR. F. W. LAWTON (Birmingham) was opened by MR. J. W. J. TOWNLEY (West Ham). Referring to the practice of building generating stations in sections, he said that when the second and subsequent sections came to be dealt with it often happened that the local authority desired that tenders should be called for again and there was the risk of the final power station being something of a museum as regarded the multiplicity of plant. He asked the representatives of local authorities to appreciate that in desiring to treat their power stations as a complete whole and to duplicate existing contracts, engineers were doing the right thing.

High-pressure Piping

Regarding high-pressure piping, there was a trend to-day to use the highest possible pressures which the steam drums of the boilers would stand—in his own case 675 lb—and accepting a very considerable pressure drop between the boiler and the turbine stop valve. That seemed to him to be a very important matter because there was no great loss of heat energy and there was a very considerable saving in capital cost.

There seemed to be two schools of thought as to the best method of ensuring that the boiler should have the same hours of availability as the turbines. It was all a question of when the boilers must come down for cleaning, but there was now some doubt as to whether we were on the right lines with regard to the use of soot blowers.

A recent suggestion from American sources was that feed water regulation should be related to steam output but this was rather revolutionary. On the question of de-aeration of feed water, he was installing an entirely separate de-aerating plant to ensure that no oxygen-saturated water reached the boiler plant.

DR. S. WHITEHEAD (E.R.A.) outlined some of the contributions which his Association had made to some of the problems mentioned in the paper, and what it was hoped to do in the future. The present high-temperature alloys had been developed in association with E.R.A., and the present steam tables and Mollier diagrams were now quite familiar. It was intended to run the temperatures from the present 1,000 deg F to 1,200 deg, and then to 1,500 deg. In conjunction with the British Coal Utilisation Research Association it was hoped to produce a standard for the grindability of coal. Again, in conjunction with the Iron and Steel Research Association, there was in hand an investigation of some small gas-turbine generating units, and he understood that the manufacturers had developed some large units. A recent test of the possibility of the overheating of rotors by harmonics had given reassuring results. He referred to the work done by E.R.A. in connection with air-blast circuit breakers and disagreed with the author's observations as to the complexity of the pneumatic equipment.

Mr. F. W. Lawton reading his paper on " Recent Developments in Power Station Practice "

On the question of electrical sheet steel, he said that fundamental research was being carried out by Sir Lawrence Bragg and others and he believed that some valuable results would emerge in the near future. As regards surges, he said that whilst the interposition of a transformer minimized these, it did not eliminate the risk of damage to the generator from surges from overhead lines so that protection was still necessary.

MR. R. A. S. THWAITES (Manchester) supported the author's view that designs for power stations should be functional and said

there were cases in which the engineer had been almost forced to abandon belt for bucket conveyors to please the Fine Arts Commission. He thought that bucket conveyors should not be permitted in any circumstances. He expressed satisfaction that the author had come down quite definitely against designing the main plant to provide for district heating. It might be found economic in some cases to provide district heating by means of the heat pump, utilizing as a source of heat the warm water discharged from the condensers in the power station. He believed that the gas turbine was the coming method of generating electricity for peak load stations and he had actually seen the preparatory lay-out of such a station incorporating four 15,000-kW sets. The advantages appeared to be (1) low capital cost; (2) comparatively small space occupied; and (3) the need for very little cooling water.

Wartime Loss of Ground

MR. F. NICHOLLS (Leeds) said that as a result of the war our practice now was at least six years behind that of America; at one time we were leading the world in the matter of thermal efficiency. As regards coal, the Americans were planning to use fuel containing 6 to 10 per cent ash whereas we had to deal with anything up to 25 per cent, and in some cases even worse.

MR. W. N. C. CLINCH (Northmet Co.) did not share the view of the author that 900 lb pressure and 900 deg F would necessarily give the most effective results. He had had the opportunity of operating a boiler at 1,900 lb pressure and 950 deg F and at 1,500 lb pressure and 940 deg F, and the story of that experience would one day be told. Referring to the use of pulverized fuel, he said that with most pulverizers it was possible to trap the pyrites and prevent them passing into the combustion chamber and therefore into the atmosphere. It was interesting to note that two of the stations mentioned by Mr. Lawton as using gas washing did not use pulverized fuel. There was need in this country for closer attention to the design of cooling towers. On safety valves, he said he had found from experience that an electrically assisted valve was a remarkable improvement.

MR. H. PRYCE-JONES (Brighton), dealing with pulverized fuel, said that given effective arresting apparatus and sufficiently high chimneys, anything that was emitted was comparatively harmless and, in his view, the tendency towards gas washing should be discouraged. He had found the electrostatic precipitator very inadequate in one respect, viz., ability to deal with the abnormal burden imposed during soot blowing. Electrostatic precipitators were also lacking in performance in connection with high carbon content in the ash, and in burning low volatile fuels a great deal of anxiety was experienced in regard to chimney emission where electrostatic precipitators were functioning. His suggestion for improving the position was to put a mechanical precipitator in series with the electrostatic. Regarding the disposal of pulverized fuel ash, he said that he had dropped 100,000 tons into the sea within sight of the Worthing and Brighton beaches, and had never had a complaint. He wondered whether the right policy in the future would not be, as far as possible, to concentrate power stations for burning pulverized fuel near the sea.

MR. J. F. FIELD (Edinburgh) considered that a much broader approach to the problem of the efficiency of electricity production was required and it would call for a considerable amount of research. What was wanted was to push up the efficiency beyond 40 per cent. He did not think the gas turbine would do that because as soon as one tried to make a gas turbine more efficient it was necessary to have heat exchangers. He believed it was possible to get an improved efficiency by means of steam, but not by present methods. By introducing radically new ideas it had been possible, on paper, to work out thermodynamic efficiencies of the order of 70 per cent and even more. But it was possible to-day to get efficiencies of 40 to 45 per cent. This had been put to one well known turbine maker and he had complained of the price of metal. Surely it would be better to make use of a high-priced " Nimonic " steel to save hundreds of thousands of tons of coal.

Author's Reply

MR. LAWTON dealt briefly with a few of the points and promised a full reply in writing. He said the question of high-pressure piping was, at the moment, one of economics. If the cost of piping was high, then smaller pipes would have to be used. With regard to soot blowers, one way was to use the retractable blower, and other possibilities were more liberal spaces in boilers, wider spacing of certain superheater tubes, and deflecting burners which directed the flame downwards and controlled the

combustion. Cleaner fuel would go farther still in the desired direction. He did not think they need fear any sensible Fine Arts Commission if a station design was really functional and also had a degree of beauty. Jet turbines, in his view, would never replace steam turbines for the larger units. Every engineer would support the plea for cleaner coal although power stations had been using low-class fuel for generations. The combination of the mechanical and electrostatic precipitators was again a question of economics, and from the technical point of view it was a very sound suggestion. He agreed that considerable research into many of the problems mentioned was necessary.

MR. J. ECCLES (Liverpool), proposing a vote of thanks to Mr. Lawton, said that no more competent, person could have been selected for the task because Mr. Lawton was now responsible for the installation of five 55,000-kW sets which were going in simultaneously, although in different stages of construction. Undoubtedly a degree of standardization was necessary. Nevertheless, he believed it would be necessary to have 15, 20 or 25 per cent of the plant of a purely experimental character because there was a vast field open for further investigation. Finally, he said he was pleased the author had given the lie to the view of Prof. Hooton of Harvard that genius and brains were inversely proportional to technological skill. The vote of thanks was cordially given.

Electricity Supply Law

Discussion on Mr. R. Birt's Paper

THE first speaker in the discussion on "the Law Relating to Electricity Supply" by Mr. R. Birt (Ealing) was MR. NORMAN ELLIOTT (London and Home Counties J.E.A.) who agreed with the author's conclusion that "in local enactments there were provisions of general application which could, with advantage to all concerned, be extended throughout the area of the electricity supply industry of Great Britain."

If that were not done, then the new Act would accentuate the present curious position in which some undertakers had wider and more convenient powers than others. Examples mentioned included the form of proceedings to be taken in cases of theft of electricity, tampering with seals when consumers' supplies were temporarily cut off, refusal to pay hire-purchase charges, and right of entry upon consumers' premises. Additional powers were needed to enable electricity suppliers to perform their duties properly and should be provided for in the codification and simplification that all hoped would soon take place.

MR. R. A. S. THWAITES (Manchester) remarked that they were meeting on an awkward day, as regarded the debate on the Electricity Bill, making it difficult to form any idea of how they stood. While the duties of administrators and engineers might differ, some engineers also had to administer their undertakings. Engineers must, at least, know what they could do; they needed to know what the state of the law was and what it might be in future. For instance, how would the new legislation affect the existing obligations of suppliers to give supplies and what were the meanings of such phrases as "undue preference" and "reasonably equivalent."

He therefore fully supported the author's recommendation for the codification of

Mr. R. Birt reading his paper on "The Law Relating to Electricity Supply"

Electricity Acts and hoped that some publication would become available at an early date. They would all be glad to learn that the new Boards might now have regard for the Local Government Superannuation Acts.

MR. W. N. C. CLINCH (Northmet Co.) said the author seemed to have forgotten that, in

addition to being a barrister-at-law, he was also an engineer and manager, for he had not credited the engineer and manager with the ingenuity that enabled them to "get round" many Bills. Evolution placed everything in its right position as time went on. Whatever the law might be, he hoped that individuality and purpose would remain and that the exercise of initiative would continue into the future.

MR. F. NEWEY (Lincoln) pointed out that there were about ten million consumers and the number of disputes between consumer and supplier were so few and infrequent as to constitute a remarkable tribute of goodwill and mutual confidence. But when such disputes did occur, it was most difficult to refer to the Acts for guidance as nobody knew where to look. Some simplified source of reference to the Act was needed, possibly on the lines of the index to emergency legislation produced during the war, the cross-indexing feature of which was a most helpful facility.

The central authority would raise money at 2½ per cent interest, whereas 4½ per cent would presumably continue to be paid on consumers' deposits. A curious position might arise if consumers elected, as they were entitled to do, to make substantially larger deposits than they were asked to do.

History Repeated

MR. J. ECCLES (Liverpool) said he was struck by the recurrent pattern of events recorded in this factual paper; so the kind of controversy now proceeding was nothing new. Those who now considered that events were moving too speedily might ponder over some of the dates recorded in the paper.

Electrical legislation had been of two kinds: to prevent some things being done and permit others to be proceeded with; restrictive at first and then enabling to provide new openings. Even the change of nomenclature of the Acts from "Lighting" to "Supply" indicated a difference of outlook. Now they had what was called simply an "Electricity Bill," perhaps indicating that the zenith had been reached, definitely enabling all, not merely some, to take further action in future.

A code of rules was being provided, but the part that code would play would not be nearly so important as the part of the people who would have to interpret the rules. Interpretation was very much more important than mere verbal content. If full scope were left for the exercise of initiative and zeal then the industry might scale heights hitherto undreamed of. He appealed for the speedy codification of what was left of existing legislation, without waiting for Parliamentary action.

ALDERMAN SIR WILLIAM WALKER (Manchester) wished to know how the "global" sum of £5 millions was to be distributed. It was a very small sum indeed to cover all sorts of matters; but if it was meant only to represent "severance" then it might suffice. He advised Mr. Elliott to be a law unto himself, being sure that he could always be more awkward than any of his customers; how often had it been necessary to go to law? Maintenance of the existing good relationships within the industry would depend upon the common sense of those in authority.

Lord Citrine's Views

LORD CITRINE (chairman of the Electricity Supply Organizing Committee) said that having given evidence for the Trades Union Congress before the McGowan Committee in 1935, he knew something of the I.M.E.A. and the work of its members. For good or evil they were now to be his colleagues, so the sooner and closer they could make contact the better. He was very conscious of his limitations in his new position; he wished to learn and his genuine desire was to co-operate. He had been in office only ten days and had not yet learned all about the industry. Its structure and organization was the main concern of the Organizing Committee; it was a hard job, but they must be sure that the structure was right and that they had the "right men to run the show."

They could only dimly see what the future might be, but he wanted the transition to be least disturbing to organizations within the industry. Consultation could secure continuance of the good work of the I.M.E.A. They must try to search for means of maintaining zeal and initiative and he could assure Sir William Walker that he was anxious to maintain good relations on the labour side and was confident that this was possible.

MR. R. BIRT replied to the discussion very briefly, remarking that Mr. Elliott's plea regarding local enactments was being attended to. He hoped other members would supply information to assist codification. They need not be too apprehensive about the £5 millions as the Central Authority would see to its fair distribution.

ALDERMAN G. B. BROOKS (St. Marylebone) proposed a vote of thanks to the author.

Electricity for Uganda

Mr. C. R. Westlake's Water Power Development Proposals

WE reported last November that Mr. C. R. Westlake, the borough electrical engineer of Finchley, had been released by his Council for a further visit to East Africa on behalf of the Colonial Office. He had already submitted a preliminary report on electricity supplies in the East African territories. Mr. Westlake returned in March and he has now sent us a copy of his "Uganda Electricity Survey, 1947."

Mr. C. R. Westlake

In this Mr. Westlake refers to a previous report (1935) by Messrs. Preece, Cardew and Rider and Messrs. Coode, Wilson, Mitchell and Vaughan-Lee to the Government of Uganda upon the development of the Nile and the potential demand for electricity. He considers that this report, although constructive, was perhaps too conservative when dealing with the potential market for power, as events have proved.

At present electricity is provided from wood- or oil-fueled stations. The supply of wood is becoming shorter and more expensive and the cost of fuel oil to take its place is increasing. Only development of the country's abundant potential water power can solve the fuel problem.

The estimated requirement in 1960 is 110 million kWh with a maximum demand of 24,250 kW. A new coal-fired station would produce this output at 9·16 cents (1·10d.) per kWh, of which coal would account for 5·80 cents (0·70d.), whereas the power could be produced at 3·67 cents (0·44d.) per kWh from a hydro-electric plant at Owen Falls, Jinja.

At present public supply (by the East African Power & Lighting Co., Ltd., and subsidiaries) is confined to the three towns of Kampala, Entebbe and Jinja. The company's stations at Jinja and Kampala have 3,200 h.p. of plant and a further 1,400 h.p. may be installed shortly; there is also about 20,000 h.p. of private plant.

The peculiar advantages to Uganda of a widespread electrification scheme (apart from those common to all countries) are the overcoming of fuel difficulties; the elimination of the need for cooling water which limits the siting of industry at present; the reduction of the heavy maintenance and labour costs; the improvement of factory efficiency by the elimination of shafting and belt losses; and betterment of working conditions.

A survey was made of the various industries and estimates were made of power requirements and load factors. The results are briefly summarized in the accompanying table. The estimates do not take into account the possible export of power to Kenya.

The East African Power & Lighting Co. has a scheme for developing the Bujagali Falls on the Victoria Nile to give between 4,000 and 17,000 kW. Although Mr. Westlake gave qualified approval to this scheme in his earlier report he now favours the development of the Owen Falls, a proposal made in the 1935 report. That report stated that by constructing a dam across the falls to give a 60-ft head a continuous output of 60,000 kW was possible, or with a load factor of 0·8, a maximum load of about 75,000 kW. It was proposed that 15,000-kW sets might be installed as required with two or three in the first instance.

If proposals now being discussed to raise the level of Lake Victoria are adopted the potential power output might be raised to about 110,000 kW.

Mr. Westlake suggests that further investigations are necessary but is of the opinion that there are no major difficulties in proceeding with the work on the lines described in the

PRINCIPAL POTENTIAL DEMANDS

Industry, etc.	No. of Centres	kW m.d.	kW m.d. × diversity	Annual consumption kWh	Load factor
Cotton	51	2,882	2,450	4,293,350	20·0
Sugar	2	3,400	2,896	19,460,000	76·6
Jaggery*	3	38	34	122,670	41·0
Coffee and Rubber	10	596	508	2,056,180	46·2
Tea	4	249	212	838,190	45·0
Sawmills	15	331	282	1,126,800	45·5
Flour	2	62	54	208,960	44·5
Tobacco	2	85	72	471,480	74·5
Soap	3	1,633	1,390	5,712,360	47·0
Textile	2	4,178	3,551	14,697,350	47·3
Other industries	11	1,290	1,098	6,339,300	66·0
Water	15	233	199	553,800	31·8
Town supplies	6	2,330	1,983	9,716,500	56·0

* Kind of low-grade sugar

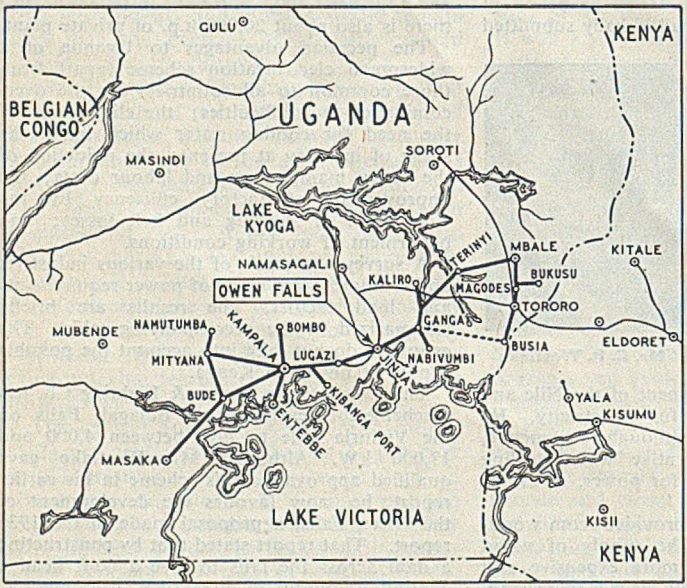
1935 report. It is proposed that a dam be constructed at or near the Owen Falls with a power station designed for an ultimate capacity of six 15,000-kW sets and a maximum output of 75,000 kW; two sets should be in commercial operation at the beginning of 1952 and a third early in 1953.

The estimated cost with an installed capacity of 45,000 kW is £3,440,000, including all civil and electrical work, provision of quarters and alteration of railways and roads. Each additional set, with transformers, switchgear and cabling, would cost about £285,000 and the total estimated cost of the whole scheme, with six sets, is £4,298,000. The cost per kW would fall from £106·00 for the initial installation (two sets) to £47·76 for the complete scheme.

As the hydro-electric station could not be brought into service until 1952, Mr. Westlake proposes the erection of two 4,000-kW thermal stations to supplement the existing stations at Kampala and Jinja by the end of 1949 or early in 1950 to meet the immediate demands. When this plant became redundant it could be used with advantage elsewhere in East Africa. He suggests that a suitable use for it might be to act as a stand-by to the East African Power Co.'s Pagani Falls development in Tanganyika.

The transmission system, it is suggested, should comprise a double-circuit 33-kV line to Kampala from the Owen Falls and a single-circuit 33-kV line westward to Masaka. Between Mityana and Bude there would be a single-circuit 33-kV line with 11-kV lines between Mityana and Bude and between Kampala and Bombo. There would be some reconstruction of the existing Kampala and district transmission system.

It is thought that it may be necessary during the thermal station period to charge "sub-economic" rates to compete with the alternative of private plant using waste products as fuel, but any losses thus incurred will cease when the hydro-electric station is brought into use. To attract load it is also proposed that electric motors and associated equipment should be lent to power consumers without charge; the annual cost would be a negligible proportion of the total cost of the scheme.



Proposed transmission system from Owen Falls

Principally to ensure the raising of capital on favourable terms, Mr. Westlake thinks that a public corporation should be set up to develop electricity supply in Uganda; this body would take over the East African Power Co.'s interests on a suitable compensation basis.

Technical and financial details of the scheme are dealt with at some length in the report, the capital and annual costs of the various parts of the scheme are set out in schedules and a number of useful maps and diagrams are appended.

The author acknowledges the assistance of a number of people, making particular mention of Mr. F. J. Lattin, Secretary for Development, Entebbe, Mr. A. O. Cosgrave, B.Sc., M.I.E.E., Government Electrical Engineer, Kenya, Mr. C. G. Hawes, C.I.E., M.Inst.C.E., Hydrological Adviser to the Uganda Government, and to his personal assistants, Mr. C. E. R. Langford, B.Sc., A.M.I.E.E., Mr. A. T. Wright, Associate I.E.E., and Miss O. E. Smale.

Engineering Centre

THE Engineering Centre, which is sponsored by the principal engineering institutions and associations, will open at 351, Sauchiehall Street, Glasgow, at the end of September. The Centre will be a permanent exhibition of modern engineering products, machinery, tools and materials, and will maintain a technical staff to furnish information. The directors include Mr. E. B. Ball, vice-chairman and managing director of Glenfield & Kennedy, Ltd., and the technical officer is Mr. D. I. L. Doran.

CORRESPONDENCE

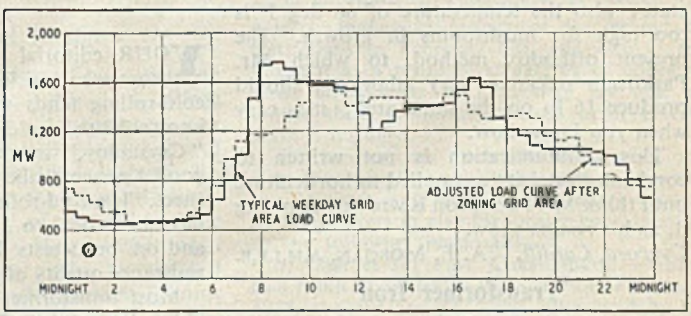
Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for correspondents' opinions.

Load Spreading

THE conclusions of the recent Report of the Electricity Sub-Committee of the Joint Consultative Committee of the Ministry of Labour and National Service do not carry conviction that they will be acted upon to solve effectively load-shedding problems. To anyone acquainted with the probable future loading position it is apparent that a *laissez-faire* attitude can only result in a repetition of the costly muddling-through experienced in the first quarter of 1947.

No proposals are made in the Report for mandatory transference of electrical load, but the suggestions for a voluntary rearrangement of staggering of working hours will undoubtedly be acted upon by a few conscientious industrial concerns. Organizations and industrialists with little or no sense of public responsibility can, however, place the country in the same desperate plight as last winter. Industrial concerns who have already shifted the suggested third of their electrical load to the non-peak periods will again be called upon to shed more of their remaining load because of conditions due to those who have failed to co-operate. This will give rise to the view that the proposed load-spreading programme will inevitably break down and, therefore, load-shedding will become a necessity, so why not, it will be argued, deal with the matter as it arises? This would be a most reprehensible defeatism and only by courageous steps can we avoid drastic curtailments with consequent loss of production.

As the ability to transfer load between one grid area and another is restricted by interconnector capacity, any rearrangement of peak load must lie substantially within each area. I would suggest that during the winter months each grid area, with the exception of Greater London, should be divided into two zones. In one, local transport, works, offices, schools, restaurants, cinemas, public houses, etc., would open and close two hours later than Greenwich mean time and in the other one hour earlier. Such a scheme would spread the peak load subject to three primary considerations: That the change in time was made *compulsory* for all activities except railways; the division of the area had regard to the balance of the electrical load; and the zone dividing line passed through essentially rural areas. The attached curves show the probable result of such a readjustment of conditions, indicating approximately a 10 per cent reduction of peak load.



Curves showing result of zoning with staggered hours

Even if this method did not eliminate the need for load shedding, the loss of production would be minimized and the sacrifices would be reasonably shared by the whole community and not merely by a conscientious minority.

Wrexham. T. R. SMITH, A.M.I.E.E.

Soil Sterilization

AS an enthusiastic grower of tomatoes and mushrooms, I was naturally interested in Mr. Parkinson's article in your June 13th issue on electricity as applied to soil sterilization. If the results he is getting were better than I have obtained for years without sterilization, other than the use of "Vapourite" or allied substance, I would be one of the first to adopt his technique.

After all the trouble and expense to which he has gone to obtain about 6½ lb of tomatoes per plant, compared with a regular 12 lb per plant without, my humble opinion is that it is not worth it. Furthermore, I fear the satisfaction he experiences is psychological inasmuch as, agreed a

temperature of 184 deg F will kill all the creepers, it is not sufficiently high to neutralize harmful bacteria, which may exist in his soil.

With regard to mushrooms, he claims 3 to 4 lb from an area of 8 sq ft with the aid of soil-heating cable. I would respectfully point out to Mr. Parkinson that soil-heating cable is likely to dry out the manure he places over it. We are taught, and it is a fact that the bed on which mushrooms grow must be neither dry nor wet and the only way to counter dryness is to add water which mushrooms hate especially in the myscelium state; also the temperature of 68 deg F is too high for mushrooms in growth. The present orthodox method, to which Mr. Parkinson refers as very laborious, should produce 16 lb on the same area; it is easy when you know how.

This communication is not written to condemn electricity as applied to horticulture but I think Mr. Parkinson is wrongly applying it, as his results show.

Cyncoed, Cardiff. A. F. MORGAN, A.M.I.E.E.

Transformer Iron

From Sir Geoffrey Clarke, C.S.I.

THE leading article in your June 20th issue on "Transformer Iron" expresses facts of which this company has been well aware for some time, and notes a shortage which it has been endeavouring to meet since the end of the war.

This company was established in the early years of the war as a result of conversations between Joseph Sankey & Sons, Ltd., and the Telegraph Construction & Maintenance Co., Ltd., with the intention of producing transformer iron of quality at least as good as that standardized in America, where, as you state in your article, notable watt loss figures are being obtained, 0·35 or even 0·3 watt per lb at 10,000 B and 50 cycles being standard production in these days.

There is one statement in your article which needs correction, that is that the cold-rolled directional steel has the demerit of being extremely brittle. Actually the reverse is the case. By cold-rolling and heat treatment processing, low watt loss can be achieved with a much lower silicon content than is employed in hot-rolled sheet, and the strip is in consequence much more ductile and less brittle than hot-rolled strip of equivalent properties, even if this can be achieved.

You suggest that research is necessary for improvement of transformer iron and for exploration into ferro-magnetism. This company has a very active research organization expressly devoted to these matters, and as a result of its operations, steel with the watt loss given in the preceding paragraph as typical of American practice can now be produced. Unfortunately the plant necessary for large-scale production is not available, so that the quantities produced are small, and it will be a year or two before the full demands of transformer engineers can be met.

London, E.C.2. G. R. CLARKE,
Chairman and Managing Director,
Transformer Steels, Ltd.

YOUR editorial "Transformer Iron" is somewhat misleading in suggesting that cold-rolling tends to brittleness. The best-known British cold-rolled transformer steel, "Crystalloy," is nothing like so brittle as good 4 per cent silicon hot-rolled transformer sheet. The cold-rolled steels so far developed have been of 2 to 3 per cent silicon content and on bend tests behave like the medium-resistance quality of electrical sheet.

Most transformer designers are very hazy about the merits of the four grades of hot-rolled "Stalloy" and often are nervous of using the extra-special and super grades because of the legend about brittleness. Brittleness increases with silicon content, but is not the sole cause of this property.

Your suggestion regarding research into the physics of electrical sheet steel was appreciated by Messrs. Lysaght-Sankey in 1942 and the efforts made since that date should enable this country, within a few years, to get ahead of the United States in this study. However, research alone will not breed good transformers. Unless the results of research and the special properties of materials are published in a form easily digested by the designer new materials will never find a market.

*London, S.W.*12. R. A. LOCKE,
B.Sc.(Eng.), A.M.I.E.E.

Induction Motors and Shedding

IN his article, "Induction Motors and Load Shedding," in your issue of June 13th, Mr. J. W. Mulligan made several references to the possibility of induction motors "falling out of step" under reduced voltage conditions. Is this not a rather loose expression when applied to such machines? The term itself implies departure from synchronism, and as such is surely applicable only to truly synchronous machines; the

plain induction motor is never "in step" and can hardly therefore be said to fall "out of step." Is not the correct term "stall?"

I must point out that the use of this term by the author would lead to serious misunderstanding were it applied to the "auto-synchronous" or synchronous induction motor, which possesses a synchronous pull-out torque *and* a stalling torque; this machine will "fall out of step" if loaded beyond the former, but will not stop or "shut down" unless loaded beyond the latter.

Shenfield, Essex. J. GRIFFIN.

Acidity and Sludge

IN answering my criticism of his article on "Acidity and Sludge" Mr. J. A. Clegg rather confuses the issue. All engineers seek to keep their oil dry but the desirability of this course does not affect the fact that in his article Mr. Clegg makes the dogmatic statement that the pressure of water has little effect on acid formation. He asks upon what evidence the criticism is made, by which I imagine he means to ask whether I know anything about the subject or not. But the legitimacy of my opinion that he has made a statement on insufficient data is, however, not affected by my ignorance or knowledge of transformer oil and its behaviour, but only by an elementary knowledge of good research practice.

Let Mr. Clegg continue his work of testing samples of the materials which are used in transformer construction and their effect upon oil of enhanced temperatures. Let him test these materials, individually and in various combinations, in oil and in the presence of varying quantities of water.

Let him repeat that experiment with as many as possible different samples of oil, at the end of which work he may or may not wish to repeat his statements, but at any rate he will have a basis for discussion.

Hersham. GEOFFREY O. CASTELL.

Standard of Technical Papers

ON reading the statement made on page 1059 of the issue of the *Electrical Review* of June 27th, I am shocked that you have recorded that I remarked upon "the quite low standard and especially composition of technical papers submitted for refereeing."

Taken literally, the "quite low standard" appears to relate to the technical content, whereas I was referring to the English, but in any case it is improper to have printed this statement out of its context since I mentioned this topic only as a preliminary to a joke on English composition.

London, S.W.7. WILLIS JACKSON.

Industrial Tariffs

Adjustments to Meet Present Conditions

REPRESENTATIONS have been made by industrial consumers to the Ministry of Fuel and Power and the Electricity Commissioners that some adjustment should be made by electricity undertakers in charges for power supplies in respect of the period of restrictions in February last, and also in the future if as a result of staggering of hours or other adjustments of load they are able to reduce their maximum demand or if private plant is installed.

The matter has been discussed with the electricity supply associations, and as a result the Minister and the Commissioners request all undertakers to give favourable consideration to the following proposals :—

(i) Charges for Past Consumption.—Where as a result of electricity restrictions in February, 1947, the average price per kWh paid by an industrial consumer for the supply taken during that month was in excess of the appropriate flat rates the consumer should, on request, be charged on the flat rates for that month.

(ii) Future Charges: Two-part Tariff.—Where the terms of supply include a standing charge based on the maximum demand taken over a longer period than one month, consumers should be given the alternative of having this charge based on the highest demand in each month. It is suggested that this concession should operate for any future twelve-month period at the request of the consumer and that the monthly charge per kW or per kVA should not in any case exceed one-twelfth of the existing annual charge plus 10 per cent or such higher figure as may be agreed with the Commissioners.

(iii) Private Plant: Stand-by Charges.—Where industrialists install private generating plant whilst maintaining connection to the public mains for stand-by purposes, the charge made for this connection should not exceed the capital charges appropriate to the distribution capacity reserved for such a connection, supplies actually taken being charged for at the normal standard tariffs.

(iv) Private Plant: Restrictions on Use.—Where the terms of supply limit the installation or use of private generating plant, such terms should be waived for the present, except in so far as they may be necessary on technical grounds, e.g., that such private plant should not be run in parallel with the undertakers' system except on conditions agreed by the undertakers.

Views on the News

Reflections on Current Topics

LORD Citrine's unexpected appearance at the I.M.E.A. Convention was welcomed by the members who eagerly awaited any indication of the activities of the Electricity Supply Organizing Committee of which he is chairman. He showed a desire to co-operate with the I.M.E.A. in effecting a smooth transition to the new arrangements but did not give much away. He did hint, however, that the Committee might advise the Minister of Fuel and Power upon appointments to the new Central Authority and Area Boards. I recall that this was suggested as one of its probable functions in the *Electrical Review's* leading article of May 23rd dealing with the Committee's personnel and work.

