

than in the ordinary rye-grass plots, which are beginning to thin out. The pasture, in fact, has a really good sole with virtually no bare spaces. I would be inclined in future to increase the amount of white clover, as although there are large quantities of seed in the ground a good growth of white clover right from the germination of the cocksfoot appears to exert a remarkable effect on cocksfoot-development. Unfortunately, on much of the lighter land of Canterbury the growth of white clover is feeble except in seasons of more than average rainfall. A clover that will grow well on soils which normally dry out badly in the summer is one of our most urgent requirements. As Dr. Hilgendorf has pointed out, *Lotus corniculatus* should prove of great value in this respect. At any rate, the synchronous production of a clover of not too smothering a character appears to be extremely beneficial for the rapid establishment of cocksfoot.

#### THE EFFECT OF CLOVER ON COCKSFOOT.

At the Central Development Farm, Weraroa, remarkable results have followed the sowing of large amounts of white clover along with a liberal seeding of cocksfoot. Two adjacent plots were laid down in the autumn of 1917. In one plot 14 lb. of cocksfoot and 6 lb. of white clover per acre were sown, and in the other 14 lb. of cocksfoot and 3 lb. of crested dogstail. During the spring and summer of 1917 the clover plot consisted of a very vigorous growth of dark-green cocksfoot and white clover, while the cocksfoot in the adjacent plot remained small and much lighter in colour. In the spring of 1918 the results were even more marked. The cocksfoot in the plot where clover was sown commenced growth quite one month sooner than in the other, and was superior in all respects. In February, 1919, both plots were cut for seed, that where clover was grown yielding at the rate of 250 lb. per acre, while the other produced 120 lb. Apart from this, the main growth in the no-clover plot occurred, as is usual, along the margins, while in the clover plot the growth of cocksfoot in the centre was equally vigorous with that along the edges.

This stimulating effect of large quantities of white clover indicates the great value of a good growth of clover right from the time of the sowing of the cocksfoot. It would appear to be highly probable that much of the benefit of phosphatic top-dressing of pastures is due indirectly to the general clover response that follows rather than to any immediate benefit the grasses themselves derive from the fertilizer.

#### DEPRESSING EFFECT OF ITALIAN RYE-GRASS.

Owing to the very vigorous and immediate growth of Italian rye this grass has become very popular as the temporary filler in mixtures for pastures of long duration. In many cases the amount per acre has been as high as 10 lb., used, of course, in conjunction with the various other more permanent grasses and clovers. The idea is that the Italian will furnish an abundance of feed during the first year, and that afterwards the more permanent elements will take its place. This perhaps is true with regard to many grasses that are likely to seed under grazed conditions, but so far as cocksfoot-establishment is concerned excessive amounts of Italian have a most depressing effect. As is well known,