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# Annual Report for 1914 With the Supplements to the Guide to the Experimental Plots Containing the Yields per Acre, Etc.



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## Introduction

### Rothamsted Research

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## INTRODUCTION

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John Bennet Lawes was the founder of the Rothamsted Experimental Station. He began experiments with various manurial substances, first with plants in pots and then in the field, soon after entering into possession of the estate at Rothamsted in 1834. In 1843 more systematic field experiments were begun, and the services of Joseph Henry Gilbert were obtained as Director, thus starting the long association which only terminated with the death of Lawes in 1900, followed by that of Gilbert in 1901.

The Rothamsted Experimental Station has never been connected with any external organisation, but was for many years maintained entirely at the cost of the late Sir John Lawes. In 1889 he instituted a Trust for the continuance of the investigations, setting apart for that purpose the old laboratory (which had been built by public subscription, and presented to him in 1855) certain areas of land on which the experimental plots were situated, and £100,000.

By the provision of the Trust Deed the management is entrusted to a Committee nominated by the Royal Society (four persons), the Royal Agricultural Society (two persons), the Chemical and Linnean Societies (one each), and the owner of Rothamsted.

Mr. A. D. Hall was appointed Director in 1902 and held the position till he resigned in 1912, when the present Director, Dr. E. J. Russell, was appointed. Mr. Hall brought about great developments, re-organising the work, increasing the staff, and considerably extending the buildings and laboratories. In 1906 Mr. J. F. Mason, M.P., presented the Committee with £1,000 for the building and equipment of the "James Mason" Bacteriological Laboratory, together with an annual grant towards its maintenance. In 1907 the Goldsmiths' Company made a grant of £10,000, the income of which is devoted exclusively to the investigation of the soil. The Permanent Nitrate Committee also made a grant of £2,000 to the endowment. In 1913 Lady Gilbert presented the library of the late Sir J. Henry Gilbert. The Hon. Rupert Guinness provides funds to maintain a special research chemist. The collection of smaller donations and annual subscriptions is the work of the Society for extending the Rothamsted Experiments which was founded in 1904, and the sums thus obtained provide a valuable contingency fund.

During the year 1911 a scheme was published from the Board of Agriculture for the encouragement of agricultural research with funds provided by the Development Commission, and this scheme established or assisted a certain number of institutes for fundamental research, each dealing with one great branch of the subject. The Rothamsted Experimental Station is recognised as the Institute for dealing with Soil and Plant Nutrition Problems. In accordance with this scheme an annual grant of £2,500 was made, which has this year been increased to £2,850.

Besides the regular staff, a number of post graduate workers and holders of scholarships carry out their investigations at Rothamsted, and investigators from other institutions periodically spend a certain amount of time in the laboratories studying

analytical methods or ways of getting over difficulties that have arisen in the course of their work.

These developments necessitated a considerable extension of the laboratory and of the farm. The first steps consisted in taking over 230 acres of land in 1911 on a 77 years' lease, and this, together with the Trust land, gave a self-contained farm capable of being worked with great advantage to the experiments. Suitable farm buildings and cottages were erected in 1913. A new wing was also added to the laboratory, and this was opened on June 27, 1913, by the Rt. Hon. Walter Runciman, M.P., President of the Board of Agriculture.

In 1914 the old laboratory, which had for some time revealed certain structural defects, was taken down and a new laboratory was begun, to commemorate the centenary of the birth of Sir J. B. Lawes in 1814 and of Sir J. H. Gilbert in 1817. Altogether these improvements cost over £21,000, of which £10,000 was given in grants from the Development Fund and over £9,000 collected by public subscription; of this £6,000 was obtained as the Lawes and Gilbert Centenary Fund in 1914.

The field experiments, which began in 1843, have on some of the plots been continued without break or alteration up to the present day; on the Broadbalk Wheat Field certain rearrangements were made in 1852, in which year also the Barley experiments on the Hoos Field began. The leguminous crops on the Hoos Field were started in 1848, the experiments on Roots have been continued on the same field since 1843, and on the same plan since 1856. The grass plots began in 1856, and the rotation experiments in 1848.

It is impossible to exaggerate the importance of continuing the experimental plots at Rothamsted without any change, as nowhere else in the world do such extensive data exist for studying the effect of season and manuring upon the yield and quality of the crop, and for watching the progressive changes which are going on in the soil. Year by year these plots are found to throw light upon new problems in Agricultural Science; in all directions they continue to provide material for investigations upon points which were not contemplated in the original design of the experiments, so that it is impossible to foresee when and how they will not become useful and provide indispensable material for the solution of problems undreamt of at the present time.

The maintenance, however, of the old data throws a heavy burden on the Experimental Station. There are 210 plots, and every year 243 samples have to be taken with proper precautions and put into store for future reference. In addition, many analytical determinations are made. During the past and the present season complete soil samples are being taken for analysis, to enable a comparison to be instituted with the set of samples taken in 1894, and thus to study the soil changes that have gone on during the last twenty years. A complete botanical analysis of the grass plots is also in hand.

It should be remembered that the object of the Rothamsted Experiments is to study the soil and the crop, and only indirectly to find the most paying method of manuring; hence neither the nature nor the quantities of material applied are to be taken as indicating the manures which should be used in practice.