

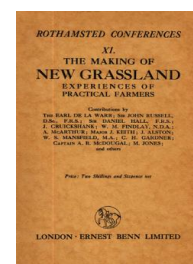
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The Making of New Grassland

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Rothamsted Conference on Grassland

The Earl De La Warr

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ROTHAMSTED CONFERENCE ON GRASSLAND

BY THE EARL DE LA WARR

Parliamentary Secretary to the Ministry of Agriculture

I AM glad to have this opportunity of attending one of the series of important Conferences that are now held, at intervals, each winter at Rothamsted. I had always looked upon Rothamsted as the head-centre of fundamental research concerned with the discovery of basic facts and principles rather than with the attainment of any tangible advantage in the first instance. The eminent scientist Huxley once said that the great end of life is not knowledge, but action, and I am glad that it has been found possible at Rothamsted to combine fundamental research with work for more or less well-defined practical objects of immediate economic importance. For many years the work at Rothamsted was applied to the increase of food production: its application is now to costs of production; to increasing the output per unit of labour and of money put into the land, and to reducing wastes and losses. An outlook of this kind is an invaluable stimulus to imagination and observation. Some of the most important problems in agricultural production, at present, are associated with grassland, and it is to consider such problems that we are met here to-day.

My interest in grassland questions is not derived solely from my activities as a Sussex farmer farming a large area of grassland, nor even from my position as Parliamentary Secretary to the Government Department responsible in this country for agriculture, in which live stock and live-stock products play so predominant a part. As a member of the Empire Marketing Board, which has to survey the agricultural problems of the British Commonwealth of Nations, I realize that grass is the greatest of the Empire's crops. It is at the same time the most neglected, and it can be no exaggeration to say that the carrying capacity of the Empire's pastures could readily be doubled with proper treatment. Of the Empire's population of 450 millions, the 300 million farmers are practically all either owners of, or directly interested in, domestic live stock.

We possess in the Empire one-third of the world's cattle and one-half of the world's sheep and goats.

We have made a beginning with a co-operative attack on the Empire's grassland problems, and the team-work between agricultural investigators in Scotland, Australia, New Zealand, Kenya and Southern Rhodesia, under the leadership of Dr Orr of the Rowett Research Institute, on the mineral content of natural pastures is an outstanding example of such co-operative research.

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The demand for animal products is bound to increase in the future, not merely on account of the increasing population, but also on account of the rising standard of living of that population. It is a significant fact that a higher standard of living results in an increased consumption of meat and other animal products.

We usually think of the agriculture of this country as being of small account compared with that of the big Dominions, but when you come to compare the output of live stock and live-stock products you find that the United Kingdom is in this respect still far ahead of any one of the Dominions. In England and Wales about 70 per cent. of the agricultural output is of live stock and live-stock products, totalling some £154 millions worth. Notwithstanding this large production we import about £120 millions worth of live stock and meat, and a further £160 millions worth of other live-stock products. There is still therefore a vast market awaiting capture by the home producers.

The acreage of permanent grass in 1930 was 15,545,000 acres, and of clover and rotation grass 2,424,000 acres, so that there are some 19,000,000 acres of grass in this country, which compares with 7,410,000 acres of arable land other than temporary grass. Even this is not a complete picture, since there were over 5,250,000 acres of rough grazings in 1930. Since the war there has been a very large turnover from arable to grass, and this is no doubt due to an effort to adjust costs of production to prices.

In the depression of the eighties and nineties, Scottish farmers, as we shall no doubt hear presently, solved their economic difficulties by converting the normal four-course rotation, with its 50 per cent. of corn and 25 per cent. of roots, into a six- or seven-course rotation with two or three, instead of one, years' grass. With a rotation containing three years' grass it is still possible to allot 43 per cent. of the land to corn and, at less expense, to produce as much corn as on the former 50 per cent. Indeed, as a result of using *Mr Findlay's* modern grass-seed mixtures, the difficulty has been to secure a crop that will stand up.

So with roots, reduced from 25 per cent. to little more than 14 per cent., it is possible, by being able to concentrate on a smaller area, to produce, if not quite as much in the aggregate as formerly, at least sufficient, in the light of modern knowledge, to satisfy all requirements of animals in winter.

