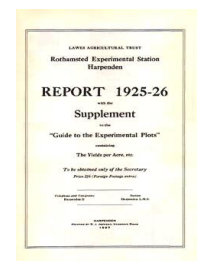


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ROTHAMSTED  
RESEARCH

## Report 1925-26 With the Supplement to the Guide to the Experimental Plots



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### Work in the Empire

#### Rothamsted Research

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Atterberg considered that soils could be classified by measuring the moisture content at which the break occurred. We have not been able to reproduce these results at Rothamsted, our curves being always smooth and unbroken within the limits of experimental error. Dr. Haines has now shown both theoretically and experimentally, that the capillary effects of water in the pores of a soil block give rise to cohesion values that increase to a maximum at the highest moisture content the soil block can hold before it becomes disintegrated. This suggests that the two sections of Atterberg's curve may be attributed to two types of cohesion, one predominating at high moisture content and due to capillary forces, and the other predominating at low moisture contents and due to the colloidal nature of the soil. The features of these two factors are such that, when combined, a broken curve might be expected with certain types of soil. Quantities of the colloidal material have been obtained by means of the Super-centrifuge in order that its properties and its effects on the soil may be studied.

Dr. Keen has acted as convener of a committee, including Professors Comber of Leeds, Hendrick of Aberdeen and Robinson of Bangor, appointed by the Agricultural Education Association to investigate methods of mechanical analysis of soil, it being now known that the old method used for over twenty years in this country is untrustworthy, since it fails to secure complete disintegration of the soil crumbs. After full tests at Rothamsted and elsewhere, Professor Robinson's method has been officially adopted, and the more important of the older analyses will now be revised.

A measure of soil tilth has been obtained by studying the degree of disintegration secured under standardised laboratory conditions on soil brought in from the field.

#### WORK IN THE EMPIRE.

The water relationships of the soil, important as they are in British farming, are of supreme importance for great parts of the Empire where low rainfall compels recourse to irrigation for crop production. An increasing number of problems is being referred to Rothamsted from various regions of the Empire, and agricultural experts have been sent from India and Africa to study methods and problems in our laboratories.

The Empire Cotton Growing Corporation has made provision for a soil physicist to carry out investigations at Rothamsted. Dr. E. M. Crowther, who holds this post, last year studied some of the soil problems of the Gezira, the great irrigated area between the White and Blue Niles, for which purpose he worked in the laboratories at Wad Medani for the six months, October, 1925, to March, 1926. (See Paper No. xxxiii, p. 67.) He succeeded in tracing relationships between early rainfall and crop yields and between permeability of the soil and its fertility, a rapid rate of movement of water being associated with a low salt content and high fertility. Some of the problems have been brought back to the Rothamsted Laboratories for further investigation.