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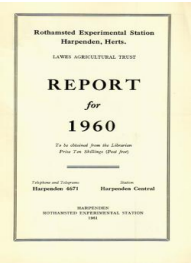
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The White Books

H. V. Garner

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The White Books

by H. V. Garner

From the earliest times hand-written records of operations on the Rothamsted field experiments have been entered in a set of notebooks known by long custom as the " White Books ". These are substantial volumes bound in white vellum having a certain weight and dignity in keeping with the unique material they contain. The most important are those dealing with the classical experiments of Lawes and Gilbert; these, listed in order of date, are as follows:

Broadbalk, 3 vols: 1843–1912; 1912–1957; 1958 onwards.
Geescroft, experiments on leguminous and cereal crops 1847–1886.
Agdell, 1848 onwards.
Hoosfield Barley Experiment, 2 vols: 1852–1939; 1940–1959.
Park Grass Experiment, 4 vols: 1854–1880; 1880–1919; 1919–1959, also 1873 Botanical Notes by W. B. Hemsley.
Various Experiments, 1870–1923: includes Hoosfield Wheat and Fallow 1870–1946 and Rothamsted Garden Clover 1871–1959.
Barnfield Experiments on Sugar beet and Mangold Wurzel, 2 vols: 1871–1931; 1932–1959.

There is no White Book for the early experiments on Barnfield, which started in 1843 and involved in turn white turnips 1843–48, swedes 1849–52, barley 1853–55, swedes 1856–70. The Hoosfield potato experiments and their residual years in cereals are recorded very briefly in the White Book of " Various Experiments ", as are also the early experiments on leguminous crops on the same field.

There is a gap of four years, 1924–27, in which the annual experiments were unrecorded, but a volume was opened for them in 1928, and others have since been added. It happens that the missing period was the one during which the experimental designs developed by R. A. Fisher were first appearing on the Rothamsted fields. At this time, however, the plans and yields of the annual experiments were published in the *Rothamsted Annual Report*.

Books were started for the new long-period rotation experiments as they were begun from 1930 onwards. In all, the existing White Books number 22 volumes. They contain the dates of the chief cultivations, sowing and harvesting; there are also copies of the manure sheets. The progress of the crop is recorded in plot-by-plot observations made early in the season and again just before harvest. These routine entries are enlivened by notes on special happenings, such as freak storms, uncontrollable growth of weeds, epoch-making changes in technique and the very rare instances when manures found their way on to the wrong plots or produce got mixed up before weighing. The entries are quite anonymous, not even initialled; the handwriting is of a very high standard, and some of the manure tables are minor works of art.

There are many interesting notes that bring the old fields to life: thus in the Broadbalk books we read that in 1883: " The plant was thin upon the ground the seed having been sown in the worst seed-

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bed as regards tilth that could be imagined, the oldest men on the farm remarking that they had never seen wheat ' go in ' worse, but if advantage had not been taken of that opportunity no other occurred for some weeks afterwards owing to the drenching rains of October and November. The ears of the wheat are however remarkably large and plump berried and the straw is stiff and strong which confirms the old adage that ' wheat sown in the slop becomes heavy in the top '."

Broadbalk, of course, saw many changes of technique: " Season 1901. Crop cut August 1, 2, 3. For the first time in the record of the experiments the crop was cut with a self-binding reaping machine, which did its work remarkably well." Fifty-six years later: " Combine harvesting. This year (1957) all plots were cut by self-propelled combine harvester for the first time. . . ."

Broadbalk has several " dell holes ", the fallen-in chalk pits used long ago to chalk the surface soil. One hole had a different history: " *Zeppelin Raid* (1916). On September 2–3 night a Zeppelin dropped bombs in this locality in the early hours. A bomb was dropped in Broadbalk Field on Plots 5 and 6 making an enormous hole. The clay was scattered in all directions. The hole measured 18 feet across and 11 feet in depth about $\frac{2}{3}$ on Plot 6 and $\frac{1}{3}$ on Plot 5. Beyond burying one of the shocks (10 sheaves) on Plot 6 and breaking a few panes of glass in the cottage windows no other damage was done."

Agdell rotation field carried a patchy crop of wheat in 1883. The note was: " Owing partly to the unfavourable conditions of the seedbed, and partly to the trampling of horses feet during a stag hunt soon after the seed was put in, much of the corn perished in the ground."

The record of Barnfield tells of a long struggle against an exceptionally difficult soil which often gave poor seedbeds for sugar beet and mangolds, and appalling carting conditions. Thus in 1874, when the field was in sugar beet we read: " The land was in a very sticky condition from frost thawing the afternoon of the first day's carting, but in a much worse state the next day. The cart wheels cut into the ground exceedingly, carrying the soil from one plot to another in a fearful manner. It occupied one man the whole day to clean the wheels after arrival at the top of the field."

Mistakes in manuring were exceedingly rare, and when they occurred, or it appeared that they might have occurred, the facts were recorded in the White Books. For example, the notes on the Park Grass Plots in 1867 tell us that: " Mr. Lawes was of the opinion from the appearance of the crop that the nitrates had not been previously sown, he therefore directed them to be put on although the actual table drawn for the sowing of the minerals (in December) had the nitrates entered in it and some of the men thought it had been sown and others that it had not, and an appeal to Robert Dudgeon who was then at the asylum gave no conclusive result."

The reason that mishaps have some prominence in the old White Books is that, as in other walks of life, if things go well no comment is called for. There is abundant evidence of the competence and integrity of the men who tended the field experiments and assembled the original data.

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In 1959 the Plot Committee examined the time-honoured recording system and decided that the following additional information should be included for every experiment: (i) numerical results as drawn up by the Statistical Department; (ii) electronic computer sheets giving individual plot yield and other useful data; (iii) field observations by the sponsors of individual experiments; (iv) index of laboratory investigations on soils and produce; and (v) photographs to illustrate special points. The material will be assembled in loose-leaf form and at convenient intervals will be indexed, microfilmed and bound.

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