IRRIGATION AND ITS PRACTICE.

(Continued.)

VI. LUCERNE-GROWING UNDER IRRIGATION.

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CENTRAL OTAGO AND LUCERNE.

On account of its adaptability to the mica-schist soils of Central Otago lucerne has become the main irrigated crop in that district. Under irrigation, yields of 5 tons of hay per acre for the season are regularly obtained, and no great difficulty is experienced in establishing the crop. When its permanency is taken into consideration—some stands even now growing luxuriantly and yielding heavily after fifteen years' occupation of the same piece of ground—the cost of establishment must be considered quite moderate. A satisfactory feature of lucerne-growing in that semi-arid region is the fact that haymaking operations can be carried out expeditiously and with great certainty of favourable weather conditions being maintained during the process.

The importance of lucerne to the Central Otago irrigation-farmer well warrants a short account of the procedure most suited to growing the crop in that region. No attempt at a detailed description of the history of the crop and the numerous modifications of the general method here described will be attempted. Each farmer must realize that certain modifications will be required to suit his particular conditions, for even in such a comparatively limited area as is embraced by this series of articles there exist considerable variations in regard to soil and climatic factors.

SOILS ADAPTED FOR LUCERNE.

As has already been indicated, the bulk of Central Otago soils are well adapted for growing lucerne. Particularly is this so in the case of the deep alluvial deposits of mica-schist, which, overlying gravelly subsoils, make soil conditions ideal for this crop. The lighter admixtures of gravel and schist soils which exist in fairly large areas are also well adapted for the growth of lucerne, provided more frequent irrigations are given during the growing-period, and care taken to obtain suitably moist conditions for its establishment. To the uninitiated these lighter types of gravelly soils would appear to be hungry and unproductive, yet, given cultivation, moisture, and seed, striking results will in almost every case be obtained, the land previously covered with scabweed (*Raoulia*) being quickly transformed into luxuriant fields of lucerne.

Certain soils in Central Otago have a subsoil of a heavy clay nature, where free natural drainage does not exist to the degree required by lucerne. Such soils, unless drained, cannot be expected to grow good lucerne crops, the common experience of farmers being the failure of the crop after a short period. It is a recognized fact