

culling of the offspring that failed to reach the required standard.

From Bakewell's day onwards cattle breeding was in favour among great and wealthy landowners as well as rich tenants of large farms, because the old open-field system had been superseded by enclosed farms, and control of mating was possible. Formerly, as Lord Ernle succinctly puts it, for at least ten centuries "stock breeding, as applied to both cattle and sheep, was the haphazard union of nobody's son with everybody's daughter", and even in the great age of breeding, say 1770-1870, an infinity of crosses was tried. Almost every so-called breed was crossed with almost every other: Devon with Hereford, Hereford with Shorthorn, Shorthorn with anything and everything, Devon with Sussex and so *ad infinitum*. Few, if any, of the British breeds can claim that its contemporary external characters are more than a hundred and fifty years old; most are much less than a century, and the British dairy-breed herd books are more recent still: Jersey 1883, Ayrshire 1878, Guernsey 1885, British Friesian 1912.

It is on the foundation of such facts as these that Mr. Prentice bases his onslaught on the conception of 'pure bred' breeds of cattle. The old principle that 'like begets like' is a fallacy, for brothers and sisters vary widely, and this is no safe rule to breed by. Again, he holds that the mating of high-producing cows to sons of high-producing cows is likely to lead to failure. In place of this system he suggests the use of the Mount Hope index. This implies that the milk and butter-fat must be recorded every year for every daughter and every mate of a given bull, and that the inheritance the bull transmits is found by comparing the average production of all the bull's mates with the average production of all his daughters.

Mr. Prentice's history is stimulating. His criticism of breeding methods is equally so, and his demand that the Mount Hope index, which is based upon performance and not upon type and pedigree, should be used is certainly one that deserves careful consideration; although as Prof. H. G. Robinson has pertinently remarked, "If the bull is regarded as being at least half the herd, the cow shapes the destiny of her own progeny. . . . A good bull deserves good cows." G. E. FUSSELL.

## THE CLIFTON PARK SYSTEM

### The Clifton Park System of Farming and Laying Down Land to Grass

A Guide to Landlords, Tenants and Land Legislators. By Robert H. Elliot. Fifth edition. Pp. 261+8 plates. (London: Faber and Faber, Ltd., 1943.) 12s. 6d. net.

THIS is a new edition of a book long out of print but well known to agriculturists in the early years of the present century. It was no ordinary volume on grassland management, much less a text-book. It was a book with a purpose, namely, to bring to the notice of farmers, landlords, and if possible the administrators, the merits of a certain system of farming as a means of meeting the prevailing agricultural conditions. The interest of the book to present-day readers lies not so much in the detailed methods adopted by Elliot in the field, but rather in light shed on the agricultural problems of the closing years of the nineteenth century and the picture it

gives of a man of highly independent mind striving to influence his fellow farmers with rather less than no support from official sources. Indeed the Board of Agriculture and the newly formed agricultural colleges were supporting the "fertilizer and feeding stuff" approach to farming, which in Elliot's view would be largely unnecessary under a rational system of grassland management.

R. H. Elliot, after a period spent as a coffee planter in India, returned to his property at Clifton Park in Roxburghshire and devoted more than thirty years to developing and demonstrating on his farm an alternate husbandry of four-year leys followed by four arable crops for livestock. In this he saw a method of reducing costs, maintaining and improving soil fertility, and increasing the output of the land. This rotation differed from those usually employed at the time in several respects: the grass was left down longer before being ploughed up, the quality of the grass and clover seeds was very much better than was commonly attained at that time, certain species of plants chosen for their deep rooting and drought-resisting habits were included in the seed mixtures.

As a planter and later as a landlord, Elliot was much impressed by the results of soil exhaustion, which he rightly viewed as a matter of the greatest national consequence. He had no faith in artificials as a remedy, and argued eloquently in favour of organic matter coupled with nitrogen derived from legumes as the basis of soil fertility. These could be obtained most cheaply from good grass well stocked, and each time the land was so treated the results improved. As fertility rose the dependence on artificials and concentrated stock foods steadily diminished, as the results of his farming operations showed.

In the course of his work Elliot raised many points of grassland husbandry that called for research for their final solution. This research was not at the time forthcoming. Many of his ideas have stood the test of time; late-flowering red clover, for example, regarded by him as the mainstay of his leys, still maintains its reputation. In his condemnation of rye-grass he was perhaps too sweeping, as improved strains of this grass have abundantly justified themselves on the more fertile soils. His deep-rooting plants on which he counted so much for opening up poor thin soils are not widely included in present-day mixtures, although their good points for certain conditions are admitted. Other pasture plants, notably wild white clover, scarcely mentioned by Elliot, who sowed the ordinary Dutch clover, have had a most profound influence in the productivity of grassland.

Many of Elliot's proposals which had little support in his time came to pass later. The trade in agricultural seeds has been greatly improved by the Seeds Act 1920 and the resulting activities of the Seed Testing Station at Cambridge. Experimental work on herbage plants and grassland problems has developed in a variety and to an extent that he could not possibly have foreseen, though undoubtedly he would greatly have welcomed them. Agricultural education has left its mark on the farming community, and Elliot's dictum that, "It is well known that, with but few exceptions, agriculturists will not read, and are indeed averse to any form of intellectual exertion" is much less true now than it may have been.

The book gains greatly for modern readers by an excellent preface by Sir George Stapledon, who gives it the necessary orientation in relation to subsequent grassland developments.