* * *

When Mr. Dalton imposed a 66⅔ per cent on cookers and other domestic appliances in April, many housing authorities protested on the ground that housing costs, already far too high would be added to. This denoted higher rents with more subsidy and was one good reason why the Chancellor should not have done it. Now that he has altered his mind, a huge sigh of relief from housing authorities echoes in the local press of many towns. Glasgow, for instance, will "save" £40,000 this year from remission of the tax; capitalized, this represents a substantial amount.

* * *

It frequently happens that hydro-electric works in rivers are likely to upset the fish who inhabit these streams. Quite elaborate precautions have to be taken to guard against this as in the Shannon Scheme where "fish ladders" had to be constructed for the benefit of the salmon in that vicinity. The North of Scotland Hydro-Electric Board has also to take steps to preserve the fishing in the Highland streams. I read in the *Electrical World* that negotiations on the same subject in connection with the Skagit River (Washington) have resulted in the City Light Company of Seattle agreeing to pay for the construction of salmon and trout rearing ponds. Moreover, it has agreed to regulate the water flowing past the Gorge Dam so that it will never be less than 1,000 cu ft per second (the natural river flow); it will pay a penalty of $70 for every day the flow is less than this and if it falls below 230 cu-ft the fine will rise to $280 per day.

* * *

The method of calculating the two-part tariff fixed charge at Chesterfield has hitherto been on the basis of lighting consumption in the previous year. As reported in the *Review* a week or two ago, this is now to be superseded by the more widely used floor area system. The change was criticized by one councillor as penalizing the thrifty, but the chairman of the Electricity Committee, Alderman Varley, had a less kind term for some of those who will find the new charge considerably higher. By using very low-wattage lamps and keeping down their consumption in the year before changing to the two-part tariff some consumers have paid a standing charge of only 5s. 9d. a quarter and these are the ones, as the alderman pointed out, who will "get a shock."

* * *

Some weeks ago in a reference to economies resulting from thermostatic control of space heating, I mentioned the rule-of-thumb way of reckoning the increase in coal consumption at 5 per cent for each deg F above 60. Data from an actual installation given by Mr. R. W. Gregory in the Journal of the Institution of Heating and Ventilating Engineers (Jan.-Feb., 1947) indicate remarkable savings through the use of room thermostats to keep temperatures within 50 and 55 deg F, radiant heat being used for topping up. The author's analysis shows that the consumption per degree goes up progressively as the temperature is raised above the datum line.

* * *

Current events in India lend particular interest to some notes I read recently on plans for raising the standard of living of natives in rural areas by the supply of cheap electricity for irrigation, farming, cottage industries, and local arts and crafts. I was surprised to learn that the total generation of electricity in India amounts to no more than some 4,000 million kWh a year, equivalent to about 11 kWh per head. Even so, half of the total output is used in the four cities of Bombay, Calcutta, Ahmedabad and Cawnpore which contain only 1½ per cent of the population.—**REFLECTOR.**

PERSONAL and SOCIAL

News of Men and Women of the Industry

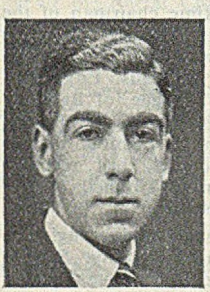
THE Freedom of the Borough of Chesterfield was recently conferred on **Alderman H. Varley**, who has been chairman of the Electricity Committee for over twenty-one years and is one of the best-known figures connected with the industry in that part of the country. Alderman Varley has been a member of the Chesterfield Town Council for over twenty-eight years and was mayor of the borough in 1934-35.

Ald. H. Varley

Mr. H. F. Carpenter, president of the Chartered Institute of Secretaries, who is also chairman of E.D.A., left this country by air on June 26th for Australia and New Zealand. He will address the Australasian Institute of Secretaries and the Institute of Incorporated Secretaries, the fusion of which with the Chartered Institute of Secretaries has been sanctioned by an Order-in-Council granting a supplemental charter.

British Insulated Callender's Cables, Ltd., announce that, the initial work arising from the amalgamation having been completed, **Mr. T. H. Martin-Harvey** and **Mr. Charles Pipkin** have, in accordance with their wishes, tendered their resignations as deputy chairmen. **Mr. W. H. McFadzean** and **Mr. P. V. Hunter** have accordingly been appointed deputy chairmen. Mr. Martin-Harvey will continue as a director but Mr. Pipkin has resigned from this position.

Mr. A. M. Perry has been appointed deputy borough electrical engineer and manager to the Grimsby Corporation after holding a similar position at Southwark for the past two years. Mr. Perry, who was born in 1907, was educated at King's College School and Faraday House, receiving practical training with the G.E.C. at the Fraser & Chalmers Works and at Birmingham. In 1921 he joined the Hackbridge Electric Construction Co., Ltd., and the Hewittic Electric Co., Ltd., as assistant chief of test and later transformer designer. He went to the London J.E.A. in 1934 and served in various sections, becoming personal assistant to the chief engineer, Mr. F. W. Purse. In 1940 he was seconded to the Electrical Branch of the Factory Department, and acted as electrical inspector for the S.E. England Area and, in 1924, for the Midlands Area. Mr. Perry holds the London B.Sc.(Eng.) degree and is an associate member of the I.E.E.



Mr. A. M. Perry

Mr. A. C. Baker, A.M.I.E.E., chairman and managing director of Simpson, Baker & Co., Ltd., Bristol, has been elected president of the Electrical Wholesalers' Federation.

Mr. J. P. Wolfenden, head of the Electrical Engineering Department of Rutherford College, Newcastle-on-Tyne, has resigned to take up a post at the Borough Polytechnic, London.

The chairman, directors and local directors of Thos. W. Ward, Ltd., gave a complimentary lunch on June 20th at the Royal Victoria Hotel, Sheffield, to **Mr. W. Johnson**, who has resigned the position of secretary of the company after fifty-nine years' service, and the opportunity was taken to make a presentation. Mr. Johnson still retains his directorship of the company. **Mr. H. Beresford** has been appointed to succeed him as secretary.

Mr. C. H. Downing, a director of British Electric Meters, Ltd., and other companies, secured the G. P. Dennis Trophy in the golf competition arranged during the I.M.E.A. Convention at Bournemouth in aid of the I.E.E. Benevolent Fund. His score was 88 (72 net). The trophy is in the form of a handsome silver rose bowl.

Mr. C. H. Downing with the G. P. Dennis Trophy

Mr. L. G. Aston, electrical engineer to the Brierfield Urban District Council, has been appointed electrical engineer to the Dorchester Borough Council. Mr. Aston went to Brierfield about a year ago; he had previously served with the Admiralty at Bath. He was at one time assistant mains engineer with the Willesden Borough Council.

Mr. J. L. Adam, chief surveyor to the British Corporation of Shipping and Aircraft, has been elected president of the Institute of Welding, with **Dr. J. H. Paterson** as vice-president.

Mr. E. M. Hickin has been elected chairman of the I.E.E. London Students' Section.

A number of staff changes is announced by the Aluminium Development Association. **Mr. W. J. McLaughlin** has been appointed secretary in place of Mr. Davies who has resigned. **Mr. J. D. Beddows,** the Association's chief metallurgist since 1944, has resigned to take up an important industrial position in the Midlands. **Mr. J. C. Bailey,** who has been on the staff since 1946, has been appointed technical officer to take over most of the duties previously carried out by Mr. Beddows.

Mr. F. E. Rowland, M.I.E.E., M.I.B.A.E., manager of the Agricultural Department of the General Electric Co., Ltd., has been appointed vice-president of the Institution of British Agricultural Engineers. This is the first occasion that an electrical engineer has occupied this position.

Mr. F. E. Rowland

Mr. E. G. Bisseker has resigned from the board of the General Cable Manufacturing Co., Ltd., and **Mr. R. A. Pantlin** has been elected to fill the vacancy.

Owing to ill-health, **Mr. Owen** has resigned his position as chief clerk in the Chesterfield Corporation Electricity Department. He is succeeded by **Mr. J. Dacre** of the Sheffield Corporation Electricity Department.

Mr. S. J. Patmore, A.M.I.Mech.E., A.M.I.E.E., has been appointed managing director of the Vanguard Engineering Co., Ltd., the management of which is now under the direction of S. J. Patmore & Partners.

Mr. E. S. Waddington, Associate I.E.E., of Philips Industrial (Philips Lamps, Ltd.), has been elected vice-chairman of the Resistance Welding Machine Section of the British Electrical and Allied Manufacturers' Association.

Captain G. C. Goodwin, R.E.M.E., on demobilization from the Army, has resumed his position as manager of Prat-Daniel (Stanmore), Ltd.

Mr. A. W. Woodbridge, M.Sc., A.M.I.E.E., has recently been appointed signal and telegraph engineer of the Great Western Railway in succession to **Mr. F. H. D. Page,** O.B.E., M.Inst.C.E., who has retired. Mr. Woodbridge had been assistant to Mr. Page since 1941.

Mr. B. H. Musgrave, hitherto the secretary of the Telegraph Construction & Maintenanee Co., Ltd., has been appointed a director of the company with effect from July 1st, and **Mr. G. L. Lawford** has been appointed secretary.

Mr. H. C. Waters, general manager of the East Anglian Electric Supply Co., Ltd., Bedfordshire, Cambridgeshire & Huntingdonshire Electricity Co. and the Newmarket Electric Light Co., Ltd., all forming part of the Edmundson Group, has been appointed a Justice of the Peace for the County of Suffolk.

Sir Maurice Simpson, Kt., C.S.I., M.I.E.E., and **Mr. John Lamont** have resigned from the board of W. T. Henley's Telegraph Works Co., Ltd. **Mr. F. W. M. Anderson,** general manager of the company, and **Mr. A. H. M. Jacob,** secretary, have been appointed directors.

The British Radio Valve Manufacturers' Association has elected **Mr. G. A. Marriott** as chairman and **Mr. Frank Jones** as vice-chairman.

The Caroline Haslett Trust has awarded the second travelling scholarship in electrical housecraft to **Mrs. E. A. Windsor,** who will spend two or three months in Sweden studying home economics, particularly the application of electricity to housecraft. Mrs. Windsor has had experience in the Bethnal Green Electricity Department and is now chief electrical housecraft adviser to the Hackney Electricity Department. She is secretary of the Association of Housecraft Advisers, formed a year ago.

Miss Caroline Haslett, who was awarded the D.B.E. in the King's Birthday Honours, is visiting Sweden as a delegate of the Eighth International Scientific Management Congress which opened yesterday (Thursday). She is leading the discussion on home management.

Mr. J. A. Uppington, late Bristol branch manager of Graham Farish, Ltd., has taken up his new appointment as general sales manager with the company at its offices in Bromley, Kent.

Mr. L. S. Hargreaves, managing director of Aerialite, Ltd., Stalybridge, and **Mr. F. G. Hargreaves,** works manager and director, will sail for America on the *Queen Elizabeth* on July 25th to consider new production methods and to inspect the latest cable making machinery.

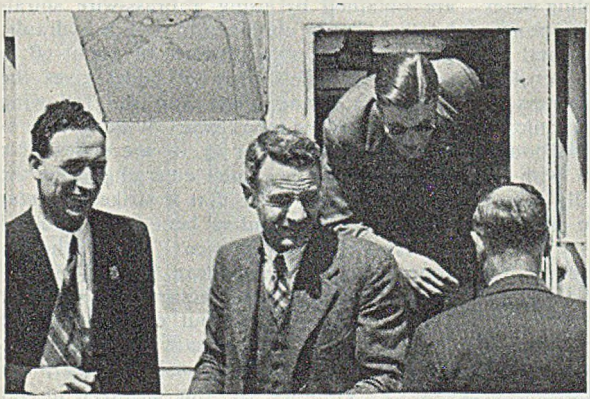
Mr. S. F. Steward, C.B.E., of E. R. & F. Turner, Ltd., who was Director-General of Machine Tools under the Ministry of Supply during the war, and one-time chairman of the Machine Tools Advisory Council and the Gauge & Tool Advisory Council, has been co-opted to the Council of the British Engineers' Association. **Mr. C. K. F. Hague,** of Babcock & Wilcox, Ltd., vice-president of the British Engineers' Association and a member of the Engineering Advisory Council, has recently been co-opted to the Grand Council of the Federation of British Industries.

Mr. F. Hannaford, assistant mains engineer, Birmingham Corporation Electricity Supply Department, has been appointed assistant mains engineer with the Nuneaton Corporation Electricity Department.

We regret to hear that **Mr. T. C. Elliott,** Assoc. I.R.S.E., received severe injuries recently when he was knocked down by a car. He is mending slowly and hopes to be able to take up his work in a week or two.

Although there was a heavy thunderstorm late in the afternoon, the annual sports meeting of the General Electric Co., Ltd., at the company's London Sports Ground, Wembley, last Saturday went well. There were fifty-five events and a number of side-shows, providing plenty of variety and interest—particularly the beauty competition, won by Miss J. Lavender. Sixteen challenge cups were competed for, including the "Leslie Gamage" trophy for the leading London establishment, which was carried off by G.E.C. Osram Works. Lady Railing presented the cups and prizes and later there was a concert and a dance.

During the I.M.E.A. Convention Johnson & Phillips, Ltd., arranged a visit to the *Queen Elizabeth* at Southampton. We reproduce a photograph taken on the occasion showing Mr. W. S. Boone, the company's publicity manager, with some of the guests.



Mr. W. S. Boone with Messrs. G. T. Allcock (Great Yarmouth) and J. A. Summer (Norwich)

The Norwich Works of Laurence, Scott & Electromotors, Ltd., held its annual sports and gala at the Social Club ground on June 21st. The weather was kind and a full programme of events included some serious athletic events, races for the children, the usual obstacle and novelty races, tennis tournament and sundry side shows, with boxing, fencing and dancing in the evening. The inter-departmental tug-of-war was won by Main Works Machine Shop, who are believed to have trained against a "Scott" winch!

British Standards Institution

AT the annual general meeting of the British Standards Institution held on June 27th Lord McGowan was elected president in succession to Lord Woolton. A high tribute was paid to Lord Woolton for his services by Sir William Larke, chairman of the General Council, and by Mr. Roger Duncalfe, chairman of the Finance Committee. It was announced at the meeting that Sir Clifford Paterson, F.R.S., had been elected chairman of the General Council in succession to Sir William Larke. The annual report and accounts show that substantial progress has been made in the preparation of British Standards for industrial products and consumer goods, and that British Standards are proving of increasing value in connection with the export drive.

Coal Utilization

SOME urgent problems of coal utilization are dealt with in a sub-committee's report submitted last week to the Minister of Fuel and Power and the Lord President of the Council by Mr. M. P. Price, M.P., Chairman of the Parliamentary and Scientific Committee. The chairman of the sub-committee is Mr. Raymond Blackburn, M.P., and the members include Mr. F. J. Erroll, M.P., and Dr. S. Whitehead (E.R.A.).

The report refers to the emphasis placed upon coal production, but it is pointed out that in utilization still nearly 70 per cent is wasted. If the efficiency of use could be raised by a tenth the result would be the same as would be obtained by producing an extra 20 million tons of coal. It is suggested that improvement of efficiency would be stimulated by the publication of efficiency figures for every industry for which this is possible. This has proved very effective in the electricity supply industry and would provide useful guidance in other industries.

Dealing with the consumption of electricity and peak loads, the report suggests several means of reducing peaks, including shift systems and "staggered" hours, with clear directions and encouragement from the Government; effective action to curtail peak-period domestic and commercial consumption; some informal or voluntary rationing scheme for the sale of electric fires; the provision of alternative means of domestic heating (cheap and simple oil heaters are suggested); more effective publicity for fuel economy; the discouragement of improvident domestic use of coal which should be saved for the winter; facilities for providing spare parts for solid-fuel appliances which are out of action; and the building up of emergency coal dumps.

The sub-committee refers to the delay experienced in obtaining consents for the erection of new power stations and calls for an ending of the cumbrous procedure. Reference is also made to possible coal-oil conversions, to coal transport delays and to the need for the better preparation of coal, particularly for generating stations and transport.

Cleaning Surface Condensers

Principal Methods in General Use

By M. P. Henzell, A.M.Inst.F.

GREAT fuel savings can be effected by maintaining the heat-transmission surfaces of heat exchangers in a clean condition and clean surface condensers result in improved engine vacuum and reduced steam consumption. Condenser fouling occurs on the cooling water side of the tube, i.e., internally, and may take the form of scale formation or deposits of organic and inorganic matter held together by micro-organisms.

Scale is usually formed when cooling water is re-circulated through towers or ponds, where temperatures more readily tend to reach the point at which matter responsible for temporary or permanent hardness is precipitated within the tubes. Inorganic or organic deposits, such as mud or slime bound together by algæ growths, are met with in cooler operating conditions, usually where river or canal water is available at temperatures about 72 deg F.

Deposits and scales may be removed in a variety of ways, either mechanically or chemically. Considering first the mechanical removal of slime and mud deposits, these may be brushed off by hand, using a short spiral wire brush (similar to that used to clean a rifle barrel) of the same diameter as the bore of the tubes to be cleaned and mounted on a rod long enough to pass the brush through the length of the tubes. The method is thorough and, if carefully carried out, ensures that the condenser tubes are brought almost to their pristine state. Its disadvantages are the necessity of taking the condenser out of service and of removing the water-box doors. Considerable time is required to complete the cleaning of a large condenser.

A pneumatic or hydraulic gun to fire small rubber or wire-brush bullets (Fig. 1) along the length of the tubes to be cleaned is now widely adopted, the bullets being designed to clean and scour during their passage. In the writer's opinion the most satisfactory results are obtained by using a brass-wire spiral-brush bullet in conjunction with a hydraulic gun operating at a pressure of about 60 lb per sq. in. This form of bullet gives the greatest scouring effect and the following water sluices the tube clean. Water pressures in excess of 60 lb per sq. in. are undesirable and result in the bullet emerging from the tube with such force that it strikes the rear water-box door and is bent and rendered useless for further service. This method is thorough, speedy and cheap, but suffers from the disadvantage that it requires the condenser to be taken out of service. The work is unpleasant and necessitates the use of protective waterproof clothing by the cleaners in the water-box. Bullets sticking in the tubes gradually reduce the effective cooling surface of the condenser and eventually require rodding out.

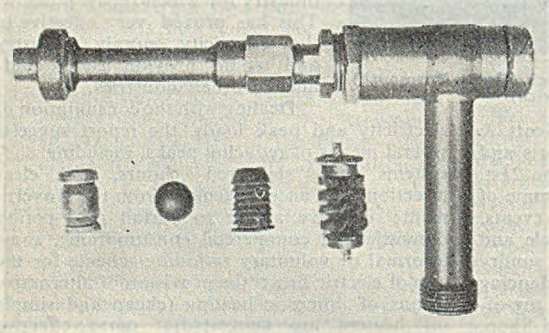


Fig. 1.—A few of a large variety of condenser-cleaning bullets available with typical gun

A chemical process for the removal of slime deposits is by "boiling out," which consists briefly in sealing off the water side of the condenser from the mains, either by valves or blanking off, and circulating a hot 2 per cent solution of soda-ash through the tubes. The apparatus may be of a temporary nature or, where frequent cleaning is required, a permanent installation may be fitted designed to circulate the soda-ash solution through the condenser and other coolers. In a typical set-up as shown in Fig. 2, the method of operation is as follows :—The water side of

the condenser and pipework is filled with circulating water and the inlet and outlet valves are shut. A soda-ash solution is mixed in tank A and pumped into tank B, where it is heated to about 120 deg F by steam jet or coil heater. The pump C is then started and the water in the condenser commences to circulate via the tank B, carrying the soda-ash solution forward and, at the same time, receiving heat from the steam jet.

The condenser must be adequately vented by means of a pipe of at least 2 in. internal diameter; otherwise gas will collect at the top of the condenser, thus baffling the flow

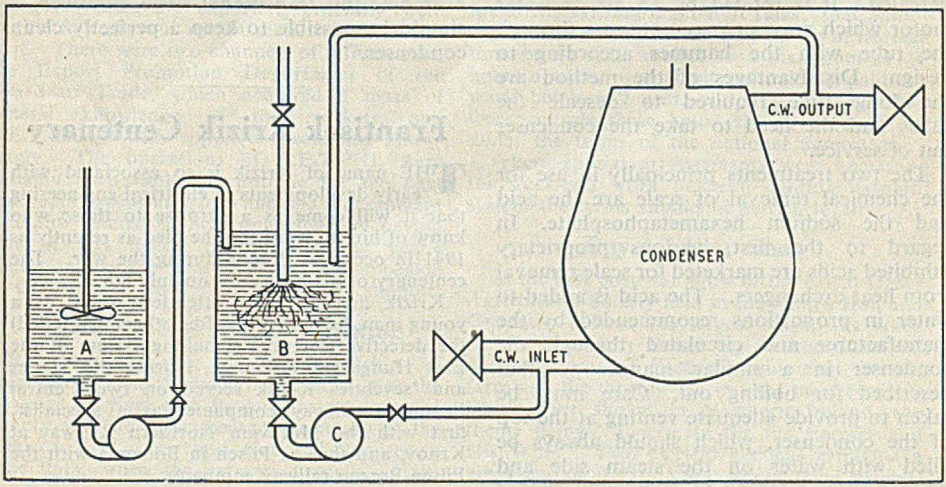


Fig. 2.—Arrangements for circulating soda-ash solution through condenser

of solution and leaving the top tubes uncleaned. The method is cheap, clean and fairly quick. As in the preceding methods it is necessary to take the condenser out of service. There is also a tendency for a thin film of slime to become baked on the tubes by the heating process, thus forming a base for further growths to build on.

By another chemical method micro-organisms, algæ, etc., are rapidly killed by the addition of very small quantities of chlorine gas to the circulating water. Small chlorine doses at intervals have been found to be as effective as larger doses added continuously, and consequently all modern chlorine plants adopt the intermittent dosing principle.

Dosing should be carried out as close to the condenser as possible to avoid unnecessary cleaning of circulating water pipe-lines with vastly increased chlorine gas consumption. Furthermore, chlorine reacts with oxidizable matter present in the water and, therefore, if the point of application is an appreciable distance from the condenser, some of the chlorine is wasted in oxidizing inorganic material instead of dealing with micro-organisms on the tube surface. Chlorine gas is extremely corrosive in the presence of water, and any leakage would be dangerous to life. Consequently it is undesirable to experiment with improvised apparatus except under skilled supervision.

A number of well-tried plants of varying degrees of elaboration are manufactured that have the common object of preparing a chlorine-gas solution in water and injecting the solution into the condenser inlet at predetermined intervals of time. The method has great advantages over all other methods of algæ removal: it is continuous, clean, low in running costs and does not entail taking the condenser out of service except for occasional plucking of leaves, etc., from the tube ends.

Where the quantity of water to be treated is not great, chlorination may be effected by chloride of lime. The dry chemical is mixed with water to form a creamy solution which is discharged to a settling tank, where the insoluble lime settles out, leaving a clarified chlorine liquid which may be drawn off and used as required.

Mechanical means of removing scale formations from tube surfaces include the

use of a drill slightly longer than, and of clearance fit in, the tubes in conjunction with an electric or pneumatic portable drilling machine. The method has little to commend it. It makes a long laborious job and a certain amount of scale is always left in the tubes. Very hard scale may deflect the drill and perforate the tube metal. Mechanised hammers offer advantages over drilling because they are not liable to damage the tube metal. They are similar to boiler tube scalers, but on a miniature scale. In action they break the surface of the scale and pulverize the deposit. The hammer consists of a swivelling rotating head which is a loose fit in the tube to be descaled. It is rotated by an air or water motor which may, or may not, pass through the tube with the hammer according to design. Disadvantages of the method are the long time required to descale the tubes and the need to take the condenser out of service.

The two treatments principally in use for the chemical removal of scale are the acid and the sodium hexametaphosphate. In regard to the first, various proprietary inhibited acids are marketed for scale removal from heat exchangers. The acid is added to water in proportions recommended by the manufacturer and circulated through the condenser in a similar manner to that described for boiling out. Care must be taken to provide adequate venting at the top of the condenser, which should always be filled with water on the steam side and drained after cleaning to avoid any chance leakage of acid into the boiler feed water. The method is clean and thorough, but it entails taking the condenser out of service. The linen grummets at the tube plates should be replaced periodically, since they are usually subject to slight attack by the acid.

Use of Sodium Hexametaphosphate

In the second case sodium hexametaphosphate, added to the condenser water continuously in the proportion of about 2 p.p.m., has been found to prevent scale formation completely and remove existing scale. Elaborate proportioning gear is not necessary since the concentration is not critical. Sodium hexametaphosphate is supplied in the form of thin glass-like plates which may be dissolved in water. A steel solution tank containing a perforated steel basket in which the phosphate may be dissolved should be erected over the circulating-water inlet pipe. A pipe-line from the tank to this pipe with a needle valve for control is all that is required, and an even less elaborate arrangement may prove quite satisfactory. The method is clean, thorough and continuous.

In changing over from other methods of scale removal it must be appreciated that hexametaphosphate will be in the system as a whole and will remove scale from pipe-lines, valves, cooling towers, etc. Consequently, some initial trouble may be experienced due to old scale being dislodged in considerable quantities and blocking condenser tubes, pond and cooling towers, sprays, etc.; the method may even reveal old condenser leaks previously sealed by scale. Once having overcome this transitional stage, however, it should be possible to keep a perfectly clean condenser.

Frantisek Krizik Centenary

THE name of Krizik is so associated with early developments in electrical engineering that it will come as a surprise to those who know of him to learn that he died as recently as 1941 in occupied Prague during the war. The centenary of his birth falls on July 8th.

Krizik first attracted attention when, as a young man, he put right (after others had failed) the defective electrical signalling system of the East Hungarian Railway. During the 'sixties and 'seventies Krizik served on two Central European railway companies as a specialist, first with the Moravian Northern Railway at Krnov, and then at Pilsen in Bohemia with the Pilsen-Brezno railway company.

Having perfected an electric arc lamp Krizik started his own engineering works in Prague in 1884, which gradually developed into one of the most important in Central Europe. Meanwhile, his lamps were also being made in England and France and were used for a time to light streets in London and Paris. Besides arc lamps Krizik made dynamos, cables and other electrical equipment and for the Prague Exhibition held in 1891 he erected an illuminated fountain.

His continued interest in railways led him to construct an electric tramway to take people to the exhibition. Four years later he had electric trams running through the streets of Prague and though the cost prevented rapid electrification the whole network was complete in 1905 when the last horse-drawn cars were withdrawn. In 1913, Krizik constructed in Bohemia a twenty-mile-long electric railway from Tábor (on the Vienna-Berlin main line) to the spa of Bechyne. He installed the tramway systems of Vienna, Pilsen and Dubrovnik (Jugoslavia) and his works equipped no fewer than 130 power stations.

COMMERCE and INDUSTRY

Services of B.E.T.R.O. Discussions on Power Position.

SPEAKING at the annual luncheon of the British Export Trades Research Organization in London last week, Sir Stafford Cripps expressed his disappointment at the lack of response made by industry generally to the offer of service which the Organization had made. He said that world markets had not only increased in number but had become more specialized in their desires and tastes, and buyers were more discriminating as to quality and design. We must make an intelligent examination of the requirements of particular markets with a view to meeting them, and this required market research which the exporters generally were unable to carry out within their own organization. There were two channels of information, the Export Promotion Department of the Board of Trade, which acquired a mass of general knowledge of the markets, and B.E.T.R.O., which supplied specialized knowledge. The operations of B.E.T.R.O. were unlikely to be able to continue for the next few years except at a loss and the Government had now offered to help financially by paying half of any deficit incurred in any year's operation over the next five years. He appealed to exporters to give B.E.T.R.O. their support.

Urgency of the Power Situation

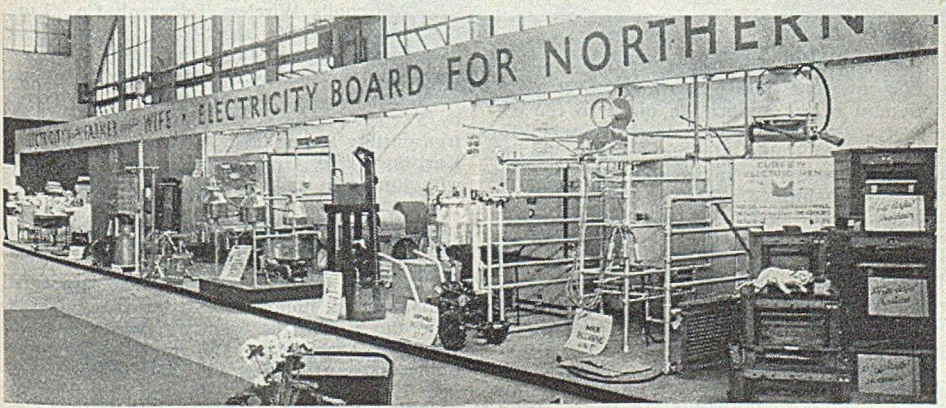
Representatives of the Confederation of Shipbuilding and Engineering Unions met the Minister of Fuel and Power, the Minister of Supply and the Parliamentary Secretary of the Ministry of Labour and National Service on June 25th, when the extreme urgency of the power situation during the coming winter was emphasized. Following this meeting, a joint meeting between representatives of the Engineering Employers' Federation and the Confederation of Shipbuilding and Engineering Unions took place at the Ministry of Labour to discuss the arrangements that may be necessary to meet the power situation. The meeting was adjourned for further consideration of the problem in the light of the discussion.

On Monday last representatives of the employers and trade unions in the engineering industry reached agreement upon the "staggering" of working hours, including work on Saturday mornings and at night, to spread the load upon the electricity system. It was agreed that hours worked on night shift should be paid for at the existing night-shift rates; that Saturday morning work should be paid for at normal time rates; that, subject to a maximum of 44 hours a week, normal rates should be paid for work between 7 a.m. and 8 p.m.; and that work outside these hours should be paid for under the terms of the national agreement.

Where special arrangements were necessary for week-end work under a continuous shift system the terms should be settled locally.

Royal Ulster Show

At the first post-war show of the Royal Ulster Agricultural Society held in the King's Hall and Grounds, Belfast, the largest stand was taken by the Electricity Board for Northern Ireland and the range of electrical equipment for the farm and the farm house was the most comprehensive yet shown in Northern Ireland, the theme being "Electricity for the Farmer and His Wife." Two electric kitchens attracted a great deal of attention and the cooking demonstrations were all well attended. A comprehensive display of domestic appliances included washboilers, dish washers, clothes washers, water heaters, fires, convectors, smoothing irons,



Stand of the Electricity Board for Northern Ireland at the Royal Ulster Agricultural Society's Show

clothes presses, vacuum cleaners, clocks, toasters and blankets. For the dairy farmer all the aids to clean milk were shown in operation —an electrode boiler, sterilizing chests and churn stools, a bottle washer, milking units, a portable milker, a milk cooler and a 2-point milk recorder. A small end-over-end domestic churn driven by a ½-HP motor proved a great attraction and so did an automatic float-controlled water pumping installation. A display of incubators, brooders and hovers covered a wide range of sizes. In the barn machinery section a root cutter was running and grain was ground. A pedestrian-controlled battery-operated vehicle was demonstrated, together with a soil-heating installation, a hoist, a power-driven horticultural spray and mains-operated hedge clippers. The E.D.A. information bureau was a central feature of the show.

Arc Welding Electrodes

At the recent annual general meeting of the manufacturers of arc welding electrodes, who form a Section of B.E.A.M.A., Mr. W. W. Watt (British Oxygen Co.), was re-elected chairman, and Mr. J. I. Law-Brooks (Metropolitan Vickers Electrical Co.), vice-chairman. Dr. J. H. Paterson (Arc Manufacturing Co.) was re-elected chairman of the Manufacturers' Technical & Production Committee, and Mr. E. S. Waddington (Philips Industrial) chairman of the Trading Committee.

It was stated that the sale of electrodes during the past year in the Home market dropped to about half of the sales in 1944, but were 80 per cent more than Home sales in 1938 and 24 per cent more than in 1939. The output in 1946 was 726 million feet (21,300 tons) valued at £2,600,000. There are 2½ times as many welders at work to-day as in 1938, but the consumption of electrodes has not increased proportionately.

