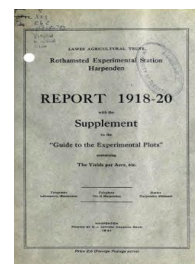


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Report 1918-20 With the Supplement to the Guide to the Experimental Plots Containing the Yields per Acre Etc.



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Mycological Investigations

Rothamsted Research

Rothamsted Research (1921) *Mycological Investigations* ; Report 1918-20 With The Supplement To The Guide To The Experimental Plots Containing The Yields Per Acre Etc., pp 24 - 24 - DOI: <https://doi.org/10.23637/ERADOC-1-109>

MYCOLOGICAL DEPARTMENT.

This department was instituted at the end of 1918 under the charge of Dr. W. B. Brierley. Although the continuity of work during the following two years has been sadly interrupted by laboratory alterations, much has been accomplished. The main investigations are summarised below.

1—*The Soil Flora.* The micro-flora of the soil is being studied by Dr. Brierley, Dr. Muriel Bristol and Miss Jewson. The algae and fungi are isolated in pure culture and cultivated *in vitro* on various food media under controlled and standardised conditions. Their identity is determined and a study made of their physiological properties and their function in the soil economy. A Rothamsted monograph on "Soil Fungi and Algae" is in preparation.

2—*The Fungal Species.* Dr. Brierley is carrying out investigations on the species concept in the fungi, this work being of fundamental importance in order that fungi—in particular those causing plant disease—may be accurately codified. Dr. Henderson Smith is employing standardised serological methods in the elucidation of this problem, this technique supplying a series of tests of a delicacy not yet obtained by chemical means. During Dr. Brierley's investigations a new form of *Botrytis cinerea* appeared, and as this has important bearings on certain basic concepts in biology it has been fully studied (p. 51).

3—*The Killing of Fungal Spores.* The greater part of remedial treatment in plant disease depends on the killing of fungus reproductive bodies by toxic agents. Such treatment is empirical for there is little knowledge of the exact relations between spores and poison. Dr. Henderson Smith is studying this problem in detail and has thrown much light upon the fundamental nature of the disinfection process (p. 52).

4—*Wart Disease of Potatoes.* This investigation is being carried out by Dr. Brierley and Miss Glynne by the aid of a special grant from the Ministry of Agriculture and Fisheries. Laboratory work is done at Rothamsted and methods are being devised to extract Wart Disease sporangia from infested soil, to evaluate the toxic effect of chemical substances upon the sporangia and to test the viability of the sporangia *in vitro* after treatment. Glasshouse and field trials are carried out at Ormskirk, where experiments on soil sterilisation, alternative hosts, manurial, cultural and other treatment are in progress.

5—*Bacterial Blackneck of Tomato.* Professor K. Nakata, of the Kyushu University of Japan, is investigating this disease, particularly from the point of view of its production by means of bacterial extract.

During 1920, Dr. Brierley represented Great Britain at the American Phytopathological Congress, and subsequently spent some months visiting educational and research institutions and the various regions of agricultural and biological importance in Canada and the United States.