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Report for 1935

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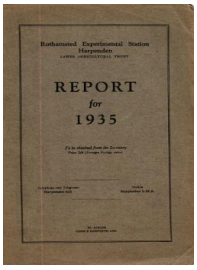

Farm Husbandry Investigations

Rothamsted Research

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The recent analysis undertaken by B. H. Wilsdon shows that in London the rate of deposition of soluble matter is less in summer than in winter. This may be partly due to a lower rate of production: but taken in conjunction with the Rothamsted results, may indicate that summer conditions favour the transport of this fraction into the surrounding country. The seasonal distribution indicates that little of what we collect originates in the domestic fires of the neighbourhood, which are much more active in winter.

The fact that only 27 per cent. of the deposit at Rothamsted is non-combustible and insoluble in water shows that very little can be ascribed to dust from neighbouring fields and roads. Most of it comes from other sources.

At some of the other centres much higher values were obtained; near the Liverpool Docks, for instance, the atmospheric deposit amounts to almost one ton per acre per annum as against our 2½ cwt. Here also, as at Rothamsted, about half the soluble material and about one-third of the insoluble material is combustible: the difference in the amounts of these deposits appears to be much greater than the difference in their composition.

FARM HUSBANDRY INVESTIGATIONS

The investigations outlined above necessitate a considerable amount of field work which is carried out on the farm but this does not occupy anything like the whole of the land available. The classical fields are of course given up to their own crops, but all the newer experiments are made on the non-classical fields. Only certain areas, however, are suitable and the land available in any year is further restricted by the wholesome rule, to which we adhere closely, that an area of land once used for an experiment should not come again into experiment until after the lapse of three years. There is thus a considerable area of land to be farmed on ordinary commercial lines, besides numbers of live-stock needed for the consumption of the farm produce or for the testing of the value of the various fodder crops. Numerous opportunities arise for carrying out farm husbandry investigations by the farm manager and the farm recorder acting in conjunction with other members of the staff. These investigations are not connected with the main programme, but they are in all cases of considerable agricultural importance. Those at present in hand are set out below.

1. A comparison of electrical power with the tractor or stationary oil engine for the performance of work about the farm buildings.

This is being done under the aegis of the Royal Agricultural Society and it consists in finding the equivalence between units of electricity and gallons of paraffin for the various operations, account being taken of such details as starting and stopping. The results are expressed in terms of power consumed per ton of material threshed, ground, etc. In all cases the work is to be done in the ordinary farm way using ordinary farm labour; the results are to show what happens on good but ordinary farm conditions. They were discussed at a Conference held at Rothamsted in February, 1936, the report of which is now issued (p. 13).

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2. The Production of Lamb. A breeding flock of 200 "Half-bred" ewes is maintained for ordinary farm use, and on this experiments are made :

(*a*) to test the effects of flushing ;
(*b*) to compare four-teated ewes with two-teated ewes as mothers ;
(*c*) to discover whether it is really necessary to import continuously new stock from the North or whether the breeding ewes can be produced here ;
(*d*) to study the advantages and disadvantages of breeding from ewes in their first year.

3. The Production of bacon. Some 20 breeding sows are kept and the progeny sold mostly for bacon.

Among the problems studied have been :

(*a*) the relative values of wet and dry feeding ; of restricted and unlimited feeding ;
(*b*) the value of green food ;
(*c*) the effect of the state of division of the food ;
(*d*) the effect of exercising the animals on the quality of bacon they yield.

THE DISSEMINATION OF THE RESULTS

This is one of the most difficult problems in connection with research work and it has no simple solution.

Several methods are adopted at Rothamsted :

1. The scientific papers are published in the appropriate journals and periodically collected as Volumes of Memoirs. At suitable times a monograph is published in which the various scattered papers dealing with a particular subject are combined and the necessary connecting and rounding-off experiments are made so as to give a coherent account of its present position. Seven of these have already been published dealing with Soil Fertility (the Director) ; Physical Properties of the Soil (Dr. Keen) ; Soil Micro-organisms (a joint production) ; Experiments on Grassland (Dr. Brenchley) ; British Aphides (Dr. Davidson) ; Soil Microbiology (Mr. Cutler and Miss Crump) ; the Woburn Field Experiments (the Director, Dr. J. A. Voelcker, with a Statistical Report by W. G. Cochran). The Director's Monograph on Soil Conditions and Plant Growth has passed through six editions and a seventh is in preparation ; it has been translated into French, German, Spanish, Russian and Ukrainian and pirated in China by photographic reproduction, omitting the name of the publisher but inadvertently including that of the printer. Other of the Director's books have been translated into Portuguese, Italian and Armenian and negotiations have been made for translation into Japanese, Hungarian and other languages. Dr. Keen's monograph on the Physical Properties of the Soil has been translated into Russian and Dr. Brenchley's monograph on grassland into German.

2. The practical and technical information is disseminated in three ways :

(*a*) by Conferences at Rothamsted at which practical men are