A forecast fall in the production of steel ingots during the next twelve months will have some effect upon the development of welding. Export sales form 27·7 per cent of the output.

Cable Makers' Wages

The award of the arbitrator (Prof. A. N. Shimmin) in the application made to the employers' side of the Joint Industrial Council for the Electrical Cable Making Industry by the trade union side for an advance in wages has now been published. The claim was that an increase of 2d. an hour should be given to all male workers, that grade 1 adult females should receive as a minimum the grade 1 labourer's rate, the differentials between the grades to be maintained, and that proportionate increases should be afforded to juveniles of both sexes.

In support of the claim Mr. Nicholas submitted that the current rates of wages were low in comparison with other industries. While wages were rising in other employments the cable making industry ought not to stand still. The industry was well able to bear the proposed advances particularly in view of large projected developments in the home market. The recent introduction of the 44-hour week without loss of pay would not reduce output or raise manufacturing costs.

In reply Mr. Jackson and Mr. Pheazey stated that the employers had rejected the claim on the ground that present economic conditions did not warrant advances in wages. There was urgent need for greatly increased production at competitive prices. Wages should not be raised unless there was a comparable increase in output per man-hour. The earnings of workers in the industry were well above the minima quoted and compared favourably with earnings in other industries.

The arbitrator found against the claim made by the trade union side which he considered was premature. He said that in his view it failed because it sought an assured increase of pay for the operatives on the basis of a hypothetical, not an established, increase of output per man-hour.

Wages in the Contracting Industry

In our issue of June 13th (p. 1032) we reported that the whole of the territory included in Grade "C" under the wages agreement of the N.J.I.C. for the Electrical Contracting Industry was to be up-rated to Grade "B." Unfortunately we said that the arrangement was retrospective to the third pay-day in January, whereas it actually operates from the third pay-day in June.

The reference to the third pay-day in January related to the continuance of the wage rates included in the previous agreement until a date to be determined by the N.J.I.C.

Transmitters for Sweden

The Royal Swedish Telegraph Administration has placed an order valued at more than £110,000 with Marconi's Wireless Telegraph Co., Ltd., for two 100-kW short-wave broadcasting transmitters for a station at Hörby, in the southern "tip" of Sweden. This order follows on a contract recently placed with Marconi's by Sweden for long- and short-wave telegraph transmitting equipment to be installed at Karlsborg and Grimeton for communication with European and American countries.

New South African Cable Factory

Speaking at a complimentary dinner given by Aberdare Cables, Ltd., and their associated companies in honour of executives and key men who are leaving for South Africa to open a new cable factory to be operated by Aberdare Cables of South Africa, Ltd., Sir George Usher said it was not intended that the establishment of this new company should in any way prejudice the prospects of the South Wales group

of companies, which would in fact benefit from the wider scope that would be presented to them by reason of the establishment of the South African company. The chairman at the function was Mr. J. Wignall, general manager of Aberdare Cables, and also present were Mr. A. J. Nicholas, general manager of South Wales Switchgear, Ltd., Mr. H. de C. Falle, general sales manager, London, and Captain F. Thompson-Schwab, a director of the new company. Mr. W. B. Cox, general manager, and Mr. A. Bullivant, secretary, of the South African company, responded on behalf of their colleagues to the good wishes extended to them by the officials of the English company.

Engineers' Appointments Bureau

In order to obviate any possibility of its name being infringed the Professional Engineers' Appointments Bureau has been incorporated as a company under limited guarantee. The scope of the Bureau remains unaltered, and members, who, by reason of their engineering qualifications, belong to the Institutions of Civil, Mechanical or Electrical Engineers or persons whose engineering qualifications for election or admission to one of those bodies have been approved by the respective Councils are invited to register upon forms obtainable from the Registrar of the Bureau, 13, Victoria Street, Westminster, S.W.1. A stamped addressed foolscap envelope should be enclosed. Employers of professional engineers are invited to submit concise details of positions vacant on their staff, indicating any special requirements and stating the salary range offered.

Batti-Wallahs' Society

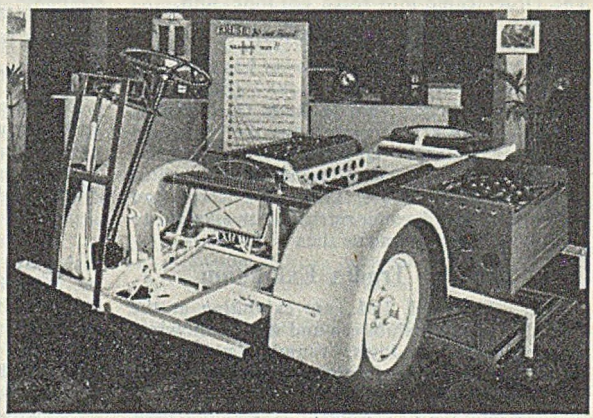
At last week's monthly luncheon of the Batti-Wallahs' Society the principal guest was Mr. H. E. Matthew, architect to the London County Council, who gave an interesting talk on the London Plan, in which he outlined the immense amount of work involved in the three official plans covering the Central London, Greater London, and the County Areas. The speaker at the next luncheon will be Maj.-Gen. Sir E. Bertram Rowcroft, who will talk on the work of R.E.M.E.

Hanover Trade Fair

An announcement issued by the Foreign Office (German Section) states that the first export trade fair for the display of goods produced in the joint U.S./U.K. Zones of occupation in Germany will be staged in the Vereinigte Leichtmetall Werke factory at Laatzen, about three miles from the centre of Hanover, from August 18th to September 7th. The fair will be housed in four large buildings and the products displayed are expected to be immediately available for export or within a reasonable time. Among the exhibits will be electrical machinery and equipment and electrical domestic appliances, fine mechanical and optical instruments and equipment, ceramics, plastic and rubber products. The Joint Export/Import Agency and the Board of Trade Purchasing Agency will establish a bureau on the site to give advice to U.K. visitors on the handling of contracts. Buyers and visitors from United States, the British Isles and British Empire and foreign countries have been invited to visit the fair. United Kingdom firms wishing to visit the fair should apply in writing to the Board of Trade, German Division, I.C. House, Millbank, S.W.1, giving details of products in which they are interested. Applications should be sent not later than July 5th.

Brush Vehicle Exhibitions

Beginning in Manchester, Brush Coachwork, Ltd., has arranged with a number of its distributors and dealers a series of exhibitions of "Brush-bred" vehicles in the main provincial centres throughout the country. At each of these exhibitions, which will be staged in the distributors' showrooms, the following vehicles are being displayed: Battery electric four-wheeled vans, closed and open; three-wheeled "Pony" truck, closed and open; three-wheeled 2-ton industrial truck with elevating platform; motor control gear, rear axle and differential unit showing working parts; chassis of industrial truck and chassis of 18/22 cwt van. The battery electric vans are built in three sizes, 10/14 cwt, 18/22 cwt, and 25/30 cwt, in open and closed models.



Chassis of Brush 20-cwt battery electric van

This series of vehicle exhibitions has been arranged to take place at Manchester (Henlys, Ltd.), Cardiff (Morsmith Motors), Epsom (Woodcote Motor Co., Ltd.), Lincoln (E. W.

Campion & Sons), Maidenhead (Modern Electric Co.) and Nottingham (Hooleys Garage, Ltd.)

American Copper Market

Copper "futures" trading is to be resumed in the New York Commodity Exchange on July 15th for the first time for almost six years. This Exchange, says the U.S. Information Service, will become the world market for copper futures, "free" trading in copper having been discontinued in the London Metal Exchange since 1939. Copper will be the third futures market on the New York Commodity Exchange to be restored since the war ended. Raw hide futures trading re-opened last November and crude rubber trading was resumed on May 1st. Other commodities formerly trading on the Exchange but still in suspension include silk, lead, zinc, tin and silver.

Electric Torch Dry Batteries

The Board of Trade in consultation with the Central Price Regulation Committee has made the Electric Torch Dry Batteries (Maximum Price) Order, 1947 (S.R. & O. 1264, 1947) (price 1d.) which amends the Electric Torch Dry Batteries (Maximum Prices) (No. 2) Order, 1946, and provides increased maximum prices for certain types of electric torch dry batteries. The Order came into force on June 30th.

Quarry Regulations

The Minister of Fuel and Power has made the Quarries General Regulations (Electricity) (Exemption) Order, 1947 (S.R. & O. 1947 No. 1220, price 1d.). This prolongs the period of exemption from the Quarries General Regulations (Electricity), 1938, of cables and apparatus in use before July 1st, 1938, and which had before that date been constructed or adapted to comply with requirements then in force.

Foundry Trades Exhibition

Thos. W. Ward, Ltd., are exhibiting at the Foundry Trades Exhibition and will be showing, among other products, foundry plant and equipment, crucible furnaces, tilting furnaces, and refractories.

Arbitration Award

National Arbitration Tribunal Award No. 965 deals with a claim regarding the grading of a technical engineer in the Electricity Department of Todmorden Corporation. The Tribunal finds in favour of the claim, which was that the Corporation should comply with a decision of the N.J.B. that Mr. T. Astin, at present designated assistant mains engineer with a salary in accordance with Grade 7, Class D, of the Schedule, should be allocated to Grade 2 as from January 1st, 1947. The Corporation contended that the Negotiating Committee of the N.J.B. did not adjudicate on the specific claim submitted by the Electrical Power Engineers' Association, which was whether or not Mr. Astin was a deputy chief official, in which event Grade 1 salary would automatically apply.

Trade Publications

W. T. Henley's Telegraph Works Co., Ltd., 51 and 53, Hatton Garden, E.C.1.—A comprehensive catalogue covering the company's overhead-line materials, including details of service accessories, outdoor terminal boxes, house service accessories, crossarms for h.v. lines, outdoor isolating switches, insulators, etc. Useful notes are also given regarding the data required in estimating the cost of constructing any particular overhead line, and the current ratings for copper conductors for overhead lines are also tabulated.

Chloride Electrical Storage Co., Ltd., Whitfield House, Whitfield Street, London, W.1.—Souvenir booklet of the Royal Tour of South Africa, including a description of the Exide Ironclad batteries installed on the Royal Train.

The Metropolitan-Vickers Electrical Co., Ltd., Trafford Park, Manchester.—Leaflet relating to infra-red heating applied to the boot and shoe trade.

Morphy-Richards, Ltd., St. Mary Cray, Kent.—A priced leaflet of "Cyldon" door chimes.

Knightshades, Ltd., Derby Road Works, Montagu Road, Edmonton, London, N.18.—Three leaflets illustrating the company's new season's range of electric lighting fittings.

Wire and Wire Rope Industry

At a meeting held at the Ministry of Labour and National Service on June 25th, a basis of agreement was reached for the establishment of a National Joint Industrial Council for the Wire and Wire Rope Industry.

Works Visit

A party of thirty members of the Association of Supervising Electrical Engineers recently paid a visit to the works at Ilford of the Plessey Co. The party was conducted on the tour of inspection of the various departments by Mr. G. A. T. Burdett and Mr. R. G. Sandeman.

Trade Announcements

The London office of Whipp & Bourne, Ltd., has been moved from Australia House to Room 8 (second floor), 66, Victoria Street, S.W.1, until more permanent accommodation is secured.

The Midland area offices of the Rockwell Machine Tool Co., Ltd., are now situated at 132, Steelhouse Lane, Birmingham, 4 (telephone: Central 3692).

Annual Holidays

The offices and works of the British Klockner Switchgear, Ltd., will be closed from August 1st to 12th. No goods will be dispatched or received during this period.

Electricity Bill

New Clauses and Amendments

DURING the further consideration of the Electricity Bill in the House of Commons last week a number of new clauses were added and amendments were made in addition to those reported in our last issue.

Clause 1 was amended to provide that where the Central Authority permits an Area Board to supply consumers in the territory of another Area Board the part of the area shall be specified.

Clause 2 was amended to make it clear that the Board's powers to install, repair, maintain and remove electrical plant or fittings are not confined to plant, etc., supplied by the Boards themselves. A paragraph (*c*) was added empowering the Authority to carry on all "requisite, advantageous or convenient" activities in connection with the performance of its duties or with a view to making the best use of any assets vested in it. This was contested by Opposition members who considered the powers too wide.

Additions were made to Clause 3 to provide that the four appointments of Area Board chairmen to the Central Authority should be made in rotation, and to Clause 4 to provide that the constitution of a new area shall be subject to Parliamentary approval.

Under Clause 5 subsection (2) was replaced by new wording ensuring that in developments involving substantial capital outlay the Central Authority will "act in accordance with a general programme settled from time to time in consultation with the Minister" instead of "with the approval of the Minister." A similar amendment was made to Clause 6 dealing with the powers of the Central Authority and the Minister in relation to the Area Boards.

Representation on Consultative Councils

Col. Clarke withdrew an amendment providing that not more than two-thirds of the members of a Consultative Council should be appointed from a panel of local-authority representatives upon being assured by Mr. Shinwell that the relevant paragraphs would be "strengthened."

Mr. Shinwell moved an amendment to provide that the Consultative Councils should represent agriculture, commerce, industry and labour as well as the general interests of consumers. He rejected a proposal to include representatives of "housewives" but promised to consult the Electrical Association for Women.

After discussion of amendments designed to ensure that Consultative Councils shall have an effective voice in the remedying of defects in Area Board's plans, one moved by Mr. Shinwell was adopted and another moved by Mr. Raikes was also accepted. The words "national security" were substituted for "national interest" in Clause 8 as a reason for the non-publication in the Central Authority's annual report of any direction by the Minister. Provision was made for the inclusion of Consultative Committees' reports in Area Boards' annual reports and for the presentation of an annual report by the Minister to Parliament upon the exercise of his electrical functions.

By an addition to Clause 13 the Central Authority is empowered to take over agreements for the supply of electricity to railways.

Directors' Compensation

Col. Crosthwaite-Eyre moved an amendment designed to bring all directors of acquired companies, whether in the position of employees or not, into the compensation scheme. In the discussion Mr. Shinwell said that he had offered to provide for small *ex gratia* payments to "non-working" directors if the Opposition would put down a suitable amendment. This they had not done. The amendment was defeated.

Mr. R. S. Hudson unsuccessfully moved to leave out subsection 13 of Clause 13 which provides for the dissolution of the acquired companies on the vesting date. It would be much simpler, he said, for the Government, the Civil Service and the shareholders if the directors were allowed to wind up their affairs after the vesting date.

Mr. Nigel Birch proposed an amendment to Clause 17 to provide for an alteration in the basis of compensation for holders of securities of bodies other than local authorities. He said that the businesses should be valued as going concerns and failing agreement as to the purchase price the matter should go to arbitration. He was supported by a number of members but Mr. Glenvil Hall (Financial Secretary to the Treasury) said that it had been impossible in this case to follow precedents and employ net maintainable revenue as a basis for compensation. The amendment was rejected.

An amendment to Clause 18 was adopted, to meet Opposition proposals in Committee, providing that the stockholders' representative shall be appointed not less than two months before the vesting date. Clause 21 (control of dividends, interest and other payments) was amended in such a way as to fix responsibility upon directors responsible for excessive payments. A later amendment protects directors who are not responsible for such payments.

Another amendment provides that the dividends permitted to be paid will apply, with the approval of the Ministry, to new issues of the same class of share instead of the latter being limited to 4 per cent. A further amendment permits dividends to be maintained out of reserves for the purpose instead of being

confined to the revenue for the period to which the payment relates. An addition to Clause 22 enables a stockholders' representative to make payments out of dividend-equalization reserves to maintain dividends or interest where the payment to the representative under subsection (*c*) is insufficient.

Boards' Accounts and Charges

Sir Arnold Gridley's amendment to ensure that each Area Board should balance its accounts was negatived. Mr. Gaitskell said that the Central Authority was financially responsible for the whole organization and had to balance its accounts, but he did not dissent from the view (which might be adopted by the Central Authority) that a Board's accounts over a period of years should be balanced.

Sir Arnold Gridley then moved to amend Clause 32 to provide that Area Boards' charges should be fixed by the Authority from time to time subject to the Electricity Commissioners' approval and that they should be two-part tariffs with a fixed kW charge and a running charge. This, too, was negatived although Mr. Gaitskell said there was little doubt that the Authority would adopt two-part tariffs. He moved an amendment, which was accepted, that different tariffs might be fixed for different Area Boards.

An amendment moved by Lt. Col. Elliott that in charging, the Area Boards should not exercise any undue discrimination against any person or persons. This was accepted.

Mr. Shinwell moved an addition to Clause 34 by which temporary borrowing by the Authority or Boards is made subject to Treasury approval. An amendment by Mr. Birch aimed at limiting the amounts placed to reserve funds by the Authority and Boards was rejected. An amendment to Clause 39 moved by Mr. Shinwell and agreed to provides that Area Boards, with the approval of the Central Authority, shall be empowered to determine how their surplus revenue shall be applied.

Supply to Railways

After an assurance by Mr. Shinwell, Col. Clarke withdrew an amendment designed to prevent supplies of electricity being given to railways at a loss. The House did not accept an amendment moved by Sir Arnold Gridley aimed at preventing power supplied for traction purposes being used by railway companies in their establishments.

Upon consideration of Clause 47 (Machinery for settling terms and conditions of employment of staff, etc.) Mr. Boyd-Carpenter moved an addition to require the Central Authority not to refuse to consult any organization appearing to represent an "appreciable proportion of persons employed by Electricity Boards." In resisting the amendment Mr. Shinwell said that 95 per cent of the present employees were in recognized organizations and it was unnecessary to promote other organizations. He recognized the position of clerical workers and would not exclude representations from N.A.L.G.O., which was a bona fide organization. Upon a division the amendment was defeated.

There was a long discussion on Clause 48 dealing with pension rights. In the course of it Mr. Shinwell said that they had taken every precaution to ensure that persons generally employed by an electricity undertaking should have their rights preserved, but they could not include part-time workers who were employed for very little of their time in an undertaking.

On Clause 49 (Compensation to officers in connection with transfers) Mr. Shinwell said he could not wholly accept an amendment moved by Col. Clarke to provide that compensation should be payable to employees for any changes adversely affecting them within five years of the vesting date. He said, however, that he would provide regulations which would substantially cover Col. Clarke's proposals. He also moved an amendment making it mandatory upon the Minister to prescribe in his regulations the procedure to be followed in determining what compensation is payable.

"Offending" Directors

Mr. John Foster sought to replace subsection (2) of Clause 54 by another providing that instead of a director or officer of offending corporations having to prove that an offence was committed without his knowledge or consent, connivance must be proved against him. The amendment was negatived.

An amendment moved by Col. Clarke to remove debenture stocks from the definition of "securities" in Section 59 (1) (Interpretation) was not accepted.

Mr. Emrys Roberts moved an amendment providing for the establishment of one Area Board for Wales and a Merseyside Board (instead of a Merseyside and North Wales Board) but this was negatived.

After further discussion the Bill was re-committed to a Committee of the Whole House and in the course of the proceedings several amendments were moved on behalf of the Government, mainly to clarify certain points. There was much criticism of the terms of acquisition of local authority undertakings. At a later stage a new clause was added providing a total sum of £5 million for division among local authorities as compensation in respect of losses due to severance of their undertakings. In a long debate Mr. Shinwell resisted the proposals by Opposition members that local authorities should be compensated for loss of rate relief. He pointed out that any increase in the proposed sum would add to the electricity consumers' burden.

A further new clause detailing the bodies to whom Part II of the Bill (Acquisition of Electricity Undertakings) applies was added as the original definition was considered too wide, including certain local authorities and bodies supplying electricity for transport only. The

definition of holding companies is also revised. The new clause lists three groups: those in a new schedule added to the Bill; power station companies; and holding companies.

Non-statutory undertakings are dealt with in another new clause. Under this any such undertaking may require the Central Authority to take over its electricity supply business. The basis of acquisition is to be the sale " as a going concern on the date of transfer in the open market by a willing seller to a willing buyer."

Composite companies are by a new clause to be given the option of being taken over as a whole or divesting themselves only of their electricity undertakings and the basis of acquisition of these undertakings (the proportion of average net revenue to the companies' total net revenue) is laid down in another new clause.

In moving the third reading Mr. Gaitskell said that nationalization was the only sensible and equitable solution of the problems of the electricity supply industry. The Bill would not produce speedy results but would put the industry on a sound foundation for the expansion which would come during the next ten years.

The rejection of the Bill was moved by Mr. R. S. Hudson, who said that its principal objectionable feature was over-centralization. He had no faith in the proposed Consultative Councils which would be merely bodies nominated by the Minister and he predicted that the Bill would result in steadily-rising prices to the consumers.

After further debate in which a number of speakers including Sir Arnold Gridley and Mr. Palmer took part, Mr. Shinwell replied for the Government. He said that the industry for the most part was already publicly owned. Integration would be conducted with the minimum of centralization and another advantage would be increased research facilities.

The Bill was read a third time and passed.

Ulster Board's Report

Development Impeded by Shortages

PERSISTING shortage of materials, particularly wood poles, has led to an accumulation of arrears of development work which is causing the Electricity Board for Northern Ireland some concern. Mr. Lendrick McMaster, secretary, in his report for 1946, says that applicants for supply—whose number is increasing—have for some time been told that there may be a delay of from eighteen months to two years and upwards. Altogether 2,145 poles were obtained during 1946, but an additional 4,300 were needed to provide supplies to those who had signed applications. Of the 1,200 concrete poles outstanding on the Board's order there was no delivery during the year owing to delays in obtaining possession of the works site by the manufacturers, and difficulty in getting high-tensile steel.

Rural Survey

The number of consumers supplied by the Board at December 31st was 52,652, an increase of 4,345 (of whom 1,198 came from the acquired undertakings at Limavady and Newtownbutler). Sales totalled 111·1 million kWh compared with 101·8 million in 1945, an increase of 9·2 per cent. The demand for all classes of appliances continued and there was a long list of applicants at the end of the year. In connection with future rural development a survey was undertaken in an area of about 128 sq miles.

At the Ballylumford power station owned by the Ministry of Commerce and operated by the Board (in parallel with the Belfast Corporation's Harbour station) 206·8 million kWh was generated, the maximum load being 59,350 kW; 123,964 tons of coal was consumed. The final metering equipment for the conditions of combined running was proved and commissioned, as also was the complete protective equipment for the 110-kV transmission system. Referring to the 110-kV air-blast circuit breakers mentioned in the previous report as the first of their type in Britain, it is stated that these have given satisfactory service throughout the year, as has the " Solkor " protective gear.

The Board's accounts show a revenue of £704,188 (against £634,801) with working expenses at £551,880 (£486,912) and loan charges, etc., £151,538 (£146,508), leaving a net profit of £770 (£1,381). Loans outstanding aggregated £2,219,058 out of £2,800,000 borrowed. The average price received per kWh sold was 1·42d., against 1·40d. From July 1st, 1946, the Board extended the standard coal clause to domestic tariffs, at the same time discontinuing the 5 per cent war addition. The average price of coal delivered was 49·7s. per ton, resulting (on the basic price of 25s. a ton) in an average coal clause charge of 0·272d. per kWh.

A superannuation fund was established, with effect from January 1st, 1944, covering all employees.

It is reported in the *Belfast News-Letter* that the Antrim Electricity Supply Co. and the Antrim Electricity Distribution Co., Ltd., have now agreed to the purchase of their undertakings by the Electricity Board as from June 30th. An official of the Board stated that there would be a very considerable decrease in charges.

Trolley-Buses in Canada

According to a survey by *Electrical News and Engineering* (Toronto) present plans call for at least 524 trolley-coaches to be in use in thirteen Canadian towns by the end of 1948.

ELECTRICITY SUPPLY

Letchworth Transfer. Refrigerator Hire Costs.

Bedford.—ELECTRICITY DISCOUNT.—All consumers are to be given a 15 per cent discount on their accounts for the first three months of 1947, and there is a possibility of a larger discount in the future.

Carlisle.—HOUSING DEVELOPMENT.—Mains extensions, to supply 80 new houses are estimated to cost £1,450.

Glasgow.—SURPLUS ON YEAR'S WORKING.—The Electricity Department reports revenue for the past year of £2,471,367 compared with £2,162,870 in the previous year. The accounts show a net surplus of £26,000; in 1945-46 there was a deficit of £99,000.

Hove.—SUPPLY TO FACTORY.—The Corporation is to provide a supply of electricity to the Mullard Radio Valve Co.'s premises at an estimated cost of £1,940.

Ipswich. — SUBSTATION CONSTRUCTION. — In connection with the replacement of overloaded substation kiosks by brick-built substations, the Council is applying to the Electricity Commissioners for loan sanctions of £18,540 and £21,400 to replace kiosks in Tuddenham Road and the Willoughby Road area respectively.

Letchworth.—TRANSFER OF UNDERTAKING.—In our issue of May 30th we reported that First Garden City, Ltd., had applied for a Special Order authorizing the transfer of the undertakings covered by the Letchworth and District Electricity Orders, 1924 and 1925, to Letchworth Electricity, Ltd. The new company has been formed to give effect to the settlement providing for the segregation of the electricity side from the main business of First Garden City, Ltd., for the purpose of nationalization. The terms of the transfer agreed upon are the payment by the subsidiary of £715,000 for the capital assets as at September 30th, 1946; capital expenditure since then is to be on account of the subsidiary and will be capitalized in the balance sheet; and the costs of forming the subsidiary are similarly to be capitalized.

Liverpool.—INDUSTRIAL SUPPLIES.—The Electricity Committee proposes to erect substations and equipment at works in Vauxhall Road and on the Speke Estate at an estimated cost of £10,081.

Lowestoft.—CONCESSION EXTENDED.—The increase in discount from 2½ to 7½ per cent which came into force in the March quarter is to be extended for six months. In addition the 7½ per cent war increase in electricity charges will be discontinued as from the quarter ending September 30th.

St. Helens.—PROPOSED NEW POWER STATION.—Negotiations are proceeding for the erection of a new power station for St. Helens. The Electricity Commissioners will shortly be asked to approve plans of the proposed station which is to receive its coal supplies direct from a neighbouring colliery.

St. Pancras.—HIRE OF REFRIGERATORS.—When in October last a hire rental of 1s. 3d. per week was approved for the M. 151 built-in type Electrolux refrigerators they cost the Electricity Department £16 10s. each. The present net cost is £16 10s. plus £16 3s. 1d. purchase tax, together with up to £3 for a housing unit, making £31 13s. 1d. each. To this must be added provision for interest on loan charges, and maintenance. It is therefore proposed that the minimum hire charge shall be 2s. 6d. per week.

Scotland.—DISTRIBUTION SCHEMES.—The North of Scotland Hydro-Electric Board on Monday last announced schemes for the distribution of electricity in the Ullapool district of Ross-shire and the islands of Lewis, Islay and Shetland. In approving these schemes the Electricity Commissioners have said that they will give financial sanction for partial developments in the first place. This will permit the Board to proceed with a first stage of each scheme. In the island of Lewis the Board proposes to go ahead with a first instalment covering the Eye Peninsula and North Tolsta; in Shetland it is proposed as a first step to extend the Board's distribution line across the mainland from Lerwick to Scalloway; in Islay the Board has bought a small Diesel engine power station at Bowmore from the Air Ministry and it is proposed to provide supplies in the first place from Bridgend in the one direction to Port Ellen in the other. At Ullapool the existing small generating station has been acquired and Diesel engine generating plant of increased capacity will be installed.

Warrington.—NEW FEEDER AND SWITCHGEAR.—The Corporation Electricity Department is to provide a new feeder from the Factory Lane substation to the British Aluminium Co.'s works at Bank Quay (£1,241) and also h.v. switchgear at the substations of the Lancashire Steel Corporation, Ltd., Dallam (£1,859) and Monks, Hall & Co., Ltd., Liverpool Road (£1,700).

TRANSPORT

Cardiff.—TRAMWAY CONVERSION.—The Corporation proposes to abandon the tramways on the Cowbridge Road route and replace them by trolley buses. Sanction has been obtained to borrow £38,158 in connection with this project.

London.—UNDERGROUND RAILWAY EXTENSION.—The London Passenger Transport Board on Monday opened the Central Line extension from North Acton to Greenford, replacing the G.W.R. steam service.

FINANCIAL SECTION

Company News. Stock Exchange Activities.

Reports and Dividends

Cable & Wireless (Holding), Ltd.—Speaking at the annual meeting held on June 25th, Sir Edward Wilshaw (the governor) said that this was the first occasion upon which he had addressed the stockholders since the nationalization of Cable & Wireless, Ltd. (the operating company). The other matter of outstanding interest during the year was the sale of their shareholding in Marconi's Wireless Telegraph Co., Ltd., to the English Electric Co., Ltd. The policy of the directors had been to spread the company's investments over a still wider field. It was not possible to make any statement regarding the effect of the acquisition by the Government of the shares in the operating company upon the holding company's affairs. Attempts to reach agreement with the Treasury had been unsatisfactory and the matter would therefore be referred to an Arbitration Tribunal. They did not expect the Tribunal to sit before the autumn, but as soon as they knew the amount they were to receive in negotiable Government stock they would be able to consider the best course to adopt in the interest of stockholders and to lay before them any recommendations. In reply to a question as to what the board proposed to do when it received from the Government the stock in exchange for the stock of the operating company, the chairman said that it would appear to him that at some stage a scheme of arrangement would have to be made between the preference and the ordinary stockholders or there would have to be a re-adjustment of the present position.

The Southern Areas Electric Corporation, Ltd., held its annual meeting recently when Viscount Elibank (chairman) who presided, said that the Electricity Bill, as it at present stood, provided for the taking over by the Central Electricity Authority of a holding company whose assets in the last balance sheet before January 1st, 1946, comprised securities of authorized undertakings, the value of which amounted to not less than three-quarters of the total value of all the assets of the holding company. As only a little over 46 per cent of their investments were in authorized electricity supply undertakings in which they held a controlling interest it would appear that they would possibly not come under this particular provision of the Bill. Presumably they would be dispossessed of their authorized electricity supply undertakings, and the value of the shares which they held in those undertakings not being quoted on the Stock Exchange would be arrived at by comparison with the values of shares of other undertakings most nearly comparable with theirs. They would also be left with their manufacturing subsidiaries. In that event the directors felt that there was justification for hoping that the income from the British electricity stock plus the profits earned by the manufacturing subsidiaries would enable them to distribute in future at least the same rate of dividend as the shareholders had been accustomed to receive in the past.

Matthew Hall & Co., Ltd.—At the recent annual meeting Mr. B. Baden (chairman) referred to the development of the electrical department and said that many inquiries had been received from abroad for their infra-red black emitters, both gas and electric, and they had already supplied plants to Denmark, Switzerland and Portugal. Their subsidiary Kelco (Metals), Ltd., was fully engaged in the manufacture of infra-red black emitters, convector ovens, drying cabinets, etc. Last year the company was producing weekly over 700 fluorescent lighting fittings, and since then their capacity had greatly increased.

A. C. Cossor, Ltd., propose to pay a final ordinary dividend of 14 per cent and a cash bonus of 5 per cent, less tax, making with the interim, 25 per cent less tax for the year (against 12½ per cent free of tax). There is also a capital distribution of 7 per cent (nil) not subject to tax. The net profits to March 31st, including profits from final settlement of certain Government contracts, amount to £137,288. After deducting initial loss of a subsidiary the balance of profit is £108,852 (against £129,001).

Ward & Goldstone, Ltd.—An increase in net profit, after tax, from £54,081 for 1945-46 to £128,179 for the year to March 31st last is shown in the accounts. A sum of £30,000 (against £5,000) is applied to reserve for future taxation. With a final dividend of 30 per cent (against 20 per cent) the total distribution for the year is 50 per cent (35 per cent) and £153,514 (£84,365) is carried forward.

The Anglo-Portuguese Telephone Co., Ltd., reports a revenue for 1946 of £676,926, as compared with £603,595 for 1945. After deducting operating expenses, and other charges, the final ordinary dividend is 5 per cent, making 8 per cent for the year (same) and the dividend on the "A" ordinary is also unchanged at 8 per cent. The balance carried forward is £42,092 (£39,743).

