

wages, etc., have, as in many other branches of farming, lent greater weight to any considerations of labour saving or the obtaining of first-class results with comparatively unskilled or newly trained labour. The mechanical milking machine is an outstanding example of such a case. Americans are definitely in favour of milking machines, largely because of the labour-saving aspect. Official figures show an average increase of 112.7 per cent in the output of milk per hour of labour and, in all, a labour-saving of 52.1 per cent.

Cooling the milk after milking is another vital step in the process which does not always receive the attention it deserves. Here again, electricity is the best source of power, with attractive characteristics to the supply authority, the connected load being from  $\frac{1}{2}$  to 1 horse-power, and the return some 500 to 1,000 kwh per consumer per annum for a 30-cow herd.

Water supply is second only to field work in essential importance on the farm; on the dairy and stock farm it might almost be awarded the premier place. The tendency is still to make a simple substitution of an electric motor for the previous source of power, in ignorance of the increased opportunity afforded by electrical operation and of the great advances made in recent years. The most notable has been the perfecting of the small automatic air-pressure controlled set; the full utilization of this method of water supply gives all the advantages of main water supply but at a substantially reduced cost.

A vital requirement on a dairy farm is the provision of hot water and steam for the essential washing and sterilizing of dairy appliances and utensils. There is no technical difficulty in doing this electrically, and to the electrical industry it is a very attractive load. On an average farm the washing and sterilizing requirements alone could account for a consumption of 500-1,000 electric units a year.

On the poultry farm, too, electricity can play a substantial part.

For several purposes, the use of power for grinding mills and general farm-yard loads is used extravagantly on many farms at present. For example, a grinding mill taking anything from 5 h.p. to 15 h.p. may be used for only a few hours weekly. By suitably using a much smaller mill of a simpler and more foolproof type and leaving it to run all day and all night if required, the power requirements may be reduced to about one fifth of what they were before for the same amount of total work. In threshing, the traditional method of using a large thresher requiring about 15 h.p. could be modified to enable corresponding work to be done over a longer period with a reduction of about 50 per cent in the power unit. To the farmer the attraction would be that the present bugbear of providing eight to ten men would be removed, as by using small threshers and mechanical adjuncts, the threshing of 75 acres could be handled by three men. These would be employed on the job for perhaps a month on the aggregate, but this could be spread over the winter months, allowing of the men being diverted for urgent work.

There is scope for research to determine how, on one hand, the cost of giving rural supplies can be reduced, and how, on the other hand, the rural load can be developed with economic justification to the farmer himself, so as to attract supply on a scale which, under present conditions of use, is only too often far from economic to the supplier. Both ends of the problem are being tackled by the Electrical Research Association.

## FORTHCOMING EVENTS

[Meeting marked with an asterisk is open to the public.]

Monday, January 20

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Sir David Chadwick: "Some Problems of World Economic Development" (Cantor Lectures, 1).

ROYAL GEOGRAPHICAL SOCIETY (at Kensington Gore, London, S.W.7), at 3 p.m.—Commandant J. Hackin: "Routes anciennes en Afghanistan".

Tuesday, January 21

ROYAL INSTITUTION (at 21 Albemarle Street, London, W.1), at 2.30 p.m.—Dr. Gilbert Murray: "Hellenism".\*

WARBURG INSTITUTE (at the Imperial Institute Buildings, London, S.W.7), at 2.30 p.m.—Dr. O. Kurz: "Stellar Divinities in the East and the West".

INSTITUTION OF CIVIL ENGINEERS (at Great George Street, London, S.W.1), at 1.30 p.m.—Mr. Herbert Cecil Whitehead: "The Design of Sewage-Purification Works".

Wednesday, January 22

ROYAL SOCIETY OF ARTS (at John Adam Street, Adelphi, London, W.C.2), at 1.45 p.m.—Sir Alan Cobham: "Flight Refuelling".

GEOLOGICAL SOCIETY OF LONDON (at Burlington House, Piccadilly, London, W.1), at 3 p.m.—Mr. Frederick Chapman: "On the Sequence and Age of the Rocks in Borings in the Atoll of Funafuti". Dr. A. G. Jhingran: "The Cheviot Granite".

Saturday, January 25

INSTITUTE OF PHYSICS (London and Home Counties' Branch) (at the Research Laboratories of the General Electric Co. Ltd., Wembley), at 2 p.m.—Conference on Industrial Radiography (Chairman: Dr. V. E. Pullin). Mr. H. P. Rooksby and Miss K. L. Jackman: "Applications of Radiography to the Electrical Industry"; Mr. W. L. Harper: "X-ray Examination of Light Alloy Castings"; Dr. L. Mullins: "Recent Developments in the Photographic Aspects of Radiography".

## APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

LECTURER IN COOKERY AND DIETETICS to the Liverpool Education Committee—The Director of Education, 14 Sir Thomas Street, Liverpool 1 (January 22).

TEACHER OF SPEECH TRAINING in the Aberdeen Education Committee's Schools—The Director of Education, Education Offices, Municipal Buildings, Castle Street, Aberdeen (January 25).

SPEECH THERAPIST in the Leicester Education Committee's Schools—The Director of Education, Education Department, Newarke Street, Leicester (January 25).

DOMESTIC SCIENCE TEACHERS to the Bradford Education Committee—The Director of Education, Town Hall, Bradford (January 25).

LECTURER IN MATHEMATICS at the North Staffordshire Technical College—The Clerk to the Governors, Town Hall, Hanley, Stoke-on-Trent (February 1).

PSYCHIATRIC SOCIAL WORKER in the Department of Psychological Medicine—The Superintendent, Guy's Hospital, London Bridge, London, S.E.1.

## REPORTS AND OTHER PUBLICATIONS

(not included in the Monthly Books Supplement)

Great Britain and Ireland

Transactions of the Royal Society of Edinburgh. Vol. 60, Part 1, No. 8: The Soils and Vegetation of the Bin and Clashindarroch Forests. By Dr. A. Muir and Dr. G. K. Fraser, with Notes on Afforestation by Dr. H. M. Steven. Pp. 233-342+4 plates. (Edinburgh: Robert Grant and Son, Ltd.; London: Williams and Norgate, Ltd.) 17s. [1912]