

## TOPDRESSING IN WAIKATO



Friesian heifers on some of the 80 acres of peat that go to make up Mr. K. Rennie's 606-acre property at Netherby. Undeveloped peat land can be seen in the background.

stage of growth. Phosphatic topdressing, while it abolished the factor which limited plant growth, was actually an obstacle to pasture management, which is dependent on paddocks being small enough to be eaten down rapidly by the farm herd; and as long as milk production was the aim, small paddocks were useless without supplies of drinking water. Water was therefore the limiting factor in intensive grassland management, and, after topdressing, the most helpful innovation in the Waikato was the motor-powered water pump. Electrical reticulation of Waikato farms (made justifiable by its use for the milking-machine motor), by its adaptation for water pumping, soon made obsolete not only the old windmill, but also the big paddock in which the windmill stood.

When a limiting factor is removed energy is liberated and expansion takes place until a new equilibrium is restored. This is what happened to the dairy industry in the Waikato between 1920 and 1935. There were extraordinary social repercussions, which are not within the scope of this article, but which have been documented in the New Zealand Co-op Dairy Company's magazine, "The Dairyfarmer", published between September, 1920, and February, 1932. Careful record was also made in the publication of the successive discoveries which together added up to the new system of grass farming. Roughly in chronological order of discovery there were:—

Haymaking with the gate sweep, swathe turner, and hoist;  
Rotation of the "night paddock";  
Scattering of dung;  
Grass harrowing, "root pruning", and "aeration";

Mowing or "topping" of pasture;  
Rotational grazing;  
The nutritive value of young grass;  
Subdivision into paddocks of an acreage equal to  $x/15$ , where  $x$  is the size of the herd;  
The motor-car grass sweep for stack and pit silage making;  
Autumn topdressing and winter calving;  
Nitrogen topdressing.

Though few farmers adopted all of these discoveries, all farmers adopted some of them, and production was increased greatly. Most of the farms were too big for one family to manage on a really intensive scale (the most common size of a dairy farm in the Waikato in 1932 was 100 to 109 acres); 30 or 40 acres was said to be the optimum size. This difficulty could have been got over by employing labour. A greater problem had to do with the health of the stock, among which peculiar "grassland diseases"—bloat, milk fever, grass staggers, and facial eczema—appeared. Though remedies were found for them, they distracted attention from pasture management, which inevitably became standardised at a pitch somewhat below that claimed for it by its expounders. Topdressing remained the basis of Waikato grass farming, but recent results of work at the Department of Agriculture Animal Research Station, Ruakura, indicate that the lively history of grass farming has not yet culminated.

### Locality of Farms

The three dairy farms and one fat-lamb farm that are to be studied for

their topdressing practices and production over the years are situated in the Waikato basin, which includes wholly or in part the Counties of Waikato, Waipa, Piako, and Matamata. The eastern half of the basin is drained by the Waihou and Piako Rivers, and the western half by the Waikato and Waipa Rivers.

The rivers run through sandy and loam pumice terraces and plains formed from material washed down after the last great volcanic eruption in the Taupo district. Away from the river margins the plains tend to subside into vast peat bogs, occupying between 40,000 and 50,000 acres, or to rise into clay and loam downs and hills mainly formed from volcanic ash showers. Except for patches of kahikatea bush the region was devoid of forest, but many of the bogs contained the remains of large trees destroyed ages ago by fire or by a rise in the water-table. The pumice plains were covered with manuka and scrubby bracken, and the clay hills with a mixture of bracken, tutu, koromiko, and small manuka. On the brown clay of the "delta" luxuriant bracken had built up a thin layer of black humus, but there was none of the accumulated bush and tussock fertility which gave farming a good start in other regions.

### Climate

With a well-distributed annual rainfall of about 50in. and a mean temperature of about 56 degrees F. the climate is ideally suited for pasture growth and this to a large extent compensates for any deficiencies in the natural soil fertility. The comparatively mild winter permits a long period of ryegrass and clover growth. The wettest period is from May to July inclusive, after which the rainfall declines, but increases to some extent in October. The dry season is from December to March. The prevailing winds are south-westerly and may be very cold at times, with occasional strong winds from the north-west. There is a possibility of frosts in almost any month, although they are very rare from October to April.

### A Cambridge Fat-lamb Farm

A Cambridge fat-lamb farm is to be considered in this section. The late Mr. Alfred Main purchased in 1886 the property of 482 acres on the Hamilton-Cambridge main highway, 7 miles from Hamilton. The area consisted of about 380 acres of very poor pasture on rolling country, 60 acres of very wet land around the foot of the rolling country and covered with heavy manuka, and 40 acres of river terraces in fern and manuka. The property is now farmed by the late Mr. Main's two sons.

The 482 acres, which were subdivided into seven fields of 60 to 80 acres, apart from a few small paddocks round the homestead, were watered by two windmills and the river. Hawthorn hedges separated one field from another and two shelter belts of pines had been planted on two of the boundaries and one through the back of the property. The English system of farming prevailed and the settlers carried out