In his statement issued with the report and accounts, Sir Alexander Roger (chairman) says that during 1946 shipments of British plant and supplies to the value of £366,000 went to the company and of £138,000 to the telephone department of the Portuguese Government. In addition the company purchased in Lisbon and Oporto over 9,400 contos (£94,000) of

miscellaneous telephone and ancillary supplies from Portuguese traders. In Lisbon the outstanding event was the opening of the new Campo Pequeno automatic exchange designed for 20,000 lines capacity. Altogether stations added numbered 6,980, an increase of 10·7 per cent over 1945, bringing the total to 72,185.

Stream-Line Filters, Ltd., reports a trading profit for 1946, including income from investments, etc., of £39,269, as compared with £52,385 for the preceding year, and a net profit of £16,779 (against £10,430). General reserve receives £4,000 and the final dividend is 10 per cent, making 15 per cent for the year.

F. Francis & Sons, Ltd.—At the recent annual meeting the chairman (Mr. John Ismay) said that the company was acquiring a controlling interest in Keighley Lifts, Ltd. The issued capital would be increased by 140,000 ordinary shares (5s.) and there was every reason to anticipate that the Keighley profits would be sufficient to enable them to maintain the 20 per cent dividend.

J. Stone & Co., Ltd., report a profit for 1946 of £242,828, as compared with £228,155 for the previous year. General reserve again receives £50,000, and the final dividend on the ordinary capital is 15 per cent, making 25 per cent for the year (unchanged).

The Ship Carbon Co. of Great Britain, Ltd., is paying a final dividend at the rate of 10 per cent per annum for the period August to December 31st, 1946, making the total distribution for the seventeen months covered by the accounts equal to that rate.

The Burma Electric Supply Co., Ltd., reports a surplus to July 31st, 1946, of £1,615 (against £3,105). The amount carried forward is £6,348 (against £4,732). The report states that consideration of rebuilding and equipment of the power station must be postponed until the rebuilding of Mandalay can be at least commenced.

The Cawnpore Electric Supply Corporation, Ltd., reports a profit for 1946 of £122,341, as compared with £164,573 for 1945. It is proposed to pay a final ordinary dividend of 9 per cent (against 10 per cent), making 13 per cent for the year (same). The balance carried forward is £30,533 (against £31,846 brought in).

Anglo-Argentine Tramways Co., Ltd.—Meetings of debenture holders are to be held on July 10th to consider a further scheme of arrangement providing for the postponement of payments until June 30th, 1950.

The Palestine Electric Corporation, Ltd. reports a net profit for 1946 of £158,067 compared with £131,383 for 1945. The ordinary dividend is being increased from 6 to 7 per cent, tax free.

The Yorktown (Camberley) & District Gas & Electricity Co. has declared an unchanged interim dividend of 2¾ per cent.

New Companies

A. H. Hunt, Ltd.—Registered June 20th. Capital, £125,000. To acquire all or any of the assets and liabilities of A. H. Hunt, Ltd. (in voluntary liquidation) and to carry on the business of manufacturers of, and dealers in, machinery and appliances for the generation, transmission and utilization of electricity, etc. Directors: C. H. Hunt, Mrs. May D. Hunt, S. H. Brewell and F. S. Richmond. Regd. office: Bendon Valley, Garratt Lane, Wandsworth, S.W.18.

Pontefract Electricity Co., Ltd.—Registered June 25th. Capital, £72,000. To acquire the undertaking authorized by the Pontefract Corporation Electric Lighting Order, 1907, and confirmatory and amending acts and orders, including all lands, buildings, works, cables, materials and plant now the property of the West Riding Automobile Co., Ltd., and suitable to, and used by it, for the purpose of the said undertaking. Directors: Sir Ronald G. Leon, J. R. Bedwell and G. H. Margrave. Regd. office: Belle Isle, Wakefield.

L. Power & Son, Ltd.—Registered June 2nd. Capital, £2,000. To acquire the business of electrical engineers and contractors carried on by L. Power & Son (1912). Subscribers: J. Power and Mrs. Amelia Power. Secretary: Norman C. Mander, 96, Leadenhall Street, E.C.3.

Selectra, Ltd.—Registered June 2nd. Capital, £1,000. Electricians, electrical and mechanical engineers. Directors: E. W. Krebs and Mrs. Marie C. Krebs. Regd. office: 42, Selcroft Road, Purley.

Robert Hardman, Ltd.—Registered May 13th. Capital, £5,000. Electricians, manufacturers of, and wholesale dealers in, electric lamps and fittings, etc. Directors: R. Hardman and H. A. Buckley. Regd. office: 3, Queen Square, Leeds.

Pentagon Industries, Ltd. — Registered June 3rd. Capital, £600. Manufacturers, repairers and dealers in dynamos, motors, armatures, etc. Directors: C. W. Coleby, A. W. Stout, E. G. Oldfield and J. F. Bennett. Regd. office: 3, Lammas Road, Leyton, E.10.

Liquidations

G.A. Ryland's Electrical & Engineering Co., Ltd.—Winding up voluntarily. Liquidator, Mr. R. Griffiths, Lloyds Bank Chambers, Brierley Hill, Staffs.

Marine Electric Welding Co. (Woodvale), Ltd.—Winding up voluntarily. Liquidator, Mr. G. H. Sample, 791, Liverpool Road, Southport.

Meeting of Creditors

Electrical Undertakings, Ltd.—Meeting July 8th at the offices of Carr, Sandelson & Co., 15, Bond Street, Leeds, 1, for the purposes provided for in Sections 239 and 240 of the Companies Act.

STOCKS AND SHARES

THE Electricity Bill received this week its third reading in the House of Commons, but its passage continues to be strenuously resisted in Parliament and out of it. Lord Royden, in the Edmundsons' report, quoted in last week's issue, declares that electricity is being nationalized because, amongst other reasons, it is efficient and is a key to political control of industrial affairs. Violent fluctuations in the price of Cable & Wireless ordinary stock was one of the features of last week's dealings. The shrinkage in British Government securities persists, and this reacts unfavourably upon prices of what are called the " blue chip " industrials.

Home Electricity Supply

Prices of the ordinary shares in the home electricity group hold to their previous levels, but the market is affected to a minor extent by the heaviness which, as stated, overcasts gilt-edged securities. There is still an absorption of stock going on for account of the big buyers, insurance companies and others, who have been accumulating electricity supply shares as a way of acquiring cheap Government stock when the time comes for the industry to be handed over. The argument runs that should the Electricity Bill fail to go through, to-day's buyers of the ordinary shares will hold a gilt-edged investment, giving a living rate of interest on the money, so that, whatever happens, nationalization or not, the purchase of home electricity supply shares at to-day's levels can hardly fail to prove a satisfactory investment.

Cable & Wireless Future

Sir Edward Wilshaw's review at last week's annual meeting of Cable & Wireless (Holding) has deflated, at least for the time being, the expectations which recently lifted the price of the ordinary stock to over 180. Optimism based on the break-up value of the stock in a liquidation was deprived of most of its substance by the chairman's view that liquidation of the assets, worth so many millions, would present insuperable difficulties. On this the price of the stock relapsed to 161, a drop of 16½ on the week. Alternative plans for the future of the combine are to be considered when the amount of compensation for the operating subsidiary is known.

Globe ordinary fell 1s. to 49s. in sympathy with the drop in Cable stock. Anglo-American Telegraph preferred is 2½ down at 140½. Telephone Rentals are better at 15s. 9d. and Broadcast Relay rose from 27s. to 28s. 6d. as a result of the meeting.

Dull Markets

Electrical manufacturing and equipment shares reflect the easier tendency of the industrial markets as a whole. Telegraph Constructions at 54s. 6d. are 1s. 9d. down. Automatic Telephones, now 74s. 6d., Brush, 8s., Enfield Cables 45s. 6d., and Siemens, 36s., are a few pence lower. On the other hand, A.E.I. and Chloride Electrical Storage have improved further on previous advances and are 92s. and 5 $\frac{3}{16}$ respectively. Ever Ready, now 41s. 6d., have been a better market since the annual meeting, and Walsall Conduits are noticeably firm at 58s. 6d. " Emmies " have reacted to 25s. Murex, 4⅛, and De La Rue, 67s. 6d., are each half-a-crown down. Amongst other prices to have receded are Metal Industries " B " 56s. 3d.; British Insulated Callenders 45s. 6d.; Crompton Parkinsons 32s. 9d.; English Electrics 67s. and International Combustion 62s. In the transport group, Tillings at 66s. and B.E.T. deferred at 1375 have lost a small part of the recent substantial rises.

Miscellaneous Matters

A market has been established now in C. A. Parsons £1 ordinary shares, which were offered a month ago at 60s. to shareholders and employees. They are changing hands at about 82s. Particulars published at the time of the preference issue indicated for the current year a 12½ per cent dividend, on which the yield would work out at a little under 3 per cent. Anglo-Portuguese Telephone last year imported telephone equipment from Britain to the value of £366,000, according to the chairman's review accompanying the annual report. Finance was assisted by loans from Telephone & General Trust, the controlling company. An issue, in due course, of capital in more permanent form is to be considered. On the regular 8 per cent dividend the shares, at 33s.—a fall of $\frac{1}{16}$ on the week—yield £4 17s. per cent. Ward & Goldstone are better upon the announcement of excellent figures; the year's dividend has been raised from 35 per cent to 50 per cent, twice the dividend of two years ago.

Electric Supply Corporation

The Electric Supply Corporation (Overseas), Ltd., a subsidiary of the Electric Supply Corporation, Ltd., has decided to issue 42,000 unissued shares of £1 each at 20s. per share. Stockholders in the Electric Supply Corporation are invited to apply for these shares, in respect of which, according to the company's announcement, it is not intended for the time being to apply to the Council of the Stock Exchange for quotation. The overseas company will hold 30,000 Kalgoorlie Electric Power & Lighting shares of 10s. each, and these shares are to be purchased by the Overseas Corporation. The directors suggest that at this stage applications should be for relatively small individual blocks, for 50 shares or multiples of 50 shares up to 500. Applicants for the shares will receive a security in which, for the time being, no Stock Exchange market will obtain. The intention of the scheme is to carry on the company in an overseas branch, in view of the impending nationalization of the electricity supply industry at home.

NEW BOOKS

Characteristics of Carbon Brushes. Electrical Test Papers.

Current-Collecting Brushes in Electrical Machines. By M. E. Hayes. Pp. 191; figs. 99; index. Sir Isaac Pitman & Sons, Ltd., 39, Parker Street, Kingsway, London, W.C.2. Price 21s.

The author has been connected with the carbon brush industry for some years. He has evidently made a close study of his subject and has wisely fortified himself by reading what others have written before him. The book begins with a description of carbon, its physical, chemical and electrical characteristics. The ideal brush is described as " one which meets all the requirements of current collection and commutation, and one which will support a heavy current density at high speed without a spark, a scratch, or a sound."

Chapters follow covering the design of brushes, brush holders, rocker gear and commutator construction. Current collection and commutation with their associated phenomena are next dealt with. In the chapter on "Qualities of Brushes " there appears a table purporting to give the specific resistance of various grades, but incidentally 10^{-5} in the *heading* should read 10^{5} or else 10^{-5} should follow the figures themselves in the column below and not appear in the heading. This error, however, due to its very magnitude is unlikely to mislead the reader.

The general arrangement of the book including the index and cross referencing is good, although the division of the chapters into sub-sections as well as main sections would have facilitated ready reference. The line diagrams are clear, but the half-tone blocks are for the most part poor. It is not obvious what purpose is served by the inclusion of a large number of pictures of complete machines, the brush gear details being small and very indistinct. The omission of a dozen or more of the pictures would have left the author more space for dealing further with, say, the merits of tandem brush gear; how to recess mica efficiently; how to measure commutator truth; the relative merits of turning and grinding commutators, together with methods of performing these operations. The operating engineer who is in trouble may have to make some practical tests of an unusual character and detailed instructions upon the precautions necessary to obtain reliable results without causing shorts, or shocks, would have been valuable. A substantial reduction of the number of blocks would also perhaps have reduced the cost of producing the book.

Most of the information recorded has by now been fairly well established by various experimenters, but it is doubtful if the experienced will readily accept the statement that it will suffice if a commutator or ring is " reasonably " true, or that the inertia of a brush holder *finger* as distinct from the brush itself should be reduced to the minimum (unless the commutator is in such bad condition that there is risk of brush breakage).

The book will be of use principally to operating engineers and the longest chapter is, rightly, devoted to " The Diagnosis of Brush Troubles."

—P.H.B.

Test Papers and Solutions on Electrical Engineering. By T. F. Wall. Pp. 312; figs. and index. George Newnes, Ltd., Tower House, Southampton St., London, W.C.2. Price 25s.

This book is a companion volume to " Principles of Electrical Engineering " by the same author and reviewed in these columns on June 13th. At the end of the volume on principles, Dr. Wall gave 203 test papers. These are now repeated and worked out. In a way, the two volumes can be considered as Parts I and II of the same work, although some of the examples go beyond the text. An attempt has been made to cover the whole range of applied electricity and magnetism, while the problems apply both to light- and to heavy-current working.

To a large extent, the questions are descriptive rather than numerical, but the answers to the former are informative and in many cases analytical. At times, it is hard to see why the subject matter was not incorporated in the text of the earlier volume. The author is not too helpful with his symbols; on the same page he uses c.cm., $cm.^2$ and cms., not one of which conforms to accepted standards. On another page, in the same line, occur $mm.^2$ and sq. mm.; in another, weights are given in kgm. and kg.

This book on worked problems will be found very useful to readers of the companion volume on " Principles of Electrical Engineering," indeed, they should be used in conjunction with each other. The combined price, 40s. plus 25s., doubtless seems a bit stiff for a textbook on fundamental principles, but the user will find it best to have both and use them together. The work can be thoroughly recommended.—S.P.S.

Books Received

Photographic Recording of Cathode Ray Tube Traces. By R. J. Hercock. Pp. 60: figs. 4; index. Ilford, Ltd., Ilford, Essex. Price 5s.

Second Year Radio Technology. By W. H. Date. Pp. 222; figs. 155; index. Longmans, Green & Co., Ltd., 43, Albert Drive, London, S.W.19. Price 7s. 6d.

The Microscope—Its Theory and Applications. By J. H. Wredden. Pp. 294; figs. 298; index. J. & A. Churchill, Ltd., 104, Gloucester Place, London, W.1. Price 21s.

NEW PATENTS

Electrical Specifications Recently Published

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

1939

A. D. Blumlein and E. L. C. White.—"Apparatus for the control of the timing of recurrent signals." 32159. December 13th, 1939. (589228.)

1940

A. D. Blumlein.—"Radio receivers and application thereof." 546. January 10th, 1940. (589229.)

1941

Standard Telephones & Cables, Ltd., and M. M. Levy.—"Means for generating rectangular electrical impulses." 6781. May 27th, 1941. (589126.)

J. Thomson, A. M. Reith, C. H. Morey and C. S. Wright.—"Apparatus for controlling electronic streams in thermionic valves or the like." 7312. June 10th, 1941. (589021.)

A. M. Reith and C. S. Wright.—"Thermionic valves." 7313. June 10th, 1941. (589022.)

D. Blumlein (legal representative of A. D. Blumlein).—"Apparatus for generating electrical impulses." 13065. October 10th, 1941. (589127.)

1942

British Thomson-Houston Co., Ltd., and K. J. R. Wilkinson.—"Production of recurrent voltage impulses of large power." 853. January 20th, 1942. (589128.)

A. H. Cooke, H. W. B. Skinner, A. G. Ward and C. S. Wright.—"Control devices for high-frequency electrical oscillations." 3056. March 9th, 1942. (589023.)

General Electric Co., Ltd., and E. Friedlander.—"Protective shields in high-voltage apparatus." 4080. March 27th, 1942. (589071.)

British Thomson-Houston Co., Ltd., and K. J. R. Wilkinson.—"Operation of triggered spark gaps." 10120. July 20th, 1942. (589129.)

1944

Siemens Electric Lamps & Supplies, Ltd., and J. N. Aldington.—"Electric lighting systems." 9785. June 15th, 1945. (589176.)

British Thomson-Houston Co., Ltd., and J. H. Walker.—"Polyphase inductor alternators." 9994. May 24th, 1944. (589236.)

H. E. W. West.—"Contact-breakers for magnetos." 10073. May 24th, 1944. (589133.)

Mullard Radio Valve Co., Ltd., and E. E. Shelton.—"Cathode ray tubes." 10566. June 1st, 1944. (589135.)

Western Electric Co., Inc.—"Directive radio systems." 10688. June 5th, 1943. (589136.)

Telegraph Condenser Co., Ltd., and N. H. Bentley.—"Closures for tubular containers for electrical condensers or other apparatus." 12615. July 3rd, 1944. (589238.)

English Electric Co., Ltd., G. F. Tagg and R. K. Whitehead.—"Prepayment meter mechanism." 12988. July 7th, 1944. (Addition to 572403.) (589043.)

Bio Electrics, Ltd., and H. J. Osborn.—"Electric soldering irons." 15472. August 14th, 1944. (589050.)

General Electric Co., Ltd., V. J. Francis and E. H. Nelson.—"Electric discharge lamps." 17825. September 18th, 1944. (Addition to 579375.) (589240.)

Telegraph Condenser Co., Ltd., P. A. Sporing and C. P. Johnson.—"Manipulation of wire." 22052. November 9th, 1944. (589247.)

V. Hope.—"Electric contacts." 24712. December 9th, 1944. (589085.)

Lobitos Oilfields, Ltd., and J. C. Wood-Mallock.—"Manufacture of electrical insulating oils." 25130. December 14th, 1944. (589149.)

Lobitos Oilfields, Ltd., and J. C. Wood-Mallock.—"Manufacture of oils for electrical insulating purposes." 25131. December 14th, 1944. (589150.)

Arc Manufacturing Co., Ltd., and R. G. Moffatt.—"Electrical spark gaps." 2292. January 29th, 1945. (589091.)

1945

Westinghouse Electric International Co.—"Power plants." 4321. February 24th, 1944. (589099.)

General Electric Co., Ltd., and L. Rollin.—"Frequency adjustment of piezo-electric elements." 6131. March 12th, 1945. (589108.)

Crypto, Ltd., and E. P. Wilson.—"Grilling and toasting apparatus." 6186. March 12th, 1945. (589109.)

S. Smith & Sons (England), Ltd., and S. A. Walton.—"Instrument panels." 6564. March 15th, 1945. (589113.)

Siemens Bros. & Co., Ltd., and D. A. Christian.—"Electrical communication systems." 6573/4. March 15th, 1945. (589158/9.)

British Thomson-Houston Co., Ltd.—"Switching arrangements for electric heating systems." 6666. March 17th, 1944. (589170.)

British Insulated Cables, Ltd., J. Chesworth and J. Conning.—"Joint or termination for an electric cable." 6683. March 16th, 1945. (589172.)

Sulzer Frères Soc. Anon.—"Gas-turbine plants." 6688. March 18th, 1944. (589178.)

Aldis Bros., Ltd., and A. C. W. Aldis.—

" Pneumatically actuated electric switches." 6702. March 16th, 1945. (589182.)

British Thomson-Houston Co., Ltd.—" Aircraft power plants." 6742. March 20th, 1944. (589189.)

British Thomson-Houston Co., Ltd.—" Aircraft cabin pressure control arrangements." 6854. March 20th, 1944. (589201.)

British Thomson-Houston Co., Ltd., and J. E. Stanworth.—" Glass composition." 6855. March 19th, 1945. (589202.)

Dorman & Smith, Ltd., and T. Atherton.—" Electric plug and socket connections." 6963. March 20th, 1945. (589213.)

G. R. Shepherd (Westinghouse Electric International Co.).—" Metal to glass seals." 7001. March 20th, 1945. (589215.)

Mather & Platt, Ltd., and R. Pennington.—" Centrifugal pumps." 7010. March 20th, 1945. (589217.)

Harland Engineering Co., Ltd., and R. C. Mortimer.—" Regulator systems for dynamo-electric machines." 7026. March 20th, 1945. (589222.)

Thermalux Electrical Products, Ltd., and A. Sykes.—" Mattresses and other like upholstery." 7088. March 21st, 1945. (589261.)

British Thomson-Houston Co., Ltd.—" Gas cooling arrangements for electric circuit interrupters." 7138. March 24th, 1944. (589270.)

Philco Radio & Television Corporation.—" Phonograph pick-up device." 7145. March 31st, 1944. (589272.)

E. Marshall.—" Assembly jigs for use in the manufacture and repair of electric accumulators and the like." 7152. March 21st, 1945. (589275.)

Landis & Gyr Soc. Anon.—" Apparatus for the counting and measurement of current impulses of short duration." 7154. April 5th, 1944. (Addition to 566645.) (589276.)

British Thomson-Houston Co., Ltd.—" Arc extinguishing structures for electric circuit interrupters." 7423. March 24th, 1944. (589277.)

Amended Specifications Published

Premier Electric Heaters, Ltd., and another.—" Electric and other fires." (571924.)

Electricity in Manchester

EXCLUDING bulk supplies, the Manchester Corporation Electricity Department (chief engineer and manager, Mr. R. A. S. Thwaites) sold 683·3 million kWh in 1946-47. This was 53·5 million kWh more than in the previous year, of which " lighting, heating and cooking supplies " accounted for 52·2 million; decreases are recorded in the case of large power users, street traction and street lighting. During the year the undertaking's 200,000th consumer was connected and at March 31st the total number was 204,230, an increase of 5,754 during the year. Altogether, 19,698 new applications for supply were received. Ten new agreements were signed for supplies to large power users, including two textile mills and a colliery. Supplies were provided to 490 new permanent houses and 1,531 temporary bungalows (including 498 bungalows with electric kitchen equipment).

Regarding industrial sales the undertaking's report says that increasing interest was shown in l.v. electrode boilers for raising process steam on a small scale, several of which were put into operation and others ordered. A number of baking ovens and other canteen cooking equipment were ordered, but long delivery periods were quoted in every case. Sixty-two new battery electric vehicles were registered in Manchester, making the total number charged from the mains 520. The undertaking's lighting sales service, suspended during the year, was revived.

At the showrooms the progressive increase in cash sales continued. The number of names on the waiting list for cookers, washing machines and refrigerators at the end of the year remained at over 3,000.

On the technical side reference is made to the preliminary arrangements in connection with the construction of the new generating station at Carrington. At Bloom Street station a 10,000-kW set originally commissioned in 1917 was once again put into operation because of the very heavy demand, and was run satisfactorily for two periods daily in spite of its age. At both Barton and Stuart Street all the turbo-alternators were kept in commission throughout the winter months. The total quantity of electricity sent out was 896·8 million kWh. Fuel consumption aggregated 677,887 tons, the average price being 42s. 9d. per ton.

Distribution work included the putting into commission of a new trunk feeder from Barton to Benchill substation. The question of a site for a new main substation in the Baguley area of Wythenshawe (bound up with plans for district heating which had not matured) continued to be the subject of negotiation. The maximum demand on the system occurred in January where, despite load shedding, 263,788 kW was reached (including 508 kW bulk supply from Stretford) compared with 244,250 kW in January, 1946.

The accounts show a gross revenue of £3,359,933 (against £2,916,457), working expenses inclusive of all generation costs amounting to £2,977,589 (£2,611,939). Loan charges totalled £372,903 (£374,638), leaving a net surplus of £9,441 against a deficit in 1945-46 of £70,120. The average price obtained per kWh sold was 0·96d. (0·92d.).

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

Contracts Open

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

Burnley.—July 14th. Electricity Department. E.h.v. cable. (June 27th.)

Cumberland.—July 14th. County Council. Electrical installation, Aspatria Council School. (See this issue.)

Darlington.—July 16th. Electricity Department. Overground feeder pillars and underground disconnecting boxes. (See this issue.)

Dorset.—The County Council invites contractors and manufacturers to apply for consideration in respect of work and materials for building and maintenance works. Applications are to be submitted by July 31st. (June 27th.)

Dundee.—July 21st. City Electricity Department. Automatic CO_2 fire extinguishing equipment for a 33-kV substation. (June 27th.)

Halifax.—August 18th. Borough Council. 33-kV underground cables and 33-kV metalclad switchgear and control panels. (See this issue.)

Hornsey.—July 28th. Borough Council. Electrical installations in 116 flats, "Hillcrest," North Hill, Highgate. (See this issue.)

Iraq.—Crown Agents for the Colonies. Diesel-driven generator sets. (June 27th.)

Newport (Mon.).—July 31st. Corporation. 33-kV main and pilot cables. (June 27th.)

New Zealand.—Hydro-Electric Department. August 26th. 110-kV outdoor switchgear and steelwork for Waverley substation (Contract 29).

September 16th. 50-kV outdoor switchgear and steelwork for Awamutu substation (Contract 30) and Litchfield substation (Contract 31).

September 30th. 750-kVA earthing transformers for Stratford substation (Contract 32). 5,000-kVA, 110/11-kV transformer bank and spare unit for Ongarue substation (Contract 33) and similar equipment for Studholme substation (Contract 34).

Reigate.—August 22nd. Electricity Department. Substation e.h.v. and l.v. equipment, and transformers. (June 20th.)

Orders Placed

Darlington.—Corporation. Accepted. Switchgear (£11,089).—A. Reyrolle & Co.

Hammersmith.—Electricity Committee. Recommended. Supplies for period ending March 31st, 1948:—E.h.v. switchgear (£3,656).—J. G. Statter & Co. L.v. switchgear (£425).—W. Lucy & Co. 500-kVA transformers (£714) and 1,000-kVA transformers (£1,194).—Brush Electrical Engineering Co.

Glasgow.—Sub-Committee on the New Generating Station. Accepted. 120-ton overhead electric travelling crane (£11,750), 12-ton underslung overhead electric travelling crane (£2,875).—Sir William Arrol & Co.

London.—Metropolitan Water Board. Recommended. Alternators.—Brush Electrical Engineering Co. (eleven 300-kVA units, £15,995, and three 450-kVA units, £5,451). G.E.C. (seven 300-kVA units, £9,786, and three 450-kVA units £5,160). Switchboards.—Millns Electrical Co. (£8,741), M. & C. Switchgear (£6,603) and Electric Construction Co. (£2,700). Cables and switchgear, at the Kempton Park Pumping Station (£1,875).—Murray Munro & Co.

Middlesbrough.—Town Council. Accepted. Six switch pillars.—English Electric Co.

Metal ring main equipment required in connection with new circuit breakers (£250).—Allen West Co.

Sedgley.—U.D.C. Accepted. Electrical installations in new Council houses.—Beaumont Electrical Installations (£1,206), Graham, Hill & Poole (£654), David Moss (£400) and Cairo Electric Co. (£189).

Stretford and District.—Electricity Board. Accepted. Meters—Measurement, Ltd.; Electrical Apparatus Co.; Sangamo Weston, Ltd. Compound.—W. T. Glover & Co.

Warrington.—Electricity Committee. Accepted. Switchboards and switchgear.—Ferguson, Pailin; Cables.—B. I. Callender's.

Contracts in Prospect

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

Ayrshire.—College (£500,000) for governors of West of Scotland Agricultural College; secretary, 6, Blythswood Square, Glasgow, C.2.

Birkenhead.—Four-storey block and nurses' home at the General Hospital (£250,000); L. Barnish, architect, 58, Rodney Street, Liverpool, 1.

Birmingham.—Flats and maisonettes (211), Hutton estate, Washwood Heath Road; Herbert J. Manzoni, city surveyor, The Council House.

Bishop's Stortford.—Extensions (£26,000) at Hockerill Training College; Kerridge (Cambridge), Ltd., Stourton Street, Cambridge.

Blackpool.—Light engineering works, Handsworth Road; Unit Tool & Engineering Co., Ltd., Chiswick Grove, Marton.

Bollington.—Cinema, café and ballroom; E. Whittaker, The Picture House.

Bournemouth.—New premises for the *Bournemouth Times*; A. J. Seal & Partners, architects, Majestic Chambers, Westover Road.

Cheetham.—Extensions to tobacco factory, Derby Street and Bent Street; Architects' Department, Gallaher, Ltd., 97-101, Cannon Street, London, E.C.4.

Chester-le-Street. — Factory for Rodney Dresses, Ltd.; W. Norman, builder, West Lane.

Factory, Newcastle Road, for W. T. Henley's Telegraph Works Co.; Higgs & Hill, builders, Leeds.

Chesterfield.—Extensions to works; Low Temperature Carbonisation, Ltd., Bolsover.

Factory, Sheffield Road; Wm. Hollins & Co., Ltd., spinners, 36, Old Change, London, E.C.4.

Hospital, Ashgate, for Chesterfield Royal Hospital; Saxon, Snell & Phillips, 9, Bentinck Street, London, W.1.

Crook and Willington.—Houses (46) at Low Mown Meadows for the U.D.C.; Page, Son & Hill, architects, 75, King Street, South Shields.

Eccles.—Secondary technical school, Ellesmere Park; G. Noel Hill, C.A., County Offices, Preston.

Edinburgh.—Factory and boiler-house, etc., for United Wire Works, Granton (£53,000); the manager.

Folkestone.—Houses and flats (55), Rossendale Road site; borough engineer.

Gateshead.—Additions to factory for Bren Manufacturing Co., Ltd.; Anglo-Scottish Construction Co., Ltd., builders, Gosforth, Northumberland.

Glasgow.—Administration building block; G. & J. Weir, Ltd., engineers, Holm Foundry, Cathcart.

Gloucester.—Aluminium bungalows; A. W. Hawkesley, Ltd., contractors, Hucclecote.

Haltwhistle.—Aluminium houses (50); R.D.C. surveyor.

Extending paint works for Smith & Walton, Ltd.; R. Blackett & Son, builders, Sutherland Street, Gateshead.

Hornsey.—Houses (45), Springfield Avenue, N.10; J. H. Melville Richards, borough engineer, Crouch End, N.8.

Islington.—Flats (120), King Henry's Walk; Henry's Walk Housing Co., Ltd., 127, Middlesex Street, E.1.

Jarrow.—Additions to bar stock bay for the New Jarrow Steel Co. (£15,000); secretary.

Maidenhead.—Houses (66); borough engineer, Guildhall.

Middlesbrough.—Additions to Constantine Technical College (£13,000); Northern Counties Building & Civil Engineering Co., Ltd.

Houses (72), Thorntree estate; borough engineer.

Newcastle-on-Tyne.—Houses (58) in Purley Gardens for J. H. Fisher & Co.; McMorton McKenzie, Mawson's Buildings, Mosley Street.

Northenden.—Extensions to electrical engineering works, Sharston Road; E. Wilcox & Co., Ltd.

Pontypool.—Aluminium houses for miners (200); surveyor, Urban Council Offices.

Poole.—New factory for Northey Rotary Compressors, Ltd., St. Clement's Road.

Potters Bar.—Factory and office premises, High Street; W. R. Prior & Co., 9, Eagle Street, W.C.1.

Romney Marsh.—Temporary administrative offices, New Romney, for R.D.C.; Jackson & Jackson, architects, 13, North Street, Ashford, Kent.

Rotherham.—Extensions to hospital, Doncaster Gate; the secretary.

Sedgley.—Houses (56), Ettymore Road South, for U.D.C.; McKewan, Fillimore & McKewan, architects, 8, Newhall Street, Birmingham, 3.

Sheffield.—Extensions to works; Pickford Tool Co., Ltd., Claywheels, Wordsley Bridge.

South Shields.—Community centre (£11,000); borough engineer.

Stanlow.—Works and storage facilities; C. C. Wakefield & Co., Ltd., 46, Grosvenor Street, London, W.1.

Stockport.—Works extensions, Newbridge Lane, Pickerings Produce Canners, Ltd.; Factory Reconstruction Co. (M/C), Ltd., Paradise Mill, Bell Street, Oldham.

Stockton-on-Tees.—Factory, Church Road, for J. D. Ord & Co., Ltd.; W. S. Hutton, Ltd., builders, Post House Wynd, Darlington.

Stretford.—Flats (64), Winchester Road and Brompton; A. H. Perry, borough surveyor, Town Hall.

