

3. *Bossu Silt Loam*.—At high altitudes on gentle, smooth-surfaced slopes this is the commonest type. The usual profile is :—

- 6 in. black to brownish-black silt loam.
- 6 in. very dark blackish-yellowish-grey silt loam.
- On brownish-yellow silt loam ; fine, dry and powdery.

The present cover consists of about 50 per cent. tussock with danthonia, Yorkshire fog, and flat-weeds and occasionally some rye-grass.

B. Soils derived from Basalt.

These soils, which have been classed as brown loams, occur on the highest, steepest, and most rugged country. All have a good crumb structure.

(1) *Stewart Brown Loam*.—A typical profile is :—

- 6 in. dull dark chocolate-brown silt loam.
- 12 in. dark chocolate-brown clay loam.
- 9 in. chocolate-brown clay loam.
- On basalt.

The depth of soil varies from 6 in. to 24 in. and lumps of basalt occur throughout the profile. The original cover was mainly totara, with konini dominant on sheltered, warmer, well-drained faces. The pasture is chiefly rye-grass and Yorkshire fog, with a little timothy and cocksfoot in sheltered spots. Almost a pure rye-grass pasture is found in some of the warmer paddocks, but the sward is fairly open. Available potash is present in fair supply. Phosphate, however, is much higher than in the other types and would almost indicate no great need for phosphate if it were not for the fact that brown loams, derived from basalt, usually fix phosphates in the soil. If phosphates are required, basic phosphates will probably give the best returns. The lime status is similar to that of the Pawson silt loam.

2. *French Brown Loam*.—The topsoil is shallower than that of Stewart brown loam and is black or brownish-black in colour. The present cover consists of blue and silver tussocks with a considerable amount of flat-weeds, a fair amount of Yorkshire fog, and traces of cocksfoot and sweet vernal.

C. Soils derived from a Mixture of Loess and Basalt.

Summit Silt Loam.—The loess covering is from 4 in. to 48 in. in thickness, and irregular pieces of basalt occur throughout the profile. The mixing of loess and basalt is caused by slipping and by shedding down of rock from above, and a good deal of variation in soil occurs ; but for present purposes several types, mapped separately, may be here classed together. An average profile is :—

- 6 in. dark chocolate-brown to brownish-black silt loam.
- 12 in. dark yellowish-brown to dark chocolate-brown heavy silt loam to clay loam.
- On dark yellowish-brown to dark chocolate-brown clay loam.

The original cover was chiefly bush consisting of broadleaf, black-pine, white-pine, titoki, ngaio, five-finger, and akeake ; but smaller areas with a black topsoil were originally covered with kanuka, manuka, and mountain-flax. Where the soil is formed chiefly from basalt the bush contained a fair proportion of totara but little broadleaf. Pastures on the Summit silt loam are not quite as good as those on the Pawson silt loam. The available phosphate is the lowest for the types examined, but the general fertility level, apart from this, as shown by chemical analysis, is similar to that of the Pawson silt loam.

D. Soils derived from Alluvium.

Barrys Silt Loam.—These soils have been formed in the larger bays. Gravels do not often occur at less than 36 in. from the surface, except at Wainui. On the flat at French Farm Bay an old soil is frequently met with at 22 in. below the surface. The soils at Duvauchelles Bay, Barrys Bay, and French Farm Bay give on the average the Barrys silt loam profile :—

- 6 in. to 12 in. dark brown silt loam.
- On brown silt loam.

As the parent material on the Wainui flat contains more basalt and brown loam, the soils are somewhat heavier, but gravels occur at 12 in. to 24 in. There are also two very narrow strips following the sea in Barrys Bay and Duvauchelles Bay which consists of 14 in. of alluvial silt loam on uplifted old sea-beach.

The original cover was scattered light bush consisting of black-pine, white-pine, and some ribbon-wood, kanuka, and totara. There is a good mixed pasture of rye-grass, cocksfoot, crested dogstail, clovers, and Yorkshire fog.

FARMING.

A rough division may be made into—

- (1) The land to the north of Wainui, which is devoted chiefly to dairy-farming : and
- (2) The land to the south of Wainui, which is devoted to sheep-farming only.

Very little top-dressing is done because of the high cost of transport. The easy slopes of the loess types might be top-dressed by machine, but the remainder would have to be done by hand, which here is heavy and costly work. Observational top-dressing trials by the Department of Agriculture had been put down long before the soil survey was made, and these are now being extended to take in types on which there were no plots. Deterioration in the pastures is said to be quite marked over a period of years, and to offset the drain imposed on the soil by heavy stocking and seed-production