Mr Cruickshank, from the heart of Aberdeenshire, has abolished roots from his strong land and now pins his faith to silage. As you know, it has for long been a maxim among cattle-feeders that, for winter fattening, roots are almost, if not quite, indispensable. We may hear to-day that the succulence so desirable in a fattening diet can be suitably supplied in the form of silage. This is a rather important point, because if everybody turns to grass the market for first-class beef, which it is so desirable to extend and even-out over the year, will be

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more than ever liable to seasonal gluts and shortages; and the same will apply to the store market—autumn gluts and spring shortages.

The objection is often raised that it is only in a comparatively wet and cool climate, such as prevails in many parts of Scotland, that one can hope to establish satisfactory temporary leys. While the establishment of good pastures may be difficult in the driest parts of England there is abundant evidence to show that the practice is capable of much wider adoption than is generally supposed. We can see examples of this on the Rothamsted farm. It would appear that the main considerations in establishing a good sward, anywhere, are soil fertility—particularly with regard to humus and phosphates—and the inclusion of wild white clover in a mixture of grasses suited to the particular circumstances.

It is possible to control moisture to a large extent by the development of a close sward of grasses and white clover and by not grazing too closely where protracted spells of drought are common.

The arable farmer, turned grazier, will find that successful grass-farming is a much more intricate business than it seems. The limit of development has not been reached with the application of basic slag and the inclusion of wild white clover in the seed mixture. For the establishment of a successful sward a nitrogenous manure is, in certain circumstances, indispensable. In Germany, where grassland is strictly limited, the farthest stage in the productiveness of pastures has been reached by intensive complete manuring and short-period rotational grazing. There appear to be possibilities in the same direction in this country, but more particularly where, as in Germany, grassland is limited as in suburban farming or, perhaps, in small-holdings. But the new system has its lessons for all graziers. For one thing, it indicates the possibility of extending the grazing season—lengthening it at both ends.

Mr Keith tells us that store cattle wintered-out thrive better the following summer and are more profitable than similar cattle housed and well fed over the winter. If winter grazing is to be extended, and it is important that it should in the interests of animal health and a more regular supply of beef and mutton, then we must consider ways and means of increasing the supply of winter grass. This is possible by improving our pastures so as to encourage winter-green grasses. Because we can choose the plant species, temporary leys and new leys are generally more responsive than old pastures, which so often abound in plants that die down over the winter. Our chief competitors in dairy produce rely chiefly upon grass for cow-feeding, and, with the exception perhaps of New Zealand, no country in the world is better adapted than ours for grass production. And fresh green grass is at least one commodity which cannot be imported.

There are, of course, obvious drawbacks to the extension of temporary leys in, say, the arable districts of East Anglia. Wide open

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fields are the ideal for corn ; small sheltered fields are best adapted for grazing. It is difficult to combine the two. There are, also, the difficulties of fencing and water-supply and the fact that new leys, on strong land, do not carry horned stock well in winter, at least not for several years. But water-supply is not so difficult where only sheep are concerned, and, in any case, there is the alternative of mowing temporary leys and of further utilizing them for sheep-grazing in winter.

With the decline in arable sheep-folding, and the corresponding increase in grass flocks, the markets in late summer and autumn tend to be glutted with lambs and fat ewes. By improving winter grazing it should be possible to spread production of mutton and lamb more evenly over the year. Perhaps *Mr McDougal* will tell us how to become less dependent on the Scottish borders for our grass ewes.

The Scottish system of combining grass and corn in one rotation, as opposed to East Anglian grass and arable in water-tight compartments, is doubtless sound for Scottish conditions, as, indeed, it has been proved sound in northern and western England, but there are difficulties in the way of its complete adoption in the arable regions of eastern England. Some have been indicated. There are others. On the lighter soils of the south, wire-worm, for which so far there appears to be no remedy, will frequently ruin the corn crop following grass. The principle, however, of the Scottish system can be and is being increasingly adopted by substituting lucerne for temporary leys. Lucerne is a plant par excellence for the drier regions of the south. As a soil-improver I am doubtful whether it is surpassed even by wild white clover, and as hay its virtues are too well known to need elaboration.

We in the south may not be able to compete with the north in luxuriant summer pastures, but we have compensations in our longer growing season and in our milder winter, and it is for us to develop these advantages to the full. We can do more out-wintering, particularly on established pastures that are not water-logged, and we might be devising ways and means of providing more winter shelter in the fields, either in the form of hovels or shelter-belts. Then we can look forward to corn-growing in larger fields and on mechanized lines.

[In the unavoidable absence of Earl De La Warr this paper was not read at the Conference.]