Sunbury.—Houses (350), for employees at London Airport, Heathrow; surveyor, Urban Council Offices.

Sunderland.—Electrical installations in 394 houses and also in shops and garages on the Springwell Farm estate; J. E. Lewis, borough surveyor, Town Hall.

Swansea.—Warehouse, etc., Liverpool Wharf and Beaufort Wharf; South Wales Sand & Gravel Co., Ltd., 3, Sketty Road.

Walsall.—New factory in Midland Road for Wilmit Bennett, Marsh Street.

Watford.—Houses (64), Willow Way site; surveyor, Rural Council Offices.

Wigan.—Houses (317), Norley Hall site; D. M. McKellen, borough surveyor, Municipal Buildings.

Willesden. — Rebuilding factory premises, Acton Road and Minerva Road; Kendrick, Findlay & Partners, 35, Tavistock Square, W.C.1.

Worksop.—Factory, site of Firbeck Aerodrome; S. Woodcock & Sons, brush manufacturers, Anglo Works, Holly Street, Sheffield.

CLASSIFIED ADVERTISEMENTS

ADVERTISEMENTS for insertion in the following Friday's issue are accepted up to **First Post on Monday**, and should be addressed to Classified Advertisement Department, Dorset House, Stamford Street, London, S.E.1.

THE CHARGE for advertisements in this section is 2/- per line (approx. 7 words) per insertion; ***ONLY OFFICIAL AND GOVERNMENT ANNOUNCEMENTS CAN NOW BE DISPLAYED:*** — 35/- per inch. Where the advertisement includes a Box Number this counts as six words and there is an additional charge of 6d. for postage of replies.

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

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

Original testimonials should not be sent with applications for employment.

OFFICIAL NOTICES, TENDERS, ETC.

DORSET COUNTY COUNCIL

Selected Contractors

A List of Contractors is now being prepared for the Council's Building and Maintenance Works. Contractors and manufacturers are therefore invited to make application for consideration in respect of one or more of the following classes of work or materials:—

1. General Building.
2. Maintenance and Repairs.
3. Central Heating and Domestic Hot Water Installations.
4. Electrical Installations.
5. Structural Steel.
6. Reinforced Concrete.
7. Masonry (Natural and Artificial).
8. Ironmongery.
9. Sanitary Fittings.
10. Roof Tiling and Slating.
11. Joinery.
12. Asphalt, etc., Waterproofings.
13. Floor Finishings (all types).
14. Patent Roof Coverings.
15. Metal Windows.
16. Plumbing Installations.
17. Decorations.
18. Tarmacadam and other Pavings.
19. Refrigeration and Cold Storage.
20. X-ray Apparatus and Hospital Equipment.
21. Cooking Equipment.

Contractors applying in connection with items 1, 2, 3, 4, 16 and 17 will be asked to state the limit of cost (maximum and/or minimum) of work for which they are prepared to tender, and to give an indication of the labour force normally employed.

Applications, on forms to be obtained from the undersigned, should be received by me not later than Thursday, 31st July, 1947.

C. P. BRUTTON,
County Hall, Clerk of the County Council.
Dorchester.
17th June, 1947. 2345

COUNTY BOROUGH OF HALIFAX

TENDERS are invited from manufacturers who can undertake complete contracts for

(a) The manufacture, delivery, laying and jointing of 33-kV Underground Cables.

(b) The manufacture, delivery and erection of 33-kV Metalclad Switchgear and Control Panels, etc.

Form of tender, specification and general conditions of contract may be obtained upon application to the Borough Electrical Engineer and Manager, 19/23, Northgate, Halifax, on payment of a deposit of one guinea (which will be refunded only on the return of all documents and the receipt of a bona fide tender not subsequently withdrawn). Additional copies of the tender form and specification will be supplied to the tenderer on payment of the sum of ten shillings (not returnable) per copy.

Tenders, on the form provided, which must be in plain sealed envelopes (not bearing any name or mark indicating the sender) endorsed on the outside "Tender for 33-kV Cables" or "33-kV Switchgear," must be delivered to me before noon on Monday, 18th August, 1947. No tender will be considered which does not comply with these conditions. The Council does not bind itself to accept the lowest or any tender.

W. USHER,
Town Hall, Halifax. Town Clerk.
26th June, 1947. 2465

BOROUGH OF HORNSEY

Housing Scheme No. 16: 116 Flats, "Hillcrest," North Hill, Highgate—Electrical Installation

THE Council invite tenders for the provision of all labour and materials for the whole of the electrical installation in the above scheme. Specifications may be obtained from Mr. J. H. Melville Richards, Hornsey Town Hall, Crouch End, N.8.

Drawings may be examined and other information obtained at the offices of Mr. F. C. Orchard, Chief Electrical Engineer and Manager, Electricity Showrooms, Crouch End, N.8, or at the offices of the Architects, Messrs. T. P. Bennett & Son, 43, Bloomsbury Sq., W.C.1.

Tenders must be received by the undersigned not later than 12 noon on Monday, 28th July, 1947. The Council reserve the right to decline all or any of the tenders received.

H. BEDALE,
Town Hall, The Broadway, Town Clerk.
Crouch End, N.8. 2466

COUNTY BOROUGH OF DARLINGTON ELECTRICITY DEPARTMENT

TENDERS are invited for:—

(a) Overground Feeder Pillars.

(b) Underground Disconnecting Boxes.

Specifications may be obtained from the Borough Electrical Engineer, Haughton Road, Darlington. Tenders, in plain envelopes endorsed "Tenders for Feeder Pillars and/or Underground Network Boxes," should be delivered not later than 16th July to the Town Clerk, 11, Houndgate, Darlington. 2416

CUMBERLAND COUNTY COUNCIL

ELECTRICAL contractors desirous of tendering for the proposed Electrical Installation at Aspatria Council School and School House, Aspatria, are invited to submit their names and addresses to the County Architect, 4, Alfred Street North, Carlisle, not later than Monday, 14th July, 1947.

G. N. C. SWIFT, Clerk to the County Council.
2464

SITUATIONS VACANT

BOROUGH OF RADCLIFFE ELECTRICITY DEPT.

Class I Plumber-Jointer

APPLICATIONS are invited for the above position. The rate of pay and working conditions will be those of the National Joint Industrial Council, at present 2s. 6d. per hour for a 47-hour week. Applicants must be fully experienced in high tension and low tension jointing work, network boxes, and substation H.T. and L.T. boards.

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. Canvassing will disqualify, and candidates must disclose in their applications any relationship to any member or officer of the Council.

Applications, stating age, and details of practical experience, together with copies of not more than three recent testimonials, must reach the undersigned, endorsed "Plumber Jointer," not later than Tuesday, 15th July, 1947.

H. A. FOX,
Town Hall, Town Clerk.
Radcliffe, Lancs.
20th June, 1947. 2386

WALTHAMSTOW CORPORATION ELECTRICITY UNDERTAKING

Consumers' Engineer

APPLICATIONS are invited for the position of Consumers' Engineer at a salary in accordance with Grade 3, Class H, of the National Joint Board Schedule, at present £761 rising to £803 per annum.

Candidates must be Corporate Members of the Institution of Electrical Engineers or possess equivalent qualifications and must be thoroughly conversant with the organization and control of staff engaged on the maintenance of hire apparatus, showroom sales, records, tariffs, and the preparation of specifications and estimates for electrical installation work carried out by direct labour. They must have had good experience in the development of load for domestic, commercial and industrial purposes, be able to advise consumers, and conduct correspondence.

The appointment will be subject to the Local Government Superannuation Act, 1937, to the National Joint Board's Conditions of Service, to the successful candidate passing a medical examination, and to termination by one month's notice on either side.

Forms of application obtainable from the Borough Electrical Engineer and Manager, Electric House, Church Hill, London, E.17, should be completed and returned accompanied by copies of not more than three recent testimonials to reach the undersigned endorsed "Consumers' Engineer" not later than Monday, the 14th July, 1947. Canvassing in any form will be deemed a disqualification and applicants must disclose any relationship to any member of the Council or holder of any senior office under the Council.

G. A. BLAKELEY,
Town Hall, Walthamstow, E.17. Town Clerk.
21st June, 1947. 2382

ROYAL BOROUGH OF KINGSTON-UPON-THAMES ELECTRICITY DEPARTMENT

Assistant Meter Engineer

APPLICATIONS are invited for the position of Assistant Meter Engineer in the Type A Non-polyphase Testing Station of the Electricity Department. Candidates must have sound training in the repair, recalibration and testing of single-phase A.C. meters, instruments, prepayment and maximum demand equipments, and in the care and use of sub-standard apparatus and standardising equipment.

The salary will be in accordance with the National Joint Board Schedule, Grade 9, Class F, the present commencing salary of such grade being £376 per annum.

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

Application forms may be obtained from the Borough Electrical Engineer, 17, High Street, Kingston-upon-Thames, and should be returned, together with copies of three recent testimonials, to reach the Borough Electrical Engineer not later than 21st July, 1947. Canvassing will disqualify.

A. W. FORSDIKE, Town Clerk.
2420

COUNTY BOROUGH OF BLACKPOOL ELECTRICITY DEPARTMENT

Appointment of Deputy Distribution Superintendent

APPLICATIONS are invited for the above position at a salary in accordance with the National Joint Board Schedule, Class H, Grade 5, at present commencing at £620 per annum. Candidates should have had experience of the maintenance and installation of 33-kV systems, including switchgear and transformers, 11-kV and 6.6-kV systems, including substation equipment, and low tension networks. Experience in any large change-over scheme will be considered an advantage. Candidates must be Corporate Members of the Institution of Electrical Engineers or have passed an equivalent examination. The appointment will be subject to the terms of the Local Government Superannuation Act, 1937, and the successful candidate will be required to pass a medical examination.

Applications, on a form to be obtained from the Borough Electrical Engineer, Shannon Street, Blackpool, must be returned, accompanied by copies of not more than three recent testimonials, in an envelope endorsed "Deputy Distribution Engineer," so as to reach the Borough Electrical Engineer not later than the 21st July, 1947.

TREVOR T. JONES, Town Clerk.
2439

COUNTY BOROUGH OF WEST HAM ELECTRICITY DEPARTMENT

Senior Technical Assistant, Consumers' Department

APPLICATIONS are invited for the permanent appointment of a Senior Technical Assistant (Consumers' Department). Salary and conditions in accordance with the National Joint Board Schedule, Class J, Grade 7, at present £591 3s. to £618 9s. per annum.

Applicants should be Corporate Members of the Institution of Electrical Engineers or possess technical qualifications admitting to such membership, and must have had a sound technical training and practical experience in connection with the preparation of schemes and specifications for electrical installations for hospitals, institutions, industrial and large commercial premises. Applicants should be experienced in the utilisation of electricity for industrial power and heating processes, and should be fully conversant with the Wiring Regulations of the Institution of Electrical Engineers, Factory Acts and Electricity Supply Regulations, also the published Codes of Practice.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and to the successful applicant passing a medical examination. Canvassing, either directly or indirectly, will be a disqualification.

Further particulars of the duties and terms of appointment may be obtained from Mr. Jas. W. J. Townley, C.B.E., M.I.E.E., Engineer and Manager, County Borough of West Ham Electricity Department, 84/86, Romford Road, Stratford, E.15. Applications should be received not later than Monday, 21st July, 1947.

E. E. KING,
Town Hall, Town Clerk.
West Ham, E.15. 2438

BOROUGH OF RADCLIFFE ELECTRICITY DEPT.

Mains Assistant

APPLICATIONS are invited for the above position at a salary in accordance with Class E, Grade 8, of the N.J.B. Schedule, at present £413 per annum.

Applicants must possess technical qualifications not less than Higher National Certificate and have had experience in the construction, maintenance and operation of E.H.T. and L.T. 3-phase A.C. and 3-wire D.C. Distribution Systems, and with A.C. static substations and equipment. Some experience in D.C./A.C. change-over and fault localisation is desirable.

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. Canvassing will disqualify, and candidates must disclose in their applications any relationship to any member or officer of the Council.

Applications, stating age, qualifications and experience, together with copies of not more than three recent testimonials, must reach the undersigned, endorsed "Mains Assistant," not later than Tuesday, 15th July, 1947.

H. A. FOX,
Town Hall, Town Clerk.
Radcliffe, Lancs.
20th June, 1947. 2385

LONDON AND HOME COUNTIES JOINT ELECTRICITY AUTHORITY

APPLICATIONS are invited for the appointment of Draughtsman in the Sutton (Surrey) Undertaking of the Authority. Salary according to age within the General Division of the Scheme of Conditions of Service of the National Joint Council for Local Authorities' Administrative, etc., Services, inclusive of the weighting for the London area and present cost-of-living bonus, as under: Age 21, salary £239 16s. p.a.; 22, £264 16s. p.a.; 23, £279 16s. p.a.; 24, £294 16s. p.a.; 25, £309 16s. p.a.

The person appointed will be required to pass a medical examination by the Authority's medical adviser, and to become subject to the Authority's Superannuation Scheme, which applies generally the provisions of the Local Government Superannuation Act, 1937, including the provisions of that statute relating to transfer values.

Applications, stating age, qualifications and experience, and endorsed "Draughtsman," giving names and addresses of not more than three persons to whom reference may be made, must be sent to the District Manager, 52-54, High Street, Sutton, Surrey, so as to reach him by not later than the 19th July, 1947. Canvassing, directly or indirectly, will be a disqualification.

A. L. BURNELL,
5-6, Lancaster Place, Clerk of the Authority.
Strand, London, W.C.2. 2450

COUNTY BOROUGH OF SWANSEA ELECTRICITY DEPARTMENT

Appointment of Chief Chemist

APPLICATIONS are invited from men not over the age of 45 years, unless at present in the employ of a Local Authority, for the position of Chief Chemist at Tir John Power Station, Swansea. The person appointed will be required to take charge of the Laboratory at the Power Station.

Salary and conditions of employment in accordance with Class J, Grade 7, of the N.J.B. Schedule, at present £563-£589 per annum.

Candidates should preferably have a university degree, but applications will be considered from persons with recognised technical qualifications. All candidates must have had a general chemical training and previous practical experience in power station routine, including the softening and treating of boiler water, boiler testing, chlorination of condenser circulating water and coal analysis. Previous experience of anthracite coal will be an advantage.

The appointment is subject to the provisions of the Local Government Superannuation Act, 1937, and to the passing of a medical examination.

Applications, stating age, qualifications, training and experience, together with copies of not more than two recent testimonials, must reach the undersigned not later than Friday, 18th July, 1947, endorsed "Power Station Chemist." Canvassing, either directly or indirectly, will be a disqualification.

T. B. BOWEN,
Town Clerk.

Swansea Corporation,
The Guildhall, Swansea. 2470

BOROUGH OF WATFORD

Chief Engineer and General Manager

APPLICATIONS are invited from Chartered Electrical Engineers experienced in the operation, management and administration of an electricity supply undertaking owning a selected generating station.

The salary, which will be in accordance with the scale in the agreement made by the National Joint Committee of Local Authorities and Chief Electrical Engineers, dated 9th July, 1941, approximates at present £2,000 per annum, and under Clause 10 of the agreement the salary for the first year will be 85% of the scheduled amount, 92½% for the second year, and full salary thereafter. In addition to salary a car allowance will be payable according to the Council's scale.

The appointment will be subject to the selected candidate passing a medical examination, and determinable by three months' notice on either side. Preference will be given to candidates of 50 years of age or under.

Applications, stating age, qualifications and experience, should be accompanied by copies of three testimonials, and forwarded in envelopes endorsed "Chief Engineer and General Manager," so as to reach the undersigned not later than August 15th, 1947. Canvassing, directly or indirectly, will result in disqualification.

A. N. SCHOFIELD,
Town Clerk.

Town Hall, Watford.
AWB/EJT.
27th June, 1947. 2471

ROYAL BOROUGH OF KINGSTON-UPON-THAMES ELECTRICITY DEPARTMENT

Senior Showroom Assistant

APPLICATIONS are invited for the position of Senior Showroom Assistant (Male) in the above Department in Grade I of the A.P.T. Division of the National Scale, plus bonus and London weighting. Candidates should have had sound training and experience in showroom and consumer advice centres, and will be required to be in charge of the showroom under the control of the Consumers' Engineer.

The appointment will be subject to (a) the National Scheme of Conditions of Service; (b) the provisions of the Local Government Superannuation Acts; (c) the passing satisfactorily of a medical examination, and (d) one month's notice on either side.

Application forms may be obtained from the Borough Electrical Engineer, 17, High Street, Kingston-upon-Thames, and should be returned, together with copies of three recent testimonials, to reach the Borough Electrical Engineer not later than 21st July, 1947. Canvassing will disqualify.

A. W. FORSDIKE.
Town Clerk.

Guildhall, Kingston-upon-Thames.
21st June, 1947. 2419

SHEFFIELD CORPORATION ELECTRICITY DEPT.

District Mains Engineer

APPLICATIONS are invited for the above position. Applicants must possess an engineering degree or equivalent technical qualifications admitting to corporate membership of the Institution of Electrical Engineers, and must have had a thorough engineering training including experience in the mains department of a large supply undertaking. The person appointed will be required to take charge of all mains and service work in a district containing heavy industrial and densely developed residential areas, distribution being mainly by underground cables of all voltages up to 33 kV.

The salary will be in accordance with Class M, Grade 8, of the National Joint Board Schedule, commencing at £635 per annum.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937. Applicants must preferably be not more than 40 years of age, or have had previous Local Authority service, carrying transfer value within the meaning of the Act. The selected applicant will be required to pass a medical examination.

Applications are to be returned to me not later than Thursday, 24th July, 1947, accompanied by copies of not more than three recent testimonials. Canvassing or any communication to a member of the Council, either directly or indirectly, is prohibited, and is a disqualification.

JOHN R. STRUTHERS, M.I.E.E.,
General Manager and Engineer.

Commercial Street,
Sheffield. 1. 2469

CROWN AGENTS FOR THE COLONIES

APPLICATIONS from qualified candidates are invited for the following posts:—

Engineers required by the Iraq Government Department of Posts and Telegraphs for a tour of two years in the first instance. A fixed salary of between 100 and 200 Iraq Dinars a month, according to qualifications and experience, plus high cost of living allowance of I.D.24 a month (I.D.1 = £1). Free passages. The posts are not pensionable but there is a Provident Fund. Candidates, between 30 and 40 years of age, must hold a University Degree in Electrical Engineering (or equivalent) and have had at least five years' practical experience on work qualifying them for one of the following posts:—

(A) TRANSMISSION ENGINEER. Good experience of overhead and cable transmission, carrier equipment and repeaters, with ability to work out transmission problems (M/N/18163).

(B) DEVELOPMENT ENGINEER. Good experience in telephonic and telegraphic communications, with ability to plan schemes for the development and extension of the existing system and to supervise their fulfilment (M/N/18164).

(C) CABLE ENGINEER. Good experience in cable work, with ability to prepare and supervise cable schemes for townships (M/N/18165).

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting for (A) M/N/18163, (B) M/N/18164, (C) M/N/18165 on both letter and envelope. 2474

COUNTY COUNCIL OF DURHAM EDUCATION DEPARTMENT

Stockton-on-Tees Technical School and Evening Institute

REQUIRED as soon as possible, two full-time Assistants to teach Engineering subjects.

The candidates appointed may be expected to divide their duties between Preparatory Day Engineering Course and Senior Engineering Courses (part-time day and evening) up to National Certificate standard. Candidates must have Graduate or equivalent qualifications in Mechanical Engineering and have had good practical engineering experience.

Salary will be paid in accordance with the Burnham Scale for teachers in Technical Schools.

For forms of application (which must be returned, duly completed, as soon as possible) apply, enclosing stamped addressed foolscap envelope, to the Director of Education, Shire Hall, Durham.

A. A. DENHOLM,
Director of Education.

Shire Hall, Durham.
28th June, 1947. 2468

COUNTY BOROUGH OF TYNEMOUTH ELECTRICITY DEPARTMENT

Appointment of Assistant Mains Engineer

APPLICATIONS are invited for the above appointment. Candidates must have passed the Graduateship examination of the I.E.E. or hold equivalent qualifications, and must have had sound practical experience in the construction, operation and maintenance of E.H.T. 3-phase and L.T. 3-phase, single-phase, and D.C. Distribution Systems, including Transformers, Switchgear and Substations.

The salary and conditions of employment will be in accordance with the N.J.B. Schedule, Class E, Grade 8, at present £413 per annum. 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.

Applications stating age, qualifications and experience, together with copies of not more than three recent testimonials and endorsed "Assistant Engineer," should be forwarded to H. Harrison, A.M.I.E.E., Electrical Engineer and Manager, Electricity Works, Tanners Bank, North Shields, to be received not later than the 17th July, 1947. Canvassing directly or indirectly will be a disqualification, and applicants must state whether or not to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council.

FRED G. EGNER,
Town Clerk.

14, Northumberland Square,
North Shields. 2373

CROWN AGENTS FOR THE COLONIES

APPLICATIONS from qualified candidates are invited for the following post:—

Chief Accountant required by the Government of Nigeria for the Electricity Department for one tour of 18 to 24 months with prospect of permanency. Salary and expatriation pay £1,350 a year. Free passages and liberal leave on full salary. Candidates should be between 30 and 35 years of age with up-to-date knowledge of accounting and costing acquired in a municipal or company-owned electricity undertaking employing mechanised accounting equipment. They should have organising ability and the capacity to manage staff, and should possess a recognised professional accountancy qualification. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/17261 on both letter and envelope. 2472

THE CROWN AGENTS FOR THE COLONIES

APPLICATIONS from qualified candidates are invited for the following post:—

Foreman Electrician required by the Iraq Government Ministry of Communications and Works for two years in the first instance. Salary Iraqi Dinars 70 a month, plus high cost of living allowance of between I.D.18 and I.D.24 a month, according to dependants. (A higher salary may be granted to specially well-qualified candidate.) (I.D.1 = £1.) Provident Fund. Free passages. Candidates, not over 40 years of age, must have served an apprenticeship with a reputable firm of electrical contractors and have had several years' subsequent experience in electrical installation work and the wiring of buildings, etc. Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/18162 on both letter and envelope. 2473

THE CROWN AGENTS FOR THE COLONIES

APPLICATIONS from qualified candidates are invited for the following posts: Area Assistant Engineers required by the Iraq Government Directorate of Municipalities for two years. Salary 80 Iraqi dinars a month, plus high cost-of-living allowance I.D.24 a month (I.D.1 = £1). Provident Fund. Free passages.

Candidates, not over 45 years of age, must have served a mechanical or electrical engineering apprenticeship and have had considerable subsequent experience in the operation and maintenance of Diesel-driven A.C. and D.C. generating sets and of the distribution of electrical energy. Experience of the control of staff essential and working knowledge of small water treatment plant an advantage.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the Crown Agents for the Colonies, 4, Millbank, London, S.W.1, quoting M/N/18110 on both letter and envelope. 2451

ELECTRICITY SUPPLY BOARD (EIRE)

THE Electricity Supply Board invites applications from suitable candidates for:

A. Positions on its Engineering staff.

B. Traineeships in a two-year Training Course.

A. Applicants for Engineering posts must have a University degree in Electrical or Mechanical Engineering, or its equivalent. The posts carry a salary scale of £350 × £20-£630 × £30-£660 and in addition an Emergency Bonus at the rate of 16s. per week is also payable. Appointments will be on a probationary basis for a period of six months, and the starting salary in each case will depend on the qualifications and experience of the successful candidate.

B. Applicants for Traineeships should be under 26 years on the 1st October, 1947. The Training Course, which will commence in Autumn, is open only to graduates in Electrical or Mechanical Engineering of Universities or recognised Institutions. The course provides experience in the Board's generating stations and technical departments. Trainees are paid £5 per week as well as certain travelling and subsistence allowances.

Applications, which must state date of birth, technical qualifications and experience, if any, of the applicant, should reach the undersigned not later than the 5th July next.

PATRICK J. DEMPSEY,
Secretary

60-62, Upper Mount Street,
Dublin, Eire.
9th June, 1947. 2263

BRIERFIELD URBAN DISTRICT COUNCIL

Appointment of Electrical Engineer

APPLICATIONS are invited for the above position at an inclusive salary in accordance with Clause 10 of the Agreement dated the 9th of July, 1941, made between the National Joint Committee of Local Authorities and Chief Electrical Engineers, and will commence at £523 12s. per annum, rising at the beginning of the third year of service to the full scale.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the person appointed will be required to pass a medical examination, and subject to three months' notice on either side.

Candidates must be Corporate Members of the Institution of Electrical Engineers, and have had experience in a responsible position in the administration, management and development of an electricity undertaking. Applications, stating age, experience and qualifications, and accompanied by not more than three recent testimonials, must be delivered to the undersigned not later than the 21st July, 1947. Canvassing, directly or indirectly, will be a disqualification.

H. L. SMITH,
Clerk to the Council.

Town Hall,
Brierfield, Lancs.
18th June, 1947. 2378

MERSEY POWER COMPANY LIMITED

Works Chemist

APPLICATIONS are invited for the position of Works Chemist at a modern power station. Applicants should be qualified and have had experience in the analysis of water, oil and fuels, and the treatment of boiler feed water.

Salary and conditions of appointment in accordance with N.J.B. Agreement, Class J, Grade 8, at present £521 to £544 per annum.

Applications, stating present position, age, details of training and experience, together with copies of testimonials, to be addressed as below and received not later than 16th July, 1947. Envelopes should be endorsed "Works Chemist."—General Manager and Engineer, Mersey Power Company Limited, Percival Lane Power Station, Runcorn, Cheshire. 2452

SURREY COUNTY COUNCIL EDUCATION COMMITTEE

Wimbledon Technical College, Gladstone Road, S.W.19

APPLICATIONS are invited for an appointment in the Department of Electrical Engineering for a full-time Lecturer in Telecommunications, with specialist knowledge in Radio Engineering. Applicants should hold a degree in electrical engineering or an equivalent qualification, and should have had industrial experience in light current and radio engineering. Salary will be in accordance with the Burnham Scale (with London allowance). Application forms and further particulars may be obtained from the Principal. 2440

STRETFORD & DISTRICT ELECTRICITY BOARD

Chief Assistant to Mains Superintendent

A Chief Assistant is required for the Mains Superintendent on the above undertaking which operates an extensive distribution network, operating at voltages up to 33 kV. Applicants should preferably have had experience of D.C./A.C. change-over. The position is graded H.7 on the N.J.B. Schedule.

The appointment will be subject to the Board's Superannuation Scheme, and a medical examination will be required. Applications, with copies of testimonials, should be received by the undersigned not later than Monday, 14th July, 1947.

H. G. BELL,

Trafford Power Station,
Trafford Park,
Manchester, 17. 2381

SEATON & DISTRICT ELECTRIC LIGHT CO. LTD.

Mains Assistant

MAINS Assistant required for the Electricity Undertaking at Seaton, Devon. Applicants should have practical experience of the operation, installation and maintenance of E.H.T. and L.T. o/h and u/g mains and static substations, including fault location, and be competent to supervise mains department work.

Salary and conditions of service in accordance with N.J.B. Schedule, Class A, Grade 6, at present £368 p.a.

Applications, endorsed "Mains Assistant," stating age, training and experience, with copies of recent testimonials, to be sent as soon as possible to Seaton & District Electric Light Co. Ltd., Silverlands, 37, Alexandra Road, Epsom, Surrey. 2467

NORTH-WEST MIDLANDS JOINT ELECTRICITY AUTHORITY

APPLICATIONS are invited for the following appointment: Electrical Fitter. Wages will be paid in accordance with Grade I, Electrical Fitter, under the D.I.C. Schedule of 30.00d. per hour.

Application forms may be obtained from the undersigned, and must be returned not later than Monday, the 14th July, 1947.

F. FAVELL, Chief Engineer and Manager. 2449

NORTHAMPTON POLYTECHNIC, ST. JOHN ST., LONDON, E.C.1

Lecturer in Electrical Engineering

APPLICATIONS are invited for a post as full-time Lecturer in the Electrical Engineering Department. Salary in accordance with Burnham Scale for technical teachers in London.

Further particulars and form of application can be obtained from the Secretary. 2436

A large expansion of our new works at Liverpool has created vacancies with exceptional opportunities and security for suitable draughtsmen. We require the following Draughtsmen of grades from Senior Designer-Draughtsmen to Junior Detailer-Draughtsmen: (a) 8 Jig and Tool; (b) 2 Plant; (c) 6 Switchgear or Control Gear; (d) 2 Transformer or Welding Regulator; (e) 3 Internal Combustion Engine; (f) 1 Refrigerator (H.N.C. standard). Experience of any of these products desirable, but men with good mechanical and electrical D.O. experience considered. Salaries according to experience. Staff war bonus 29s. 6d. single, 32s. 6d. married. Pension scheme. Apply, quoting full details of experience, technical training, salary, etc., to—English Electric Co. Ltd., Queens House, Kingsway, London, W.C.2. 2458

AMBITIOUS and energetic man, age 30-35, to control and develop new department of old-established company in N.W. London. Experience in design and manufacture of fractional and low h.p. motors, capable to prepare and draw up winding specifications and all technical data applicable to manufacture of electric motors. Write, stating age, experience, qualifications and salary required to—Box 2361, c/o The Electrical Review.

APPLICATIONS are invited for two responsible positions as Representatives, on salary and expenses basis, to handle Crompton lamps, cables and lighting units and Young accumulators, in (a) West Middlesex and (b) West Essex. Similar experience and residence in or near territory is desirable; car an advantage. Write to—1CL, Crompton Parkinson Ltd., 1/3, Brixton Road, S.W.9. 2335

AN Electrical Engineering firm in the Brighton area, require an Electronic Engineer with practical experience in the mechanical and technical designs of loudspeakers. Please give full particulars of experience, qualifications and salary required. Previous experience essential.—Box 6133, c/o The Electrical Review.

AN electrical engineering firm in the Midlands require Senior Draughtsman experienced in the mechanical design and construction of turbo and engine-driven alternators. Good salary and prospects to suitable men. Please give full particulars of training and experience. Housing accommodation provided. Write—Box No. 354, 8, Serle Street, London, W.C.2. 137

ARMATURE Winders and Improvers urgently required. Top rates and good conditions.—Box 113, c/o The Electrical Review.

ARMATURE Winders and Improvers urgently required. Top rates and good conditions.—Collins Electrical Ltd., 22, St. Alban's Place, London, N.1. 85

ARMATURE Winders and Improvers wanted for general repair works. A.C. and D.C. Top rates.—Phillips & Sons Electrical Ltd., 40, Waterford Road, S.W.6. 2202

ARMATURE Winding Chargehand for repair shop, to control female labour on small armature and stator windings. Applicant must have experience of A.C. and D.C. windings.—The Midland Electric Installation Co. Ltd., Cyprus Works, Upper Villiers St., Wolverhampton. 2459

ARMATURE Winding Shop Foreman required by medium-sized firm producing A.C. and D.C. electric motors up to 5 h.p. Previous experience in similar capacity and ability to control mixed labour force on piece work essential. Salary not less than £425 p.a. More to specially qualified man. Full particulars to—Personnel Manager, Small Electric Motors Ltd., Eagle Works, Churchfields Road, Beckenham, Kent. 2351

ASSISTANT Chief Draughtsman for large North London engineering company. Must have experience of electrical and mechanical assembly design of radio receivers. Good salary and excellent prospects. Write—"A.C.D." Box 0/5443, A.K. Advg., 212a, Shaftesbury Avenue, W.C.2. 2487

ASSISTANT Plant Engineer, age 25-45, for firm producing hard metal. Degree in electrical engineering or equivalent with qualification in metallurgy preferred. Works experience and knowledge of high frequency heating, vacuum pumps and temperature measuring equipment. Intimate knowledge of all this equipment not essential, but previous experience should have covered this type of plant. The work involved will be mainly electrical, but includes maintenance of hydrogen producing plant and development of chemical plant. Salary £550-£650 per annum. Write, quoting D.151/47-A, to Ministry of Labour and National Service, Technical and Scientific Register, Room 171, York House, Kingsway, London, W.C.2, for application form, which must be returned by 18th July, 1947. 2447

ASSISTANT Works Manager for North Midlands repair works to control work covering rewinding, repairs, overhauling, etc., and to be capable of re-designing windings for conversions.—Box 2299, c/o The Electrical Review.

BRITISH Electric Co. (Beco Ltd.), require Armature Winders, top rates and conditions. Apply—British Electric Co. (Beco Ltd.), 25/29, Lower Road, Rotherhithe, S.E.16. 146

BRITISH Jeffrey-Diamond Ltd., Stennard Works, Wakefield, Yorkshire, require a Designer-Draughtsman experienced in A.C. and D.C. control gear. Knowledge of F.L.P. requirements an advantage but not essential. Permanent position with good working conditions and excellent prospects. Applications must be by letter to the Secretary, giving age, technical qualifications, experience and salary required. 2422

CABLE (V.I.R.) Sales Department of manufacturing electrical engineers (London) requires an Assistant, age 25/40 years, with knowledge of cable business and good experience in dealing with orders and correspondence. Reply, stating age, experience and salary required, to—Box 2421, c/o The Electrical Review.

COST Clerk, by London firm of electrical contractors. Write stating age, full particulars of experience and salary required.—Box 2426, c/o The Electrical Review.

DE Havilland Propellers Ltd. invite applications for the following vacancy: Draughtsman (design), with good working knowledge of electrical mechanism. Successful applicant will be required to work a 39-hour, 5-day week. Application should be made in writing, stating age, experience and salary required, to—The Personnel Manager, De Havilland Propellers Ltd., Hatfield, Herts. 11

DRAUGHTSMAN required, Enfield district, age between 25/35, with design experience of fractional h.p. electric motors. Applicants with workshop experience plus sound academic background (B.Sc.Eng. or A.M.I.Mech.E.) would be preferred. Reply, age, experience, qualifications and salary required—Box 2311, c/o The Electrical Review.

DESIGN Draughtsman required immediately for employment in South-East London area, with experience of high-speed mechanisms. Applications are invited from qualified draughtsmen who are desirous of advancement and willing to accept responsibility. Write, giving full particulars of age, experience, qualifications and present salary, to—Box 149, c/o The Electrical Review.

DESIGN Engineer. Must be conversant with intercommunication telephone equipment, also design of press and mould tools, etc. Excellent opportunity for progress for right man. Write stating age, past experience, salary, etc.—Box 2462, c/o The Electrical Review.

DESIGNER-Draughtsman to undertake design work in connection with domestic electrical appliances. Apply, stating age, qualifications, experience and salary required, to—Delaney Gallay Ltd., Vulcan Works, Edgware Road, Cricklewood, London, N.W.2. 2463

DEVELOPMENT Engineers. Several vacancies occur in the laboratories of a well-known electrical engineering company in the North for Assistants who should be Engineers or Physicists, preferably graduate apprentices with practical experience in high vacuum technique, electronic or discharge devices or testing same.—Box 2461, c/o The Electrical Review.

DRAUGHTSMAN with experience of factory layout required by large engineering company in London area. Write, stating age, experience and salary required, to—Box 2339, c/o The Electrical Review.

DRAUGHTSMEN required by switchgear engineers. Experienced in contract work, protective gear diagrams or design. Applications in writing, with full particulars, to—Ferguson, Pailin Ltd., Manchester, 11. 86

DRAUGHTSMEN, Senior and Junior, experienced in the design of small fuse and switchgear or cable accessories. Permanent positions at Prescot works, superannuation scheme. Apply, stating age, previous experience, etc., to—Staff Officer, British Insulated Callender's Cables Ltd., Prescot, Lancs. 2457

ELECTRIC Traction Engineer, by firm of consulting engineers in London, to prepare railway electrification schemes. Applications, stating age, details of training and experience and salary required, to—Box 2437, c/o The Electrical Review.

ELECTRICAL Contractors require Manager. Good salary and prospects for an engineer with experience in estimating for and controlling good class installations of all types.—Box 6109, c/o The Electrical Review.

ELECTRICAL Engineer, having good experience of electrical sub-contract work, designing all kinds of electric lighting and power installation, taking off quantities and estimating. Position is one of responsibility with plenty of scope and prospects for the right man. Apply, in writing, giving full details to—Matthew Hall & Co. Ltd., 95/97, Princess Street, Manchester, 2. 2486

ELECTRICAL wholesalers (London) require the following staff for progressive positions: (1) Male Order Clerk, with some experience an advantage; (2) Stores and Trade Counter Assistant (Male), with some experience an advantage; (3) Packer for Stores, experience not necessary; (4) Youth, for general duties, experience not necessary. Write brief particulars and state experience and salary required.—Box 2352, c/o The Electrical Review.

ELECTRICAL Wholesalers require Storeman for purpose of checking and packing for despatch. Knowledge of electrical material essential.—London Electrical Company Ltd., 92, Blackfriars Road, S.E.1. 41

ELECTRICIAN, by small contractor, S. London.—Box 6155, c/o The Electrical Review.

ELECTRICIAN for London contractor, must have served apprenticeship. Permanent job for live man with thorough knowledge of trade. Telephone CUN. 2401. 2392

ELECTRICIAN wanted for general maintenance. Only first-class men need apply. Rate 3s. per hr. Apply—32, Old Church Street, S.W.3. 2322

ELECTRICIANS for large factory in Essex, under good conditions, including a five-day week, good wages paid in agreement with trade unions. Experienced in factory maintenance, wiring and plant installations, A.C. and D.C.—Box 2456, c/o The Electrical Review.

ENGINEERS and Draughtsmen required for development work on automatic telephone exchange equipment. Apply in writing, giving particulars of qualifications, experience, age and salary required, to—Ref. 634, Siemens Brothers & Co. Ltd., Woolwich, S.E.18. 2307

ENGINEERS' Clerk-Storekeeper, £5 per week. Permanency for suitable man at £260-£10-£330 and superannuation. Apply to—The Engineer, University of London, Senate House, W.C.1. 2435

EXCEPTIONAL opening for experienced man to take entire charge Mica Buying and Processing, etc., in Midland works employing 80 hands. State qualifications, salary required, to—Box 6115, c/o The Electrical Review.

EXPERIENCED Costing Clerk required by manufacturers of light electrical and radio products. Must be familiar with production process and tooling, and capable of accurate precalculation. Salary according to experience and qualifications.—Box 2388, c/o The Electrical Review.

FEMALE Invoice Typist, experienced preferred, for electrical wholesale distributors. State wages, etc.—L.M., Sloan Electrical Co. Ltd., 41 Kingsway, W.C.2. 2260

FIRM of manufacturing electrical engineers require person with experience in compiling catalogues and leaflets, capable of taking charge of advertising department. Only persons with experience need apply.—Box 2393, c/o The Electrical Review.

FIRST-class Assistant required by manager of an electrical firm, with sound knowledge of the electrical manufacturing trade, particularly motor starters and switchgear. The appointment calls for an experienced engineer with an up-to-date knowledge of factory production and affords excellent opportunities of advancement. Apply, with full details of education, qualifications, experience, age and salary required, to—Box 2338, c/o The Electrical Review.

FLUORESCENT. Large manufacturers require Lighting Sales Engineers, about 30 years of age, for Scotland (Edinburgh), Lancashire and London, preferably already domiciled there. Matriculation and National Certificate E.E. preferred, lighting knowledge and sales experience an advantage. British Nationality. Please state age, qualifications, experience and salary required to—Box 2233, c/o The Electrical Review.

FOREMAN for Coil Winding department of large engineering concern in London area. Suitable applicant must have experience of single and multi-spindle machines and must be capable of controlling male and female labour. State age, experience and salary required to—Box 2432, c/o The Electrical Review.

FOREMAN for Electric Motor Assembly. Experience and skill in handling labour, and in first-class production methods. Young man with drawing office and toolroom experience preferable. Apply in writing, giving full details and references to—Manager, Electrical Dept., H. Frost & Co. Ltd., Fieldgate, Walsall. 2424

FOREMAN-Winder willing to work and supervise. Small to medium rewinds. Opportunity for good man. London area. State experience and wages.—Box 6136, c/o The Electrical Review.

HOOVER Limited have vacancies for trainees as Machine Shop and Electrical Assembly Shop Supervisors. Candidates are required to have completed their military service, have an appropriate practical industrial experience, and be graduate members of the Institution of Production Engineers, or hold an equivalent qualification. Applications should be made in writing, giving full details of age, training and experience, to—The Employment Supervisor, Hoover Limited, Perivale. Testimonials are not required at this stage. 2475

HOOVER Limited have vacancies for trainees as Production Engineers. Candidates are required to have served a craft apprenticeship in toolmaking, and have had some production setting experience. They should be studying for graduateship of the Institution of Production Engineers and should have passed the Ordinary National Certificate examination. Applications should be made in writing, giving full details of age, training and experience, to—The Employment Supervisor, Hoover Limited, Perivale. Testimonials are not required at this stage. 2477

HOOVER Limited have vacancies for trainees as Project Engineers in the Engineering Department of the Company. Candidates are required to have completed their military service, to be graduate members of the Institution of Electrical Engineers or equivalent. An Honours degree in Physics or Electrical Engineering would be an advantage. They should preferably have had at least two years practical workshop experience in a light engineering factory. Applications should be made in writing, giving full details of age, training and experience, to—The Employment Supervisor, Hoover Limited, Perivale. Testimonials are not required at this stage. 2476

JUNIOR Assistant Engineer with experience of steel tower transmission line construction and survey, wood pole lines and substation construction. Midlands area. Write, stating age, experience and salary.—Box 2442, c/o The Electrical Review.

JUNIOR Detail Draughtsman required for interesting work in industrial design section of well-known electrical manufacturing company in London. Fullest particulars to—Box 2305, c/o The Electrical Review.

JUNIOR Engineer required for development of processes on radio components in London area. Higher National Certificate in electrical engineering or equivalent essential. —Box 2336, c/o The Electrical Review.

JUNIOR Assistant for Electrical Stores. Knowledge of all electric accessories, cables, etc., essential. Good wages and prospects. Apply, giving full details of experience, wages, etc., to—Staff Manager, W. N. Froy & Son Ltd., Brunswick Works, Hammersmith, W.6. 140

LADY or gentleman as assistant to Export Manager by City firm. Must be good at figures, knowledge of Portuguese or Spanish an advantage. No Saturdays. Write—Box " F.H.Q.", c/o 95, Bishopsgate, E.C.2. 2479

LIVE Representative for better class electrical products. Northumberland, Durham, Lancashire, Yorkshire and Cheshire require covering. Own car essential. Commission basis, free to handle other lines.—Box 2394, c/o The Electrical Review.

LONDON Passenger Transport Board. Applications are invited for posts of Combustion Engineer in the Board's Generation Stations at Chelsea, Greenwich and Neasden. Candidates must have had a thorough practical and technical training in mechanical and electrical engineering, together with recent experience in the duties of Combustion Engineer. Corporate membership of one of the engineering institutions will be an advantage. Commencing salaries £510 p.a. (Chelsea and Greenwich), £480 p.a. (Neasden). The successful candidates will be required to pass a medical examination and to serve satisfactorily a probationary period, upon the completion of which membership of the Board's contributory superannuation fund is compulsory. Canvassing, either directly or indirectly, will disqualify. Applications, stating age and giving full particulars of training and experience, together with recent testimonials, should be sent not later than 10th July, to the Staff Officer (ref. ER/E.432), London Passenger Transport Board, 55, Broadway, S.W.1. 2453

MECHANIC for experimental work in light engineering factory, Epsom. Able to work on own initiative in developing mechanisms for improving production methods. Write, stating age, experience and wages required, to—Box 2354, c/o The Electrical Review.

MODEL Shop Foreman required by electrical and radio manufacturers. Must be capable of handling wide variety of work. Administrative experience essential. State salary required.—Box 2389, c/o The Electrical Review.

OLD established electrical wholesalers have vacancy for a youth on trade counter. Excellent opportunities for advancement.—Box 2395, c/o The Electrical Review.

PLANNING Engineer with experience of coil winding. Applicant should be capable of complete layout of all types of coil winding. State age, experience and salary to—Box 2433, c/o The Electrical Review.

PROGRESS Clerk. Only those completely familiar with power transformer manufacture need apply. Applications to be made in writing, giving age, experience and salary, to—Employment and Welfare Manager, Johnson & Phillips Limited, Charlton, S.E.7. 2454

RADIO Cabinet Designer for large North London company. Previous experience essential. Write full details to—" R.C.D.", Box 0/5440, A. K. Advg., 212a, Shaftesbury Avenue, W.C.2. 2488

REPRESENTATIVE required for Scotland for well-known manufacturer. State previous experience with wholesale trade and supply companies, and remuneration required.—Box 138, c/o The Electrical Review

REPRESENTATIVE required for South-West Coast. West Coast and South-West Wales area for well-known manufacturer. State experience with wholesale trade and supply companies, and remuneration required.—Box 139, c/o The Electrical Review.

SALES Engineer for automatic generating equipment. Entry to manufacturers of telephones and radio an advantage. Write, giving details of experience and salary required.—Box 2276, c/o The Electrical Review.

SALES Manager (Electrical), experienced in organisation of trade counter and warehouse supervision. A permanent position with excellent prospects. Applicants without experience will not be considered. State experience, salary required and references to—Box 2415, c/o The Electrical Review.

SENIOR Jig and Tool Draughtsmen, by progressive concern engaged in telecommunications industry, situated in South-East London area. Preference will be given to applicants who have served an apprenticeship and received a thorough practical training. Applications in writing, stating age, qualifications, experience and salary required, to—Box 150, c/o The Electrical Review.

SENIOR Meter Testers with single and polyphase experience. Write, stating age, experience and salary required, to—Personnel Officer, British Electric Meters Ltd., Bangor, North Wales. 2460

SKILLED and semi-skilled men and women for test room work. Knowledge of electrical precision instruments is necessary. Apply Cambridge Instrument Co. Ltd., Sydney Rd., Muswell Hill, N.10. 2391

SUPERVISOR wanted for electrical contractor, London. Must have thorough knowledge of trade, able to control labour and estimate. Own car an advantage. Excellent prospects for live man. Write, stating age, qualifications, salary required, to—Box 2359, c/o The Electrical Review.

TECHNICAL Assistants required for patents department on electrical circuit work for radio, television and similar projects. Applicants should be inclined to paper work rather than practical work, must be thorough and have a logical mind, preferably university training in physics, engineering or mathematics. West London area. Commencing salary £300 to £450 per annum, depending on qualifications and experience. Write, giving age, fullest details of education and experience, to—Box 2357, c/o The Electrical Review.

TELECOMMUNICATION Engineers required with some technical training, good knowledge of auto. telephone exchange practice, and experience with circuits or apparatus or equipment. Also men with some technical training and practical knowledge of exchange wiring for preparing wiring drawings. Applicants should give full details of age, training, experience, and state salary required.—Ref. 424, Siemens Brothers & Co. Ltd., Woolwich, S.E.18. 2308

TEST Bed Assistant, with experience in testing all types A.C. and D.C. motors.—British Electric Co. (Beco Ltd.), 25/29, Lower Road, Rotherhithe, S.E.16. 147

THE Wigtownshire Electricity Co. Ltd. Applications are invited for the appointment of Demonstrator at a commencing salary of £279/£304 per annum, according to experience and qualifications. Apply, in own handwriting, to—The Resident Engineer & Manager, Electric House, 76, George Street, Stranraer. 2480

WELL-known Loudspeaker Manufacturers require Senior and Junior Acoustic Engineers for development work in research laboratory. Write, stating age, qualifications, salary received and remuneration now required to—Box 2478, c/o The Electrical Review.

WELL-known non-ring manufacturer requires a Representative for the North-East territory. One resident on the ground preferred. Applicants must be really " live " and have a good knowledge of electric cables, preferably with a connection. Good salary and expenses. Splendid opportunity for the right man.—Box 2390, c/o The Electrical Review.

WESSEX Wholesale Electric Ltd., St. Aldate Street, Gloucester, require an experienced Representative. Permanent post with advantages of superannuation scheme, car and congenial working conditions for man with pleasant personality and natural affinity for hard work. Please write in first instance, giving full particulars of past commercial experience and salary required, to Mr. Freemantle at the above address. All applications treated in strictest confidence and will be answered. 6127

WINDER for A.C. and D.C. rewinds, general repairs, etc., for Yorkshire repair works.—Box 2300, c/o The Electrical Review.

WORKING Foreman for machine shop engaged on the production of small electric motors. Good salary and house for suitable applicant. South Wales area.—Box 2423, c/o The Electrical Review.

WORKS Manager required for light engineering factory in South London. Candidates should be good engineers, capable organisers and strong disciplinarians. The position is permanent and progressive. Reply giving full details of education and experience, age and salary required.—Box 2262, c/o The Electrical Review.

APPOINTMENTS FILLED

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

SITUATIONS WANTED

A.M.I.E.E., A.M.Brit.I.R.E. (32), desires managerial post in radio or electrical organisation overseas. Extensive experience radio and electrical industry in executive, technical and design spheres for past 12 years.—Box 6135, c/o The Electrical Review.

A.M.I.E.E. (33), resident Midlands, 5 yrs. manufacturers' test depts., rotating equipment up to 4,000 h.p., transformers, rectifiers, etc.; 4 yrs. industrial admin. involving personal negotiations at director level; position giving similar freedom of movement preferred, consultants, etc., salary envisaged £800, or occasional representation; would emigrate to Australia.—Box 6064, c/o The Electrical Review.

BRANCH Manager desires change to South Midlands. Wholesale, retail and direct sales, office and personnel administration experience. Free by arrangement. Would consider representative for reputable firm.—Box 6090, c/o The Electrical Review.

ARMATURE Winding Shop Foreman desires change, experience in production and repairs, assembly, testing and redesigning A.C. and D.C. fractional to 500 h.p. —Box 6102, c/o The Electrical Review.

BUYER, aged 30, requires progressive and permanent position. Long experience in buying engineering equipment of all types. Knowledge Far Eastern markets. —Box 6072, c/o The Electrical Review.

CHARTERED Electrical Engineer, sick of restrictions as reward for enterprise, seeks scope for energies abroad. Previous tropical experience. Speciality, power schemes (preliminary investigations and reports, planning, development, construction).—Box 6051, c/o The Electrical Review.

DRAUGHTSMAN, jig and tool, shortly disengaged, requires responsible position, South London preferred. Extensive experience, including press tools and assembly bench layouts.—Box 6158, c/o The Electrical Review.

ELECTRIC Lamp making. Production executive, A.I.I.A., 12 years' experience, all types, including fluorescent discharge, desires change.—Box 6097, c/o The Electrical Review.

ELECTRICAL Engineer (25), H.N.C., 5 years' thorough practical training in armature winding, installation and maintenance, 4 years' service in R.E.M.E. as Arm. Art. Elect. (S.-Sgt. and W.O.2), seeks progressive position in light or medium electr. industry on testing, research, development, administrative or supervisory work.—Box 6055, c/o The Electrical Review.

ELECTRICAL Engineer (25), 4 yrs.' certificated indentured apprenticeship, 2 yrs. test, fractional h.p. to 25,000 kVA, 2 yrs. sales, Nat. Cert., public school education, requires change, home or abroad.—Box 6126, c/o The Electrical Review.

ELEC. Engineer Draughtsman (31), specialist machine tools, installations, plant, needs progressive post. Anything considered. Please advise salary.—Box 6125, c/o The Electrical Review.

ELECTRICAL Foreman, age 40, 20 years' experience in electrical installations, maintenance and handling of labour, seeks progressive post, London area.—Box 6112, c/o The Electrical Review.

ELECTRICAL Mechanic seeks post (34), 16 years' experience power station and outside erection, overseas experience.—Box 6120, c/o The Electrical Review.

ELECTRICAL and Mechanical Engineer, overseas (38), married, present position Chief Electrical Engineer of a power supply company, being responsible for all generation, distribution, maintenance (electrical and mechanical), and general administration, requires position as Chief Engineer or Chief Electrical Engineer of works, institution or similar undertaking in England. With present employers ten years. Will be at liberty to accept new post in three-four months.—Box 6063, c/o The Electrical Review.

ENGINEER, A.M.I.E.E., A.I.Mech.E., 16 years' superintendence experience in production and distribution of electricity and gas in supply companies abroad, seeks responsible position in U.K. or abroad, preferably Dominions.—Box 6065, c/o The Electrical Review.

ENGINEER, 26 yrs. old (H.N.C. Electrical), served indentured apprenticeship and four years' production planning and development work, experience on high-class electrical and mechanical instrument work, requires change, preferably technical sales or development work.—Box 6153, c/o The Electrical Review.

EXECUTIVE Engineer, A.M.I.E.E., M.I.Mech.E., A.I.I.A. (33), wide interests and experience, seeks progressive appointment, London-Guildford-Portsmouth area.—Box 6086, c/o The Electrical Review.

EXPERIENCED Buyer and Manager, electrical fittings and appliances, cycle and accessories, desires position on or near South Coast.—Box 6160, c/o The Electrical Review.

FOREMAN Electrician (50), liberty July, long varied experience, control large labour force, interview anywhere. Write—H. A., 9, Dale Road, Crayford, Kent. 6159

MANCHESTER area. D.F.H. (Hons.), Grad. I.E.E. (27), desires progressive position as Sales or Contracts Engineer or as Technical Assistant to director or contracting firm. First-class training and experience, specialising distribution and switchgear. Ex-major in R.E.M.E. Salary £550.—Box 6134, c/o The Electrical Review.

M.I.E.E., M.I.Mech.E., released from duty with Control Commission Germany, desires administrative, executive or technical post of responsibility. Sound experience in electricity distribution, power stations and planning. Full particulars.—Box 6116, c/o The Electrical Review.

PRODUCTION Engineer, 25 years' exp. light mechanical and electrical engineering, sound machine shop experience. Modern production methods. Jig and Tool design. Organisation and labour control. Ex. Refs.—Box 6152, c/o The Electrical Review.

NEWS of openings for Electrical Designer required.—Box 6138, c/o The Electrical Review.

RESPONSIBLE Executive post sought by engineer, age 29, with university degree and seven years' electrical and mechanical experience, London area. Salary £600. —Box 6156, c/o The Electrical Review.

SUCCESSFUL General Works Manager, A.M.I.E.E., A.M.I.Mech.E., fully trained in modern scientific control of production and personnel, with accountancy qualification and experience as general manager, desires appointment with increasing scope in essential industry. Present managerial responsibilities, approx. 1,500 employees. Enquiries in confidence to—Box 6036, c/o The Electrical Review.

WORKS Manager, A.M.I.P.E., M.I.E.C.E., with considerable experience, design and manufacture radio, domestic appliances, electrical equipment, light engineering, seeks change of position, W. London area preferred. Min. salary £800.—Box 6157, c/o The Electrical Review.

WORKS Manager (37), seeks position, London area, capable and efficient organiser with 16 years' experience mechanical and electrical engineering. Thoroughly conversant all machine tools, jigs, fixtures. Planning, progress and ratefixing.—Box 6132, c/o The Electrical Review.

FOR SALE

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

BOROUGH OF ACCRINGTON

Sale of Electrical Equipment

THE Corporation invite tenders for the purchase of the following electrical plant, viz.: One 2,000-kW British Thomson-Houston Curtis Turbo-Alternator, 3-ph., 50 cycles, 6,600 volts, 3,000 r.p.m., with Cole Marchant Condensing Plant.

Further particulars and permission to view may be obtained from the Borough Electrical Engineer, Corporation Electricity Works, Hyndburn Road, Accrington. Tel. Nos. 2002 and 3374.

Tenders, enclosed in plain sealed envelope and endorsed "Tender for Electrical Equipment," should be forwarded so as to be received by the under-named not later than Thursday, 31st July, 1947.

P. D. WADSWORTH,
Town Clerk.

Town Hall, Accrington.
18th June, 1947. 2301

A. Cooksley & Co. Ltd. offer large selection of used Electric Motors, D.C. Write—21/25, Tabernacle Street, London, E.C.2 (Monarch 3357/58). 46

A Superior Streamlined Toaster in one-piece die-cast aluminium, with attractive mirror finish. Price 39s. 6d. subject. Immediate delivery. Sample, 31s. Cash with order.—Metropolitan Distribution Ltd., Truro. 94

A.C. and D.C. Motors, all sizes, large stocks, fully guaranteed.—Milo Engineering Works, Milo Road, East Dulwich, S.E.22. Forest Hill 2278-9. 102

A.C./D.C. Motors can be supplied from stock or at short notice.—John Phillips & Co. Electrics, 31, Fortune Green Road, N.W.6. Hampstead 8132. 126

A.I.L new, in large lots, 1/200, 1/40, 1/20, 1/16, 1/10, 1/7, 1/6, ¼, ⅓, ½-h.p. Motors; 3 almost new G.E.C., 65 h.p., 485 r.p.m., 400/3/50, Brookhirst pedestal starters, £430. Also other h.p.—Goodenough, 20, Bulmershe Rd., Reading, Berks. 6129

ALTERNATING Petrol Set, comprising 4 cyl., vert., petrol engine by Gardner, on bed, coupled to alternator, 12½ kW, 220/1, 83.5 cycles, with exciter. Like new.—Box 2399, c/o The Electrical Review.

ALTERNATOR Petrol Set, all new and complete, 28 kVA, 400/3/50, 4-wire. Delivery from stock for users only.—Box 6070, c/o The Electrical Review.

ALTERNATOR Sets, Diesel or Petrol, up to 300 kVA, 3 or 2-phase, any voltage. Also D.C. Sets up to 50 kW.—Box 6067, c/o The Electrical Review.

ALTERNATORS. Build your own sets. We have several brand new 10-kVA, 3-ph., 1,500-r.p.m., 400 or 230-v. Alternators in stock, complete with exciters and voltage regulators.—Box 6068, c/o The Electrical Review.

ALTERNATORS: 1 125-kW belt-driven Alternator by L.D.M., 440/3/50, 750 r.p.m., vee belt pulley supported by outer bearing; 2 15-kW brand new Alternators by E.C.C., 440/3/50, 1,000 r.p.m. (2 available).—B.C.S. (Engineers & Contractors) Ltd., 3, Castle Street, Cardiff. Tel. Cardiff 8512. 2427

AUTOMATIC Voltage Regulators for alternators, brand new, by Stone or Isenthal.—Box 6149, c/o The Electrical Review.

BATTERY Chargers, Input 230/1/50 or 400/3/50, 36 volts at 50 amps., 1.8 kW.—Box 6093, c/o The Electrical Review.

AVAILABLE immediately, ½ and ¼-h.p. motors, cont. rated, cap. st. winding. 220/230 volts, 1-phase, 50 cycles, 1,425 r.p.m., ball bearings, foot mounting.—Box 6154, c/o The Electrical Review.

B. & W. Water Tube Boilers for disposal: Two 50,000 lb. evap., 310 lb. w.p.; one 30,000 lb. evap., 260 lb. w.p.; one 20,000 lb. evap., 175 lb. w.p.; two 16,000 lb. evap., 190 lb. w.p.; one 12,000 lb. evap., 200 lb. w.p.; one 9/10,000 lb. evap., 200 lb. w.p.; also one 5,000-kW Turbo-Alternator. We install complete, including brickwork. Economisers, Pumps, Piping, Valves, Motors in stock. Please send us your enquiries. We can give immediate delivery.—Burford, Taylor & Co. Ltd., Boiler Specialists, Middlesbrough (Tel. Middlesbrough 2622). 32

BATTERY Chargers for home and export, 4 models. 2-6-12 v., 1, 2 or 4 amp, D.C., any mains voltage. Generous trade terms. Write for catalogue.—The Banner Electric Co. Ltd., Hoddesdon, Herts. Tel.: Hoddesdon 2659. 97

BELLMAN Hangars for workshops, storage, etc., supplied and erected under licence, 89' 5" clear span, 18' clear height, 175' long. Door openings for full width at each end if required.—Bellman Hangars Ltd., Terminal House, Grosvenor Gardens, London, S.W.1. Sloane 5259. 124

BELT Grinders or Sanders, 4" wide belt, £6; 6" wide belt, £15.—John E. R. Steel, Clyde Mills, Bingley. Phone 1066. 52

BI-Uni. The New Push-Button Flush-Fitting Domestic Switch. Wholesale enquiries only. Send for details.—Scemco Ltd., Scemco House, 6/7, Soho Street, London, W.1. Tel. Ger. 1461/2/3. 122

BLISTER Hangars, 91' span × 45' long, and other sizes. Steel or asbestos roofing. Suitable for repair shops, factories, storage, etc. Details from—J. Thorn & Sons Ltd., Box 16B, Brampton Road, Bexleyheath, Kent. Phone, Bexleyheath 305. 43

BLOCKS, best quality, polished wood, imitation walnut. All standard sizes in stock at current prices.—British Elec. & Mfg. Co., 25-27, Berners Street, London, W.1. 65

BRITISH Electric Co. (Beco Ltd.) offer 15-kVA, 400/230, 3-phase, 50-cycles, Petrol-driven Alternator Set complete with control panel, etc.—British Electric Co. (Beco Ltd.), 25/29, Lower Rd., Rotherhithe, S.E.16. 148

BRITISH Electric Co. (Beco) Ltd., 25/29, Lower Road, Rotherhithe, S.E.16, offer from stock 65-h.p., 570-r.p.m., 415-volt, 3-phase, 50-cycle Motors by G.E.C., complete with floor-mounted rotor stator starters. Up-to-date equipment and practically unused. 2033

BRITISH Electric Co. (Beco Ltd.), Electra House, 25/29, Lower Road, Rotherhithe, S.E.16, will be able in 3/4 weeks' time to quote for early delivery of Alternators up to 100 kVA. 114

B.T.A. A comprehensive service is now available for all classes of tools and equipment for the accumulator trade. — B.T.A., 246, Cavendish Road, London, S.W.12. Tel.: Balham 6691/2. 10

CABLE, .1 sq. in. (19/.083). P.B.J., lengths on drums 930, 450, 150 yds.; also .06 sq. in. (19/.064), lengths on drums 720, 350 yds. New, recent manufacture.—Belco, 65, Buckingham Gate, S.W.1. Abbey 7644. 2175

CIRCUIT Breakers, 15 amp., 250 v., single-pole, complete with automatic overload cut-out, robust moulded construction, accepted by most supply undertakings as efficient switch fuses if used in conjunction with our distribution boards; Distribution Boards, 5 and 15 amp., 2, 3, 4 or 6-way, D.P. or S.P. and N.P., wood cases, improved design and finish, no permit required; Ekco and Smithlite Fluorescent Fittings, complete, ex stock, large quantities available, carriage paid; Electric Motors, 1-h.p. squirrel cage induction motors (Tilling-Stevens), 400/440/3/50, 1,430 r.p.m., new; Insulators, suitable for overhead service cables, bakelite, brass inserts, screwed P.O. thread for pin mounting, vertical type with drip groove, 5⅛" high, 3¼" dia., large quantities available, sample 2s. per return, discount on quantities; Wood Switch Blocks, 3¼" round and square, 6" × 3" × ¾", 9" × 3" × ¾" and 6" × 6" × 1", white enamelled and walnut finish from 6s. 6d. and 6s. 3d. per doz. respectively. Discount on quantities and for natural finish.—Metropolitan Distribution Ltd., Truro. 2193

CLEARANCE Stock: Projector Transformer, 1 kW; Transformers, 15 ohm, O.P., centre tapped; Braided Sleeving, 1 mm. and 1.5 m.m.; Bias Condensers, 50 × 12; Volume Controls, less switch, wire wound and carbon; Silk, black oiled; Bakelite Tubing; Twin Screened Wire, 14/36; Vitreous Resistors; 4-B.A. Grub Screws; Switches, Yaxley type, 3-pole, 2-way; Milliammeters, all types; Amplifiers, 6 valves, 15 watts.—Gordon Elf Ltd., 37b, New Cavendish St., London, W.1. Tel. Welbeck 9356. 2353

CLEARING line of Lamp Shades now available, Plastic, Parchment, Crinothine and Art Silk. Prices absolutely below cost. Offer will be considered for bulk clearance.—L. Bowen & R. Angel, 356, Westborough Rd., Westcliff-on-Sea, Essex. Southend-on-Sea 44983. 6114

CERAMIC Rods suitable for 200-250 v., 750-1,000 w., 9" × 10¼" long, ⅜" dia, 1s. each, lots of 5,000. Sample by request. Sole distributor—Richard Voss, 6, Merton Way, Hillingdon, Middx. 6081

COMPLETE with tubes, Fluorescent Fittings with all gear for immediate delivery. Enquiries—John Phillips & Co. (Electrics), 31, Fortune Green Road, W. Hampstead. Phone, Hampstead 8132. 87

CONDENSERS, Paper Block, 100,000 (ex-Govt., new): 8 mfd. 250 v.; 4 mfd. 600 v.; 4 mfd. 800 v.; 2 mfd. 400 v.; 2 mfd. 600 v.; 1 mfd. 800 v., and .5 mfd. 2,000 v. Attractive prices in lots of not less than 100 each item. —R.C. Radio-Electric, 4, Conduit Court, Long Acre, London, W.C.2. Temple Bar 0233/4. 2356

CROMPTON-Parkinson 5-kW, 200/230-v. D.C. Generators, b/b, 1,500 r.p.m., with coupling, £49 10s. each; Control Panel with ammeter, voltmeter and regulator, £12 10s.—Universal Electrical Co., 221, City Rd., London, E.C.1. 1892

D.C. Switchboard Control Cabinet, 220 v., 120 kW. Marvellous instrument. Bargain £150.—Burton's Works, Astley, Shrewsbury. 6079

DIESEL-driven Alternator Sets of 200 kVA, 91 kVA, 75 kVA, 65 kVA, 60 kVA and 40 kVA, each with electrical equipment, 3-phase, 50 cycles, 400/230 volts.—Newman Industries Limited, Yate, Bristol. 2273

DIESEL Engine-driven Alternator Sets ranging from 16 to 80 kW. Alternators only supplied. Both for delivery in August/September, 1947.—The Horseshoe Supply Co. (Spalding) Ltd., Horseshoe Road, Spalding. Phone, Spalding 3088. 2323

DIESEL Engines by G.M., 130 h.p. at 1,900 r.p.m.—Box 6150, c/o The Electrical Review.

DIESEL Generating Sets, 5 and 10 kW, single-phase, and 16 to 200 kW, three-phase.—Box 2372, c/o The Electrical Review.

DYNAMOS: 24 kW, 110 v., 650 revs., Westinghouse; 24 kW, 110 v., 1,600 revs., E.C.C.; 9 kW, 60 v., 600 revs., L.D.C.; 12 kW, 60 v., 1,050 revs., Cutting; 8 kW, 80 v., 1,400 revs., Vickers. Plating Dynamos, 9 v., 900 a., new, Crompton Parkinson (Two). Immediate delivery.—W. H. Sugden & Co. Ltd., Glenny Road, Barking. 2158

EARTH-Continuity Conductor Tape. "Portaway" (Regd.) and Patented, for the efficient earthing of all heavy duty electrical equipment. Send for details.—Porter Electrical Products Ltd., 8, Portsdown Road, Leicester. Tel. 78181. 88

ELECTRIC Motor, Higgs, 5 h.p., 230 v., single-phase, 1,450 r.p.m., unused. Price £35 ex works.—Burrell, Printer, Chertsey. 2445

ELECTRIC Motors, A.C. We have available a large selection, both new and reconditioned. Inspection invited. Repairs and maintenance given immediate attention. Send particulars of your requirements to—Max Electric Co. Ltd., 190, Thornton Road, Croydon. Thornton Heath 4276. 72

ELECTRIC Motors, A.C. and D.C. We supply all types and sizes of electrical machinery. Slow speed reduction gears can be supplied to customers' requirements with short deliveries. Send your enquiries to—The Electropower Co. Ltd., 3, Retreat Close, Kenton, Middlesex. Wordsworth 4928. 42

ELECTRIC Motors, 440 v., 3-ph., 50 cycles, 30 h.p., 500 r.p.m.; 50 h.p., 575 r.p.m.; 90 h.p., 575 r.p.m., slipring; £70, £110, £160.—Norman E. Potts (B'ham) Ltd., 130, Moseley Road, Camp Hill, Birmingham, 12. 2309

ELECTRIC Motors and Dynamos. We hold one of the largest stocks of new and secondhand motors. Secondhand machines are thoroughly overhauled. Inspection and tests can be made at our works. For sale or hire. Send your enquiries to—Britannia Manufacturing Co. Ltd., 22-26, Britannia Walk, City Road, London, N.1 (Phone, 5512-3 Clerkenwell). 13

ELECTRIC Welding Plant, Engine and Electric, A.C. driven, 300 amps. output, complete with weatherproof covers.—Box 34, c/o The Electrical Review.

ELECTRICAL Accessories, including Plugs, Sockets, Switches, Adaptors, etc., and "Beeantee" Bakelite Festoon Striplighting Lampholders, which are available for immediate delivery. Catalogue and price lists sent on receipt of your enquiry.—The Beeantee Illuminations (London) Ltd., 69, Upper Street, Islington, London, N.1. Telephone, Canonbury 4555 and 1034. 71

ENAMELLED Copper Wire, 14 s.w.g., on original reels, for immediate delivery. Offers to—Box PP.10859, Samson Clarks, 57/61, Mortimer Street, W.1. 2434

EXHAUST Fans, 200/250 v., 50 cycles, single-ph., 1,200 r.p.m., totally enclosed induction; 8" diameter blades, £3 5s. 6d. each; 10" diameter, £3 15s. 6d.—Johnson Engineering, 319, Kennington Rd., S.E.11. REL. 1412/3. 57

FELT Polishing Mops, 8" dia. × 1½" thick.—A. Burgess Coutts & Co., 9a, Albert Place, Bridge Street, Manchester, 3. 2410

ELECTRIC Motors: 1 Keith Blackman D.C. 460 v., 0.75 amps., 920 r.p.m., winding series, type TE, complete with starters; 1 Stewart Turner 1-h.p. Pump, D.C., 460 v., No. 2238E416, GPH2000/1000, Ft. Head, 5/30, complete with automatic starter, mercury float switch and float; 1 Worthington Simpson Salvo Portable Fire and Salvage Gunmetal Pump, size bore 3/3½", 2,300 r.p.m., No. 5019800, year 1944, with Mawdsley Motor, D.C., compound wound, Machine No. 60R4767, 2,300 r.p.m., 220 v., amps. 30.2, rating-cont., class 1, 7.4 h.p., enclosed drip proof, 1945, complete with Allen West Starter, No. GO.V559A45/85, year 1945, 220 v., 30.3 amps., 7.4 h.p., and spare parts for motor pump and starter. Electric Overhead Travelling Crane: 1 5-ton Electric Overhead Travelling Crane, as new, span 26 ft., hand-operated electric hoist, with hand-operated trevice, with 12½-h.p. Brooks Slipring Motor, 400 v., also controller for 12½-h.p. motor, 400 v., Ref. No. E.4084A-AY284, resistance 12½ h.p., 145 v., 41 amps, Ref. No. 4084A-AY284, Magnet Brake by E. Holme & Co., Moss Lane, Altrincham, size 2, 415 v., 3-phase, 50-cycles, 2-stroke, 33-pull, year of manufacture 1943, 25 ft. lift. Bus Bars: 450 Bus Bars, English Elect. Co., in 12 ft. sections, 3-phase and neutral, with 6 tappings per section, of 9/16" copper rod, completely cased in and complete with end connectors, in excellent condition and guaranteed, as new. Electric Starters: 1 Allen West, type SC2, No. 1.52091, 2PHP, 400-440 v., 3-phase, 50 cycles Star Delta Starter; 2 do. Direct-On Starters, ¼ h.p., 200-220 v., single-phase, 50 cycles, 2.55 amps., type SCF No. V.395A29; 1 Ellison Starter, 20 amps., 400-440 volts, 50 cycles, No. 342855, oil immersed. Switch Gear and Fuse Boards: 1 Automatic Igranic A.C./D.C. Change-Over Controller, complete with Bus Bar Chamber and Switch Fuses as follows: 1 160-amp. D.P. Switch Fuse; 4 60-amp. do., all mounted on 2" angle iron frame. Conduit Fittings: 200 Galvanised and Black 6 × 3 × 2 Inspection Boxes; 10 6 × 6 × 2½ Inspection Boxes; 150 gross 1¼" Female Brass Bushes; 84 Porcelain Bayonet Cap Holders; qty. of rubber and lead covered wire, also bare copper wire. Condensers: 1 12.5 plus 12.5 U.F. Condenser; 4 300-v. 30 U.F. Condensers; 1 300-v., 50 do.; 1 300-v. 60 do. Electric Welder: 1 British Federal Electric Welder, 100 kVA, 50 cycles, 400 v., Machine No. 6079, Transformer No. 4065/6, water cooled. Blowers: 1 Lawrence Scott 2.5-h.p., 400-440-v., 3-phase, 50 cycles, 3.7-amps, 1,425-r.p.m., rating-cont., conned Star-Delta, complete with Starter and Sturtevant Blower; 4 Keith Blackman Blower Exhausters, type 30, No. U.8798, with electric motor, 400 v., 20 amps., 15 h.p., 2,900 r.p.m., 50 cycles, type PT., date 1940; 4 do. Blower Exhausters, type S.4, with electric motor, 400 v., 11 amps., 8 h.p., 2,900 r.p.m., 50 cycles, type SPT, No. 170114, 1940. Heating Units: 1 Mather & Platt Air Flow Heating Unit, with 15" Fans, unit size 174, tested pressure hydraulic 300 lbs., heating medium steam safe working pressure 70 lbs., 0.1 h.p., 400-440 v., 50 cycles, 3-phase; 1 do., unit size 128. Reduction Gears: 2 D. Brown & Co. Radicon Reducers, 3000/1. Coal and Ballast Hoppers: 20, as new, Coal and Ballast Hoppers, with conveyors, complete with 5" buckets, size of hopper across top 10 ft. sq., depth of hopper 10 ft. × 16 ft. Tool Boxes and Racks: 6,000 Steel Tool Boxes, sizes 2' 2" × 9" × 9"; 600 variable size Steel Racks and Benches. Renolds Chain: qty. of new Renolds 1½" Pitch Chain and Sprockets. Acetylene and Oxygen Gauges: 10 Acetylene Gauges; 18 Oxygen Gauges. Additional Motors: 8 Lancashire Dynamo Crypto, .68-h.p., 3-phase, 50-cycles, 400-v., 1.7-amps., 700-r.p.m., size 1G, No. 81A01, totally-enclosed, Fan Motor; 1 Motor Alternator, 2.5 kW, at unity power, 220 v., D.C., 18 amps., 3,000 r.p.m., 230 v., 1-phase, 11 amps., 50 cycles, weight 450 lbs., fitted with ball races; 1 do. 3 kW, at 0.8 power factor, 220 v., D.C., 18 amps., 3,000 r.p.m., 230 v., 3-phase, 7.53 amps., 50-cycles, weight 450 lbs., fitted with ball races. Pumps: 2 2½" Centrifugal Pumps. Pulleys and Plummer Blocks: 4 40", 4-groove, 2¾" bore Pulleys; 4 2", G.M. Plummer Blocks; 26 1½" do. Gas Furnaces: 5 Brayshaw Furnaces, year of manufacture 1940, Ref. No. 9.6962; 2 Incandescent Heat Co. Furnaces, square type. Degreasing Plant: 1 Degreasing Plant. Steel Plate: 30 tons 18G. Steel Plate. Gas Producing Plants: 2 5-therm Gas Producing Plants. Transformers: 22 low voltage Transformers, 230 v., single-phase, 50 cycles, input, output 12 v., 100 watt.—C. J. Rice, 137, Mayplace Road West, Bexley Heath. 55

FACTORY Sheds, 100 ft. × 30 ft. × 10 ft. Steel and asbestos construction. Delivered and erected. Full details from—J. Thorn & Sons Ltd., Box 111, Brampton Road, Bexleyheath, Kent. Phone, Bexleyheath 305. 136

FANS, 12 v. D.C., G.E.C.—Box 6095, c/o The Electrical Review.

FLUORESCENT Chokes, 80 watt. Low noise level, for satisfied users; long life, for low replacement costs; characteristics matched with lamp, for rated lamp life and light output. Prompt deliveries.—Mieramatic Ltd., Meico Works, Congleton, Cheshire. 73

FLUORESCENT Fittings. Trough or flush type fitted Hi-Craft Ballast control gear, complete with tubes. Delivery from stock. Apply—Scemco Ltd., Scemco House, 6/7, Soho St., London, W.1. Tel. GER. 1461/2/3. 100

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FLUORESCENT Lighting: 80-watt and 40-watt fittings complete with control gear and tubes, in stoved or vitreous enamel or Perspex. Spare starter switches, chokes, tubes, etc., available.—Superlighting Electrical Co., 146, Upper Richmond Rd., Putney, S.W.15. Putney 6908. 6111

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FLUORESCENT Lighting Fittings, industrial and others. Several types complete with 5' 80-w. lamps, and others complete with 3' 30-w. lamps, actually in stock.—Brooks & Bohm Ltd., 90, Victoria Street, London, S.W.1. Telephone, Victoria 9550, 1441. 67

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FOR sale, unused Ford and Austin Generating Sets for plating and battery charging, 200/400/800 amps., 15/7½ volts.—Fyfe, Wilson & Co. Ltd., Bishop's Stortford. 2257

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FRINGES, Braids, Tassels for lampshades always in stock.—Philip Cohen, 77, Great Portland Street, London, W.1. Langham 1385. 38

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HEAVY duty Arc Welding Plants, 200 amps. Price £38 10s. complete. Also Spot Welders. £51.—John E. R. Steel, Clyde Mills, Bingley. Phone 1066. 50

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HOUSE Meters, 200/240 v. A.C., s/ph., 50 c. Price 17s. 6d., plus 1s. carriage.—Universal Electrical, 221, City Road, London, E.C.1. 129

HIGH-tension Slip-ring Motor, 200 h.p., 1,485 r.p.m., 6,300 volts, 50 cycles, 3-phase, new condition. £400 from stock.—Higgs Motors Ltd., Witton, Birmingham, 6. G258

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LESLIE Dixon & Co. for Dynamos, Motors, Switchgear, Chargers, Telephones, etc.—214, Queenstown Road, Battersea, S.W.8. Telephone, MACaulay 2159. 18

MANUFACTURER closing down offers the following material at less than cost price. 3,000 yards 9/012 Triallvin Triple-core Rubber Flexible; 8,000 yards 9/012 6-core Metal Braided Flexible; 2,000 yards 7/0076 3-core Neoprene Flexible; 3,500 yards 7/0124 Push Back Wire; 3,500 yards 14/0076 5-core Metal Braided Flexible; 30,000 yards 14/0076 Twin Twisted Maroon Flexible; 20,000 yards 40/0076 Triple Maroon Flexible; 60,000 yards 23/0076 Triple Maroon Flexible; 5,000 2-way 4 ft. Telephone Cords; 4,000 yards 40/0076 Single C.T.S. Flexible, Tropical Finish; 5,000 yards 70/36 Twin Twisted D.V. Maroon Flex; 20 gross 2-pin, 5-amp. Flex Connectors.—Kayes The Electrical Specialists, 11, St. Anns Rd., Harrow. 6146

MERCO Permanent Magnet Loud Speaker, best quality cobalt steel magnet, cone covered in dustproof shrond, individually boxed, 5″ 10s. 6d.; 6½″ 11s. 6d.; 8″ 12s. 6d.; 10″ 16s.—Merco Trading Co. Ltd., 20, King Street, Glasgow, C.1. 49

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MOTOR Generator Set, 60 v., 80 amp., D.C., with regulator, driven by 8-h.p., 3-ph., 400-v. motor, with starter, on bedplate; 1,000 Carbon Brushes, 7/16″ × 5/16″ × ½″; 500 Circular Brushes, 7/16″ × 15″, with tags and springs. Offers,—67, Redcliffe Hill, Bristol. Tel. 25778. 2405

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MOTORISED ½″ Bench Drilling Machine, 13 speeds. £15 5s.—John E. R. Steel, Clyde Mills, Bingley. Phone 1066. 51

MOTORS: Brook, 200/1/50, pro. B.B. with starters (S.H., good condition); 15 h.p., 1,500 r.p.m.; 10 h.p., 1,000 r.p.m.—Electrical Installations and Motor Rewinds Ltd., Trinity Street, Huddersfield. Tel. 6015. 2413

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NEW Fractional Domestic Sewing Machine Motors, totally enclosed, 230 v. A.C., s/ph., 50 c., 70s. each.—Universal Electrical Co., 221, City Road, London, E.C.1. 2125

ONE modern 100-h.p., 600-r.p.m., 400/3/50-cycle Auto-Synchronous Motor by Crom. Park., with Allen West oil-immersed switchgear.—Newman Industries Ltd., Yate, Bristol. 2414

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OSMOR A.C./D.C. 3-wave, 5-v. Superhet Receivers, excellent reproduction and sensitivity, attractive cabinet, early delivery, shipping wave-band if required. Write for literature.—Morgan, Osborne & Co. Ltd., Southview Rd., Warlingham, Surrey. 110

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PILOT Transformer Converter, 200/230 v. A.C., s/ph., 50-c. input, 400/440-v., 3-ph., 50-c. output, to carry 25 h.p., with control gear, £188.—Universal Electrical, 221, City Road, London, E.C.1. 2281

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REFRIGERATORS (large industrial type), very low temperature for shrinking small work; also large selection of Electric Furnaces and Ovens.—Box 6094, c/o The Electrical Review.

RESISTANCE Wire: Alloy Wire Co. Ltd., Lawrence Lane, Old Hill, Staffordshire, manufacturers of high-grade Resistance Wires for all electrical applications. 25

ROTARY Converters in stock, all sizes; enquiries invited. — Universal Electrical, 221, City Road, London, E.C.1. 16

SEVEN Welding Motor Generator Sets by Fuller, integrally coupled machines comprising 5-h.p., 400/440/3/50 squirrel cage Induction Motors and 70-volt, 175-amp. single operator Welders; units having mounted thereon welding resistances and motor starters; these machines are semi-portable, having a lifting handle at each end, and are ball bearing throughout. Latest type Anodising Set by Crompton Parkinson comprising a 95-h.p., 440/3/50 slipring Induction Motor, protected type, with endshield ball bearings, flexibly coupled on a cast-iron bedplate to a 60-volt, 1,000-amp. Generator, speed 970 r.p.m., screen protected type, with endshield ball bearings. Ten 5-kVA Petrol Alternator Sets; Alternators wound for 230 volts, single-phase, 50 cycles, direct coupled to Coventry Climax Engine, 1,500 r.p.m., complete with switchboard and shunt regulator; accessories include daily service fuel tank and starting handle.—George Cohen, Sons & Co. Ltd., Wood Lane, W.12, and Stanningley, Nr. Leeds. 2332

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SELF-Priming Electric Pumps, 300 g.p.h., £15 5s.—John E. R. Steel, Clyde Mills, Bingley. Phone 1066. 53

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SUPERIOR Type Builders' Ladders now in production: also Steps, Trestles and Extension Ladders. Phone—Shaftesbury Ladders Ltd., 453, Katherine Road, E.7, Grangewood 3363/4. 15

SURPLUS Electric Cable and Electrical Plant for disposal: One Model W.G.350 Neihaus Bunching Machine, complete in every respect, with low chain wheels, guards, etc., but less electrical equipment; Two 6-head Vertical Cotton Covering Machines, suitable for cotton covering cables up to 3/16" dia. (these machines are less electrical equipment); One 6-head Paper Covering Machine for paper covering cables up to 3/16" or ¼" dia. (this machine is less electrical equipment); 1 Bryce Transformer, 3,460-400 v., 400 kVA, 50 cycles, 3-phase, delta primary, star secondary; 1 Hackbridge Transformer, 3,460-300 or 200 v., 500 kVA, 50 cycles, 3-phase, delta primary, star secondary; 1 T.C.C. Transformer, 3,460-300 or 200 v., 400 kVA, 50 cycles, 3-phase, delta primary, star secondary; 2 Hackbridge Transformers, 3,460-400 v., 50 kVA, 50 cycles, 3-phase, delta primary, star secondary; 1 bank of three Crompton Parkinson, 11,000-v., T.A.P. Circuit Breakers, triple-pole.—H. D. Douglas & Co., 2, Caxton St., London, S.W.1. Phone, Abbey 6344. 2444

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VACUUM Impregnating Plant for sale, comprising autoclave, 36" dia., 72" deep inside, varnish tank, external electrically heated oil circulator with pump, vacuum pump and electrical contactor. All new and unused.—Box 2298, c/o The Electrical Review.

WEE Meggers, 500 v., in case, £13 16s. 3d.; Record 500-v. Test Set, £12 7s. 6d., C.O.D. (new).—Robins, 222, West End Lane, N.W.6 (HAM. 0879). 82

1 secondhand Wild Barfield Furnace, 400 volts, 3-phase, 50 cycles, Type 1612.H., complete with all control.—Oldfield Engineering Company Limited, 96, East Ordsall Lane, Salford, 5. 2259

1 only, English Electric, 20-h.p., totally enclosed S/R, 400/3/50, 727 r.p.m., cont., with pedestal oil-immersed starter; 2 only, Brook high torque, 20-h.p., 400/3/50, 750-r.p.m., cont., S/C, with oil-immersed starters, fitted 6-way × 6" V-pulley.—Denalectrix, 41, High Street, Stanstead Abbotts, Herts. 2065

2 and 4-way Fuse Boxes, 5 and 15 amp.; 5,000 Multirange Meters; large quantity of Radio Components; Fluorescent Fittings, 5 ft. and 4 ft., from stock at keenest prices; Fluorescent Spares; 5,000 Chokes in stock, 40 and 80 watt; Power-Factors, 2's, 4's, 8's and 10's, thousands in stock; Starter Lamps, thermal and glow; Suppressors, 4 and 5 ft. tubes, etc. Phone or call—L. Goodman (Radio) Ltd., 9, Percy Street, Tottenham Court Road, W.1. Museum 0216. 93

3 ½-h.p. "Igranic" Starters, 7 7½-h.p. "Igranic" Reversible Starters. All brand new. What offers? Further particulars—Electrical Supplies London Ltd., 17, Penybryn, Wrexham. 6131

5 Electric Rotary Converters, 6-phase, D.C. side 440/220 volts, 1,090 amps., 1,000 revs., A.C. side 326/341 v., 545 amps., 50 periods, field compound, each complete with Pony Motors, 310 v. A.C., 1,000 r.p.m., 3-phase, 50 cycles; Transformers, 530 kVA, 2,200/340 v., 136 primary amps., 518 secondary amps.; Starting Panels, comprising 3-pole switch, neutral switch, field change switch mounted on slate panels with grid wire protection (3 Siemens, 2 English Electric).—Richard Thomas & Baldwins Ltd., Redbourne Works, Scunthorpe, Lincs. 2441

5-kW and 2½-kW, 230/250-volt D.C. Generating Sets, complete with 4-cylinder, 10-h.p. Austin Engines, with petrol tanks, radiators, fans and switchboards. Large number available.—Britannia Manufacturing Co. Ltd., 22/26, Britannia Walk, London, N.1. 103

15-h.p., 400-v., 3-ph., 50-c. Motor, 1,450 r.p.m., and starter, £77 10s.; 10-h.p., 460/480-v. D.C. Motor, B/B, 1,000 r.p.m., and starter, £54 10s.; 3-h.p., 460/480-v. D.C. Motor, R/O, 400 r.p.m., and starter, £39 10s.; ½ h.p., 400 v., 3-phase, 50 c., 2,800 r.p.m., T/E, £3 17s. 6d.—Universal Electrical Co., 221, City Road, London, E.C.1. 2363

15 Motors (Newman), brand new, surplus to requirements, 3 h.p., 3,000 r.p.m., 400/3/50, £20 each.—Richard Threlfall, Bridgeman Place Works, Bolton. 2493

25 ½-h.p. "English Electric" single-phase Motors, 230/250 volts, con. rating. Price £8 10s. These motors are brand new and guaranteed.—The County Vacuum Service Co., 215, London Rd., Mitcham. 6147

30-kW M.G. Set, comprising 45-h.p. L.D.M. Slipring Motor, 400/3/50, coupled to 30-kW L.D.M. comp. wound 400-volt D.C. Generator on baseplate, complete with starter and regulator.—Electric Machinery Co. Ltd Union Works, Ancoats, Manchester. 115

40-h.p. Motor, 460 volts, D.C., 260 revs. with starter, by Crompton; also 32-kW Dynamo, 460 volts, 300 revs. by Crompton.—W. H. Sugden & Co. Ltd., Glenny Road, Barking. 2485

250-kW Rotary Converters (2), with transformers and switchgear, input 6,600 volts, 3-phase, 50 cycles, output 420/210 volts; also A.C. and D.C. Motors, Switchgear, Generating Sets, Welders, etc.—Midland Counties Electrical Engineering Co. Ltd., Grice Street, Spon Lane, West Bromwich. 36

400 Rent Collectors (C. & H.), 20 amp., A.C., 200/250 v., 50 cycles, calibrated 2s. to 16s. (in shillings) per week. Suitable collectors for consumption or use of appliances, billiard tables, etc. Good condition. Offers to—Box 2483, c/o The Electrical Review.

450 Satchwell Thermostats, tubular type, W.O., variable 10°-90° C.; 3,000 Wire Wound Potentiometers by Fox and B.E.R., 50 watt, 50 ohm and 500 ohm, 20 watt loading. All brand new tested stock offered, substantially discounted for quantities.—Partridge, Wilson & Co. Ltd., Davenset Electrical Works, Leicester. 83

500 Electric Motors, Dynamos, Transformers, Converters, etc., etc., at low prices.—S. C. Bilsby, A.M.I.C.E., A.M.I.E.E., Crosswells Road, Langley, near Birmingham. Phone, Broadwell 1359. 21

3,000-amp. Plating Generator Set by Stamford Electrical Co. Ltd., driven by 35-h.p. Slipring Motor, 400 volts, 3-phase, 50 cycles, 720 r.p.m., ball bearing machine, enclosed ventilated type; double Commutator Generator, 3,000 amps. output at 6 v., protected, coupled exciter, 220 v., all mounted on common bedplate with oil-immersed stator and rotor starter with shunt regulator and two ammeters.—Reed Bros. (Engineering) Ltd., Bevis Marks House, London, E.C.3. Phone, Avenue 1677; Grams, Replant, Ald, London. 2334

10,000 Metal Lamp Shades, ex-Govt. surplus, pre-war quality, each 1s.; Galleries 9d. Sample doz. 2/s. Quantity of Bakelite Accessories.—Suplex Lamps Ltd., Suplex House, 239, High Holborn, W.C.1. 2402

AUCTION NOTICES

G. R.

BY ORDER OF THE MINISTER OF SUPPLY

Important One-Day Sale by Public Auction
(without reserve) of
GOVERNMENT SURPLUS STORES

comprising ELECTRICAL, PLUMBING and GENERAL ENGINEERING SUPPLIES, Aircraft Instruments and Miscellaneous Parts, Electric Generator Sets, Electric Motors, Compressors and Air Receivers, 5-therm and 20-therm Gas Producers, Electric Fans, Starters, Switches, etc., Lifting Jacks, Chain Blocks and Lifting Slings, Tecalemit Grease Guns, Lot Small Trucks, Ballard After Cooling Unit, Water Purification Plants, Heat Treatment Furnaces, Small Benches, Inspection Cabinets with Surface Plates, Surface Tables, Straight Edges, Telescopic Gauges, Depth Gauges, Steel Squares, Vices, Dawson Washing Machines for cleaning engine parts, Centrifugal Pumps, Rawlplug Outfits, Assorted Leather Straps with Buckles, Spray Paint Containers, Galvanised Tanks, Leather Tool Cases, Tachometers, Hand Tools, Quantities of Rubber Hose, A.R.P. Equipment, Hammers, Shovels, Picks, Axes, Crow Bars, etc., Canteen Equipment (including Soup, Dessert, Meat, and Tea Plates), Two-compartment Refrigerator (6ft. 3in. × 5ft. 2in. × 2ft. 6in.) with motor, Pressure Gauges, Demagnetisers, Hydraulic Pushers, Shorter Flame Hardening Machine with Electric Gear Burners (14ft. × 12ft. × 3ft. 6in.), etc., etc. (About 500 lots in all.)

To be held within the
CENTRAL HALLS, 25, BATH ST., GLASGOW, C.2
(opp. Municipal Transport Offices) on
THURSDAY, 10th JULY, 1947, at 10 a.m. prompt.

Admission by Catalogue only. The sale is catalogued in Five Parts where the equipment is located:—

Part 1—Located at M.O.S. Depot No. 73, Gatend Farm, Giffen, near Beith, Ayrshire.

Part 2—Located at Messrs. Rolls-Royce Factory, Hillington, Block B.1.

Part 3—Located at M.O.S. Transit Depot, Dundonald Aerodrome, adjacent to Drybridge L.M.S. Station.

Part 4—Located at Messrs. Mond Nickel Co. Ltd., Thornliebank, Glasgow.

Part 5—Located at Messrs. Young Windows Ltd., Claydon Works, off Caledonian Rd., Wishaw, Lanarkshire.

View Days, Monday, Tuesday and Wednesday, 7th, 8th and 9th July, from 10 a.m. to 4 p.m. each day. Admission to view will be by catalogue only (price 6d.), each catalogue admitting two persons to view and one only to sale.

Catalogues will be the only means of admission to the five Depots and also to the Central Halls, and can be had on application to the Auctioneers. Light Refreshments will be provided on sale day.

NICOL & HALLIDAY, Auctioneers and Valuators, 31, Argyle St., Glasgow, C.1. Tel. Central 8500. 2398

G. R.

BY ORDER OF THE MINISTER OF SUPPLY

DEPOT No. 93, P.O.L. SITE, EARDISLEY
(14½ miles west-north-west from Hereford.)

JACKSON & McCARTNEY are instructed to Sell by Auction, without reserve, at the above Depot, on Tuesday and Wednesday, 8th and 9th July, 1947, at 11 o'clock each day:

INDUSTRIAL ELECTRIC EQUIPMENT AND OTHER MACHINERY, APPLIANCES AND MATERIALS

principally comprising: Electric, Incandescent, Stabilising, Gas-fired, Nitriding, Muffle, Shot, Blast, Tool-making, Tilting, Oil Bath, Coke-fired and Melting Furnaces; Melt Winches; Electric (12-volt) Water Pumps; Electric Motors and Fans; Shrink Ovens; Swarf and Dust Extractors; Crack Detectors; Water Coolers; Furnace Chargers; Sturtevante Extraction Equipment and Motors, complete; Quench Tanks; Swarf Crushers; Salt and Oil Baths; Shot-Blast and Oil Extracting Cabinets; Reavel Rolling Drum Rotary Exhausters; Shop Floor Turntables; Petrol Motor Engines; Centrifugal Pumps; Avery 30-ton Testing Machine; Avery 4-ton Weighing Machine; 9,000 Empty Metal Cases; 9,000 Steel Helmets; Emergency Field Kitchens; Gas Vegetable Boilers; Gauge Carriers and Surface Tables; Rockwell Hardness Testers, and other Miscellaneous Surplus Stores and Accessories.

On view Thursday, Friday and Monday, 3rd, 4th and 7th July, between the hours of 10 a.m. and 4 p.m., upon production of Catalogue. Each Catalogue will admit two persons on View and Sale Days. Refreshment Bar on Sale Days only.

Catalogues (1s. each) from the Auctioneers at their Head Office, Craven Arms, Shropshire (Tel. No. 2185). 2296

Second Sale.

G. R.

BY ORDER OF THE MINISTER OF SUPPLY

MINISTRY OF SUPPLY DEPOT, FEATHERSTONE
(6 miles from Wolverhampton, Staffordshire)

NOCK & JOSELAND

are instructed to Sell by Auction, without reserve, at the above Depot, on Tuesday, Wednesday and Thursday, 29th, 30th and 31st July, 1947, at 11 a.m. each day, a large quantity of Valuable

INDUSTRIAL ELECTRICAL EQUIPMENT AND PORTABLE POWER TOOLS

including about 3,200 MOTORS, various h.p. and voltages, A.C. and D.C., including geared and flameproof types, and 200 Electric Fan Motors; 202 MOTOR ALTERNATORS, standard A.C. and D.C. voltages; 250 CONTROL GEAR UNITS, motor driven and friction drive; 140 Boosters for voltage control; 120 Electric Flex Shaft Polishers and Grinders; 80 Suds Pumps and Sump Pumps; 570 GENERATORS up to 72 kW; 127 TRANSFORMERS up to 114 kVA; 20 Riveting and Etching Machines; 9 D.C. Spot Welders, 40 kVA, complete with Transformers, Circuit Breakers and Rectifiers, and other Arc Welding Equipment; 6 Static Condensers, 20 kVA; 170 Starters, and a large quantity of small Industrial Switchgear. Also a large quantity of Equipment, including Control Panels, Contactor Panels, Furnace Control Panels, Testing Panels, Frequency Changers, Switchboards, Distribution Boards, Fuse Boards, Rectifier Units, Dynamos and Super-Chargers; Pneumatic Grinder (Holman); 120 Drill Steel Bits; quantity of Copper Strip and Copper Busbar; a large quantity of T.R.S. and P.V.C. Multicore Cable.

On view Tuesday, Wednesday, Thursday, Friday and Monday, 22nd, 23rd, 24th, 25th and 28th July, 1947, between the hours of 10 a.m. and 4 p.m.

Admission to view and sale by catalogue only. Each catalogue will admit two persons on view days and one person on sale days.

Catalogues, 1s. each (post free on receipt of postal order) may be obtained from the Auctioneers, Nock & Joseland, 48, Queen St., Wolverhampton, Staffs (Tel. 20070). 2417

BY Order of the Liquidator, R. C. Sheen, Esq., F.C.A., re G. Godson & Son Ltd. (in voluntary liquidation): Leasehold Manufacturing Premises, Pembroke Works, Nos. 213/215, Kilburn Lane, W.10. Substantially constructed building of three floors, dwelling house, 11 rooms, used as offices; open and covered yard space, paved drive-in. Floor area of factory abt. 11,000 sq. ft., now occupied by M.O.W. Property is held on lease, having an unexpired term of about 36 years, at a rent of £120 per annum. Leopold Farmer & Sons will offer the above to auction at The Mart, 155, Queen Victoria Street, E.C.4, on Wednesday, 30th July, 1947, at 2.30 p.m., unless previously sold. Particulars of—R. C. Sheen, Esq., F.C.A., Messrs. Morton, Moller, Sheen & Co., Chartered Accountants, Moorgate Hall, Moorgate, E.C.2; Herbert Reeves & Co., Solicitors, 39, New Broad Street, E.C.2; and the Auctioneers, 46, Gresham Street, E.C.2. 2406

CHELLOWS Park, Crowhurst, Nr. Lingfield, Surrey. Sale by Auction, including Lighting Plant and Electrical Gear; Kohler 800-watt Automatic Petrol Electric Lighting Plant; Lister Diesel 9-h.p. Engine complete with 200-gallon Fuel Tank and Fittings; Mawdsley Dynamo, 5 kW, 100/140 volts, 4/5 amps., with Switchboard; 1½-kW. 100/140-volt, 15-amp. Dynamo, with Switchboard; Lightfoot Refrigerator and Condenser, etc. Will be sold by auction by Messrs. Friend & Nightingall on Wednesday, 9th July, 1947. Catalogues of the Auctioneers, 16, Market Square, Westerham, Kent. Tel. 180. 2455

ARTICLES WANTED

A 50 or 60-h.p. new or secondhand Motor, 400 v., 3-ph., 50 cycles, slipring, 960 or 720 r.p.m., complete with hand starter and slide rails. Also 3 12-h.p. new or secondhand Motors, 400 v., 3-phase, 50 cycles, squirrel cage, 960 or 720 r.p.m., totally enclosed, external fan-cooled, complete with star/delta or auto-transformer starters.—Samuel Salter & Co. Ltd., Trowbridge, West of England. 2295

A.C. Motors and Transformers urgently wanted. Burnt out machines acceptable.—Max Electric Co. Ltd., 190, Thornton Road, Croydon. 12

A.C. Motors wanted urgently, all sizes and voltages. Best prices offered.—John Phillips & Co. Electrics, 31, Fortune Green Road, N.W.6. Hampstead 8132. 125

AUTO Electrical Test Bench for 200/250/1/50. A.C. mains.—S.E.B. & E. Co., 375, Queens Road, New Cross, S.E.14. New Cross 0667. 2403

CONDENSERS for power factor improvement. State nameplate particulars and price.—BCM/Kilovar, London, W.C.1. 6031

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

D.C. Generator, 1,800 r.p.m. minimum speed but 2,000 r.p.m. preferred, minimum output to be 75 kW, maximum 100 kW, voltage anything above 200; also Switchboard comprising C.B. voltmeter, ammeter and field regulator. Quote price and advise where plant can be inspected.—Southern Areas Electric Corporation Ltd., Silverlands, 37, Alexandra Road, Epsom, Surrey. 2337

D.C. 220 volts equipment, all kinds, including refrigerators, wanted for export.—Edgar Brothers, 247, Prescot Road, Liverpool, 7. 6140

DIESEL or Paraffin Engine, 3/15 h.p. Dynamic Balancing Machine, Coil Winding Machine, Armature Winding Machine, Wattmeter and Test Meters. Enamelled, lewmex, rayon, silk and cotton covered wires. 19/43 S.W.G. or B.S.—Box 2484, c/o The Electrical Review.

ELECTRIC Motors (480 v. D.C.) wanted immediately: two 40 h.p., 1,200/1,600 r.p.m.; one 70 h.p., 975 r.p.m.; one 100 h.p., 900 r.p.m.; one 120 h.p., 700 r.p.m. Either new or secondhand considered if in good working condition. Offers to—Harland & Wolff Limited, North Woolwich, E.16. 2429

ELECTRICAL Steel Sheet or Laminations of reputable make, .014" to .020" thick, will be purchased for cash in any quantity.—Davenset Electrical Works, Leicester. 24

ENAMELLED Copper Wire, 38, 39, 40, 41 and 42 s.w.g. Any quantity purchased. Particulars to—Signcrafts Ltd., Cobourg Wharf, Cobourg Road, S.E.5 (RODney 4433, Ext. 7). 133

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. 62

FLUORESCENT Lamps, 5 ft., urgently required, any quantity, best prices paid. Collected London area.—Box 111, c/o The Electrical Review.

GEARED Electric Motors, ¼ h.p. to 20 h.p., new or secondhand.—Box 37, c/o The Electrical Review.

INDUCTION Regulator around 3 kVA, plus and minus 10%, with a throughput of 12 kVA at 400/1/50. Details near this capacity to—John Rigby & Sons Ltd., Low Moor, Bradford. 2326

LAMINATIONS, types M.E.A. 74, 235a, Baldwins 86, 54. Any quantities.—Meico Ltd., Congleton, Cheshire. 2482

MERCURY (Quicksilver) wanted. Write for packing instructions. Gold, Silver and Platinum also purchased.—Collingridge & Co. Ltd., Riverside Works, Riverside Road, Watford (Tel. 5963). 20

ONE 20-h.p., totally enclosed, slipring Motor, with reduction gears, to give an output speed of 35 r.p.m., for 400/50/3 cycles.—Box 144, c/o The Electrical Review.

ONE 300-h.p., 500-v. D.C., 800/900-r.p.m. Motor, continuously rated, protected or enclosed type, shunt or compound wound; also starting gear for same. Two Centrifugal Pumps, 2,000/3,000 g.p.m., 150 ft. head, complete with motors and starters for 500 volts D.C.—Box 2412, c/o The Electrical Review.

ONE 400-v., 3-phase, 50-cycle, 100-kVA Plant; one 230-v. D.C., 100-kW Plant; one 230-v. D.C., 5/10-kW.—Booth, Electrical Engineer, Bishop's Waltham, Southampton. 6128

RHEOSTATS, spot cash paid for suitable rheostats for voltage control, 60 and 300 ohms or near sizes, also 6/9 inch ammeters and voltmeters.—Box 6151, c/o The Electrical Review.

TRANSFORMER, new or second, 50 kVA, 11,000/400/230 volts, 3-phase, suitable for pole mounting. Particulars to—Chudleigh Electric Light & Power Co., S. Devon. 6143

TRANSFORMER Steel, Sheets, Offcuts and Laminations, any quantity purchased. Particulars to—Signcrafts Ltd., Cobourg Wharf, Cobourg Road, S.E.5 (Phone, Rodney 4433, Ext. 7). 134

TRANSFORMERS, together with attendant switchgear, wanted to details given or to nearest for rewiring: One 300/500 kVA, 20,000 to 2,300 v.; one 300/500 kVA, 11,000 to 2,300 v.; one 90 kVA, 400 to 125 v., star-delta connected; one 200/400 kVA, 11,000 to 400-440 v., isolating switch to exceed 100,000-kVA rupturing capacity; one 200-amp. Isolating Switch suitable for 400/440 v., 3-ph., 50 cyc.—Steetley Co. Ltd., Worksop, Notts. 2143

WANTED, D.C. and A.C. ball-bearing Motors. Full details to—Britannia Manufacturing Co. Ltd., 22/26, Britannia Walk, London, N.1. 29

WANTED Kohler plant 1,500 w. secondhand or defective for spares; also diesel alternator sets 400/3/50, 25 kW, 50 kW, 100 kW, 300 kW, or alternators only.—Box 6142, c/o The Electrical Review.

WANTED, Generator of about 200 kW, 460 volts D.C., 600 r.p.m., suitable for direct coupling. State make, condition.—A. & W. Douglas, Dalkeith, Midlothian. 2227

WANTED, Rotary Converters, any size.—Universal, 221, City Road, London, E.C.1. 22

WANTED urgently, Alternator for coupling, 200/300 kW, 400/3/50, or high voltage, 200 revs.—Box 2400, c/o The Electrical Review.

WANTED, 460-v. D.C. Diesel Generating Sets, 75/100 kW, complete with switchboard, etc. Full details, price and condition to—Box 2249, c/o The Electrical Review.

150/60-kW Alternator, 400 v., 4-ring, 3-phase, 50 cycles, 1,000/1,500 r.p.m.; alternatively Alternator or D.C. Machine capable of being rewound and slip rings added, suitable for pulley drive from Diesel engine.—W. Mackie & Co. Ltd., 129, Lambeth Road, S.E.1. 2425

200/300-kW Turbo-Generating Sets, 220/380 volts, 3-phase, 50 cycles, with switchboards.—Reed Brothers (Engineering) Ltd., Bevis Marks House, Bevis Marks, E.C.3. 2130

250-kW-400-kW, 400/500-volt D.C., 1,000-r.p.m. Dynamo.—Britannia Manufacturing Co. Ltd., 22/26, Britannia Walk, London, N.1. 2189

WORK WANTED AND OFFERED

ARMATURES for Vacuum Cleaners, all types rewound, 32s. 6d. Complete overhaul of Motors our speciality, estimates free. Reconditioned Machines from £8.—Vacuums All Makes, 201, Hope Street, Glasgow, C.2. Telephone, Douglas 6234. 105

ARMATURES. Vac., Gramo. and Dryer Armatures rewound and returned in seven days. Special terms for quantities—Streatham Transformer Co. Ltd., 68, Streatham High Road, S.W.16. Streatham 7626. 118

BAKELITE capacity wanted.—Box 2396, c/o The Electrical Review.

CAPACITY available for the manufacture of Transformers, Chargers and Rectifying Apparatus. Guaranteed work.—Box 6130, c/o The Electrical Review.

CAPSTAN capacity immediately available, 6 B.A., 1½", steel or brass. Large holdings of both materials in stock; also Surface Grinding, Light Milling.—Sacks Engineering, 1a, Bamborough Gardens, London, W.12. 6089

COIL Winding capacity available. Complete facilities for all types of R.F. and small power coils, chokes and transformers. Design undertaken if required.—E.T.A., 109, West Hill, St. Leonards-on-Sea. 6088

ELECTRIC Motor Repairs, Rewinding, etc., 1/6 h.p. to 3 h.p., A.C. and D.C. First-class work at reasonable prices.—The Johnson Engineering Company, 319, Kennington Rd., London, S.E.11 (Reliance 1412/3). 99

ELECTRICAL Contractors in Kent, Sussex, Hampshire, Dorset, Wiltshire, Somerset, Gloucestershire, Leicestershire, Lincolnshire, Yorkshire, Liverpool area and Northern Wales, who are interested in and capable of installing and maintaining internal telephone equipment (push-button telephones, loudspeaking master stations, and amplifier equipment), and who have had previous experience in similar work, please write in confidence to —Box 2235, c/o The Electrical Review.

ELECTRICAL Measuring Instruments skilfully repaired and recalibrated.—Electrical Instrument Repair Service, 329, Kilburn Lane, London, W.9. LAD. 4168. 2270

ENGINEERS, Precision, South England, seek manufacture of electrical, mechanical or domestic assemblies or components. Press tools, gauges, small stampings, capstan turning, also Internal and External Grinding. Write—Box 74, c/o The Electrical Review.

ENQUIRIES solicited for all Press Work and Stampings. Keen rates, prompt delivery.—John Drown & Co. Ltd., 7 Northampton St., B'ham, 18. Cen. 6381. 59

IMPORTANT firm of manufacturing engineers, unwilling to accept work not coming under heading of national importance, such as Atomic Energy, Mining Equipment, Generating Plant, etc., invites enquiries under these or equally important headings. Long-term contracts only considered from reputable concerns. Careful consideration given to all responsible enquiries.—Box 2358, c/o The Electrical Review.

MACHINING Work, for Centre Lathes up to 6½ in. centres and medium-sized milling (good grade work preferred).—The London Electric Firm, Croydon. Uplands 4871. 56

PRECISION Engineering, capstan and centre lathe work, welding, spot welding, tube bending, finishing, assembly, experimental work, product improvement, complete production runs. All enquiries to—Herbert W. Baker (Electrical) Ltd., 2a Kilburn Lane, W.10. LAD. 4006. 2387

REWINDING Electric Motor Service. Prompt repairs, 3 months' guarantee. Refrigeration motor repairs and service specialist. Voltage conversions a speciality. Trade enquiries invited. Wanted to purchase ¼ & ½ h.p. A.C. motors.—W. J. Connor, 49, Rathcoole Gardens, Hornsey, N.8. London agent for Telengrad industries. 6029

REPAIRS to Time Switches, Clocks, Electric Clocks, Controllers and all kinds of clockwork mechanisms.—J. W. & R. E. Hughes (Clockwork Engineers), 58, Victoria Street, London, S.W.1. Phone, Victoria 0134. 128

REQUIRED, Electrical Contractors in Aberdeenshire, Perthshire, Edinburgh, Lothians and Borders capable of installing and maintaining non-automatic internal telephones. Only firms of good standing who have had definite experience in this class of work should apply to—Box 2173, c/o The Electrical Review.

RUNBAKEN Electrical Repairs. Rewinding to trade. Fractional h.p. motors a speciality, A.C. and D.C. Prompt service. Guaranteed work.—45, Oxford Road, Manchester. Tel. Ard. 2507 (3 lines). 100

SHOT Blasting and Metal Spraying. We are able to undertake the efficient and prompt handling of all goods sent for treatment. Large capacity available. Enquiries to—Commercial Structures Ltd., Staffa Works, Staffa Road, E.10. 112

SWITCHGEAR. We design and manufacture high-class Air-brake Switchgear of all types to a customer's requirements. Reasonable delivery. Enquiries for large or small quantities invited.—Albright (Engineers) Limited, 125, Red Lion Road, Tolworth, Surrey. Elmbridge 1648. 6144

21/- Armatures, 11/6 Coils. We are the specialists in Vacuum Cleaner Rewinds and Repairs. Prompt delivery and work guaranteed.—County Vacuum Cleaner Service, 215, London Road, Mitcham. 5993

AGENCIES

ADDITIONAL Agencies required for South of England, including London: (a) Cables; (b) Small Switchgear; and any lines suitable for distributing through wholesalers.—Box 40, c/o The Electrical Review.

AGENTS required with good connections in the electrical wholesale trade to represent large manufacturers of Wooden Electric Switch Blocks in England and Scotland. —Box 2192, c/o The Electrical Review.

AGENTS with established connection in London and South of England require additional agencies of all types of Domestic Appliances.—Box 6122, c/o The Electrical Review.

BUYING Agents required in Manchester, Birmingham and London to work on commission basis for electric motor manufactrs.—Box 2408, c/o The Electrical Review.

ELECTRIC Appliance manufacturers require part-time Agents in the following centres: Manchester, Leeds, Newcastle-on-Tyne, Birmingham, Cardiff, Glasgow and Belfast. Wholesale only. Commission basis. State previous experience.—Box 6118, c/o The Electrical Review.

LEADING Indian industrialists, having recently acquired former European engineering company with well equipped workshops in Bombay and Madras, are desirous of contacting reputable British manufacturers, if unrepresented in India, with a view to indigenously manufacturing Electric Motors, Starters, Switchgear, Transformers, Generating Equipment, etc., on either an agreed percentage, royalty or under licence basis. Replies in confidence to—Box 2342, c/o The Electrical Review.

MANUFACTURERS' Agent, large connection twelve southern counties, Channel Islands, electrical undertakings and retailers, desires contact manufacturer of Electric Cable, Wiring Accessories and Household Equipment, view agency. Stockrooms, showroom, sales force. —Box 2355, c/o The Electrical Review.

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

MANUFACTURERS of Electrical Precision Indicating Instruments for industrial switchgear and radio testing sets require technical representation on agency basis in Lancashire, Cheshire, Yorkshire and Newcastle areas. Write, giving full details, to—Box 2146, c/o The Electrical Review.

REPRESENTATIVES required for Temco Clocks for Scotland, Northern England and Midlands. Replies, stating age, previous experience, whether car owner and remuneration required, in strictest confidence, to—Sales Director, T.M.C.-Harwell (Sales) Ltd., 37, Upper Berkeley Street, London, W.1. 2325

WELL-known old-established firm of Manufacturers' Agents, covering London, South of England, requires additional agencies: (1) Domestic Appliances; (2) Brass Accessories, Switch Plugs, etc. Advertisers have contacts with every wholesaler in territories mentioned. Immediate turnover can be given, commission or buying basis.—Box 64, c/o The Electrical Review.

WELL-known traveller, covering London and the South, requires agencies, Switchgear, Conduit Tubing and Fittings, Cables, Wood Blocks, Brass and Bakelite Accessories, Domestic Appliances, Elements, etc. Advertiser has contact with wholesalers, exporters and supply companies.—Box 6113, c/o The Electrical Review.

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WHOLESALE House wishes contact manufacturer of P.V.C. for supply.—Box 2409, c/o The Electrical Review.

EDUCATIONAL NOTICES

ENGINEERING Careers and Qualifications. Both Government and industry have announced and emphasised that young men with technical knowledge and qualifications must receive every chance of rising to the highest posts within their capacity in post-war engineering and allied industry. Write to-day for "The Engineer's Guide to Success"—200 courses—free—which gives particulars of the first-class training supplied by The T.I.G.B. for the A.M.I.E.E., A.M.Inst.C.E., A.M.I.Mech.E., A.F.R.Ae.S., A.M.I.P.E., B.Sc.(Eng.), C. & G., etc., examinations in which T.I.G.B. home-study students have gained over fifty first places. The Guide covers careers in all branches, Electrical, Mechanical, Radio, Aeronautical, etc.—The Technological Institute of Great Britain, 35, Temple Bar House, London, E.C.4. 77

LATEST A.M.I.E.E. Results. In the examination held by the Institution of Electrical Engineers 646 candidates sat who had taken B.I.E.T. courses. Of these 620 were successful in passing the examinations. We believe this record of 620 successes out of 646 entrants has never before been approached by any oral or correspondence tutorial organisation, and indicates the very high efficiency of the modern system of technical training which we have laid down. The B.I.E.T. tutorial organisation is waiting to assist you either with a short specialist course or complete training for a recognised examination. We have available a large full-time staff of instructors, while the efficiency of our extensive organisation is a byword among engineers. We guarantee—"No pass—no fee." May we send a copy of "Engineering Opportunities"? Containing a great deal of useful advice and detailed information on over 200 home-study courses and examinations, this handbook is of very real value to the ambitious engineer. Our highly informative handbook will be sent free and without obligation on request.—British Institute of Engineering Technology (established 1927—over 200,000 students), 12, Shakespeare House, 17, 18 & 19, Stratford Place, Oxford Street, London, W.1. 33

COMPANY MEETINGS

THE RHEOSTATIC COMPANY LIMITED

Record Output of Proprietary Articles

THE Tenth Annual General Meeting of the Rheostatic Company Limited was held on the 25th June, 1947, at Slough.

The report of the directors showed that the profit for the year, after making provision for depreciation, managing director's remuneration and taxation, amounted to £13,493, a substantial increase compared with the previous year's figure of £9,425. The directors recommend that £3,500 should be transferred to general reserve and that an increased final dividend of 10%, less tax, be paid on the Ordinary Stock, which with the interim dividend already paid gave a total of 14% for the year. The carry forward was slightly increased to £5,128.

Mr. L. Satchwell (Chairman of the Company) presided, and in the course of his speech said: The progress of the company is expressed to a substantial extent in the accounts which you have before you, the increased net profit being attributable not only to milder taxation but also to a considerable improvement in trading economics. The output of our proprietary articles, especially thermostats, reached a new peak in the company's history, and this must bring reassurance to the shareholders as to the utilitarian character of the product.

Delivery Prospects

The extensions so badly needed to ensure better deliveries have not been completed for reasons outside the control of the ordinary citizen. I am glad to report, however, that permit obstacles have now been overcome, building work is well in hand, and it is hoped that by the time we meet again the company's friends and customers, both home and overseas, may be better satisfied with our deliveries.

It is extremely regrettable that the Swiss subsidiary has had to be liquidated, the necessity of this step having been brought about by difficulties which arose during the war years when contact with head office was hardly possible.

Shareholders will be already aware of the fact that I have resigned the managing directorship of this company, making room for Mr. T. N. Flight and Mr. M. J. Gartside as joint managing directors, both of whom are younger men who not only have outstanding ability but have been devoted to the business for many years. The active administration of your company has been strengthened by the appointment to the Board of Mr. J. H. Stevens, who previously held the position of works manager, and you will be asked to confirm his appointment.

The difficult domestic conditions arising in our organisation due to the national crisis of last February were ably contended with, and the anxiety felt was much alleviated by the goodwill existing at all levels amongst workpeople and staff, who are to be congratulated on the company's rapid recovery.

The report was adopted. 2404

CABLE AND WIRELESS (HOLDING)

Wider Spread of Investments

THE Eighteenth Ordinary General Meeting of Cable and Wireless (Holding) Limited was held on 25th June in London, Sir Edward Wilshaw, K.C.M.G. (the Governor) presiding.

The Governor said that this was the first occasion upon which he addressed the stockholders since the Government's expressed intention to nationalise Cable and Wireless Limited (the operating company) was implemented on 1st January last. The shares owned by their company in Cable and Wireless Limited had now become the property of H.M. Government and the control of the cable and wireless telecommunications system had passed from their hands.

The other matter of outstanding interest during the year was the sale of their shareholding in Marconi's Wireless Telegraph Co. Ltd. to the English Electric Co. Ltd.

Turning to the consolidated balance sheet, they would see that the securities held at 31st December, 1946, had a book value of £9,974,125 and a market value at the time of £11,274,700, an appreciation of about 13%. The comparable figure at the end of 1945, eliminating the securities held by the operating company, was about 4½%. The profits realised during the year amounted to £322,458, compared with £208,280, an increase of £114,178.

Successful Policy

After a careful consideration of the position, the policy of the directors had been to spread the companies' investments over a still wider field, and in making each choice to endeavour to hold a reasonable balance between caution and enterprise. The results shown were very satisfactory, but it would be generally agreed, he felt sure, that with the present uncertainties prevailing and all the hindrances to productive work and enterprise it was difficult to be confident about the economic outlook.

It was not possible to make any statement at this meeting regarding the effect of the acquisition by the Government of the shares in the operating company upon the holding company's affairs. Under the Cable and Wireless Act it was provided that failing agreement on the price to be paid for the shares a tribunal should be established to fix the compensation. Attempts to reach agreement with H.M. Treasury had been unsatisfactory, and the matter would therefore be referred to an Arbitration Tribunal. They did not expect the Tribunal to sit before the autumn. As soon as they knew the amount they were to receive in negotiable Government stock they would be able to consider the best course to adopt in the interest of stockholders and to lay before them any recommendations.

In reply to a question as to what the Board proposed to do when they received from the Government the stock to be paid for the stock of the operating company, he said that it would appear to him that at some stage a scheme of arrangement would have to be made between the Preference and the Ordinary stockholders for a readjustment of the present position. It would be impossible to do that before they knew the amount and terms and conditions of the stock to be issued by the Government. Stockholders would be consulted before any decisive step was taken.

The report was adopted. 2448

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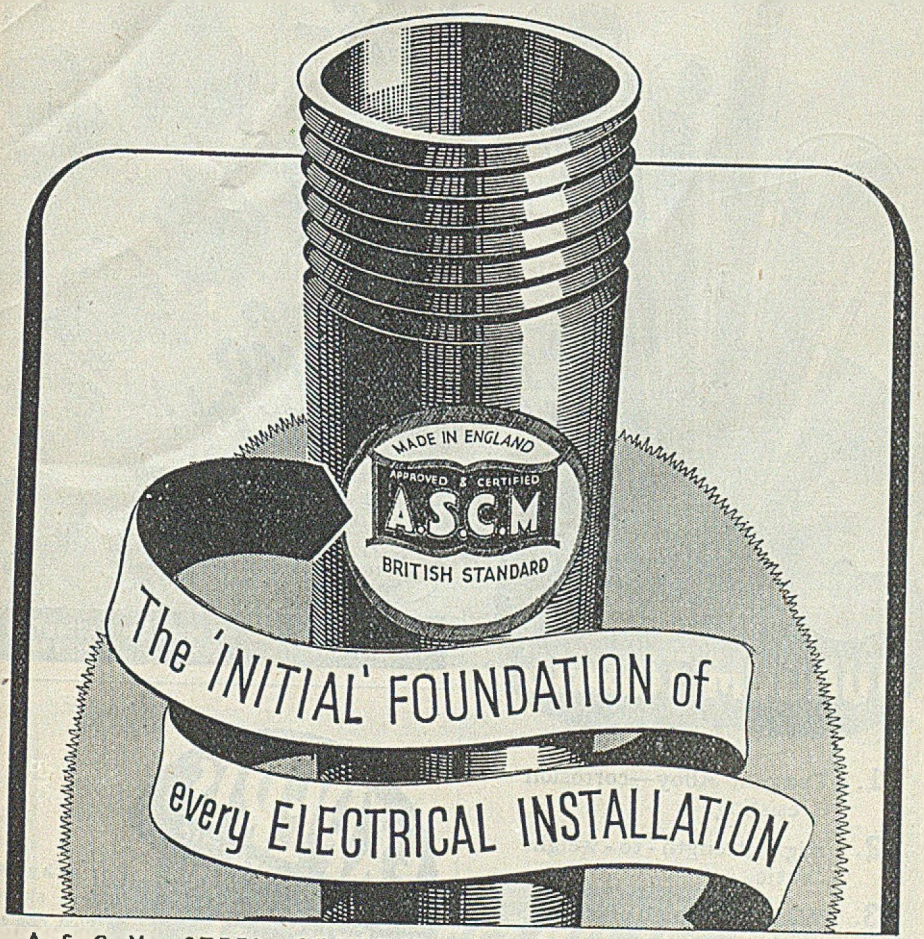

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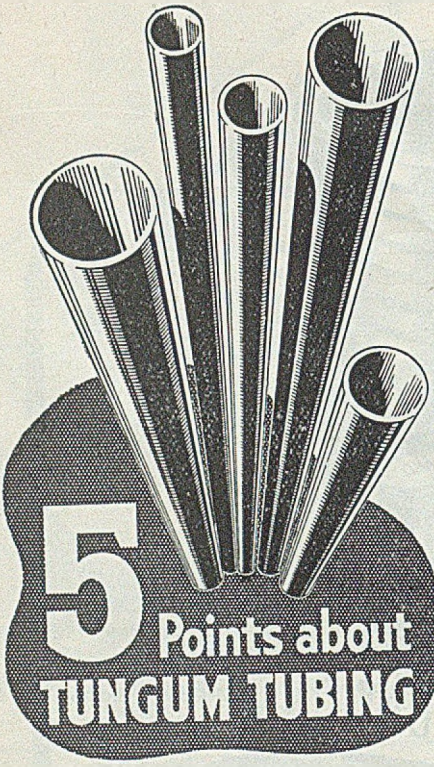

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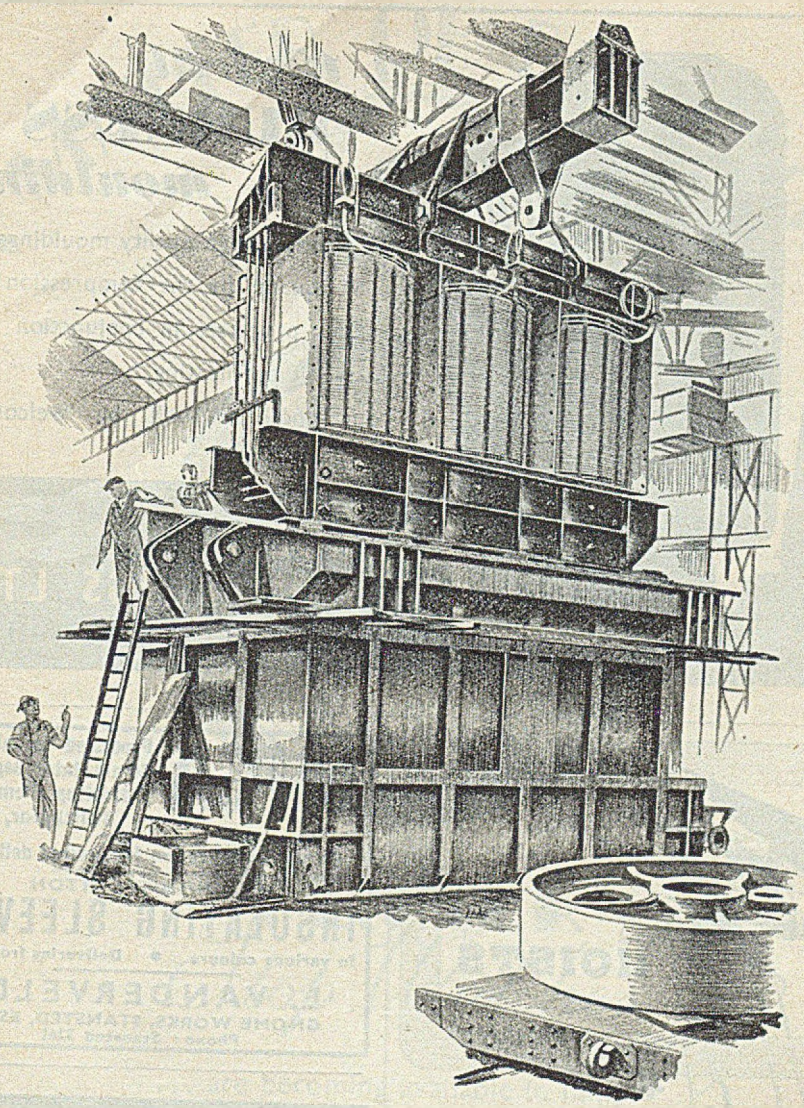

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