

A wet climate not only induces secondary growth, but also makes the control of that secondary growth difficult. Of the kinds of secondary growth that are most troublesome in the above counties, hard fern and soft fern in particular are surface-rooting, and if only a hot fire can be secured over this class the surface stolons are easily killed, and then that particular growth ceases to trouble. Again, shade is not inducive to the spread of any of those grasses and clovers which would migrate and form a turf over the country. Particularly is this true of danthonia. To ensure danthonia to spread, light must be allowed into the crown of the plant; and, without a doubt, where secondary growth is troublesome the cheapest way of removing the shade of the secondary growth is by the firestick. In a wet climate where the firestick cannot be satisfactorily used, then the more expensive implement, cattle, or the slashhook, must be employed to effect the removal of the shade of the secondary growth so that the danthonia and other grasses may spread.

(b.) *Insufficient fencing of the country, so that controlled stocking, particularly by cattle, could not be carried out.*

In most instances throughout the above counties the areas of forest felled at any one time have been on the large size compared with the ability of the settler to fence and sufficiently stock the area felled. As before stated, the germ of the secondary growth survives in most instances the heat of the fire. The grasses sown have this growth to compete with; and it must be said that we have in New Zealand at the present time no combination of pasture plants which in themselves are sufficiently aggressive to swamp out secondary growth. The two great factors in weed-control in our grasslands are (1) the formation of a close and continuous grass sward, and (2) the judicious feeding-down of that sward by different classes of stock. Stock judiciously managed are really the most potent agents in the control of weeds, and particularly is this true of cattle. On the ability or otherwise of the settler to stock his new burn with cattle depends, in nine cases out of ten, success or failure. Most of the ferns take, from spores, two to three years before they form anything like adult plants. During this period the treading of the cattle plays havoc with the young plants, and if only the whole of the surface could be cattle-tramped during the first few years there would be little fern-growth on that area. The presence of innumerable logs and stumps precludes this possibility, but the principle holds good for all parts of the burn that may be tramped by cattle. Cattle, again, consolidate the country and make possible, for grass, pukahu areas and other light spongy soils where, without the consolidation, the grasses simply wither off, leaving the area open to weeds. To effect this consolidation and to tread out the establishing ferns, &c., a heavy cattle-stocking is necessary, and farms have been visited where from one to two cattle to the acre for short periods have been maintained on the new burn during the first two or three years. This gives some idea of the cattle-power necessary on certain areas; and unless the burns are fenced into comparatively small areas such cattle-stocking is an impossibility. Again, many burns are not fenced at all from the neighbouring unfelled portion, and thus the settler has no control at all over his cattle, and as soon as the harder winter conditions come on, or as soon as the feed amongst the secondary growth becomes scarce, the cattle are liable to take to the bush. Again, stock of almost all descriptions will always hang on the warmer slopes or where the feed is sweetest, and it is not until these areas are fenced off from the shady or rougher portions that stock may be kept on these latter places. In order to bring back the deteriorated lands, fencing is an essential. No definite size of the paddock can be given, as this varies according to the size of the holding and to the cattle-power that the settler can bring to bear on any one area at the one time. Roughly speaking, 10 per cent. of the holding would represent the size of a good workable paddock. Thus on a 1,000-acre place the maximum paddock would be not more than 100 acres, and on a 500-acre place 50 acres would represent about the largest paddock that could be effectively worked. The secret of pasture maintenance and improvement, and of secondary-growth control, lies in the ability of the settler to heavily stock the area for a short period—to clear it up rapidly and then to spell. This intermittent hard grazing and spelling is not possible unless the farm is adequately fenced.

(c.) *Injudicious stocking—close and continuous grazing by sheep; failure to spell the country.*

It may be laid down as a fairly definite rule that close and continuous grazing, particularly by sheep, leads to an early running-out of the first-class grasses and clovers, and to an incoming of either low-fertility-demanding and light-loving grasses, such as danthonia and brown-top, or weeds, such as catsear, hawkweed, cudweed, &c., or hard fern, hutiwai, and manuka. In the country under consideration, in view of the light burn and loose nature of the country, it would appear that the stocking has been too much with sheep and not enough with cattle. Once the secondary growth makes headway sheep will avoid those places where it is growing, but will keep close-grazed the grassed areas. The spread of hard fern, hutiwai, &c., is greatly encouraged through baring the grass turf to the ground. Sheep, no matter how forced, will not break into the patches of hard fern, &c. Crushing with sheep, therefore, but adds to the deterioration, inasmuch as, while little damage is done to the secondary growth, the heart is eaten out of the grasses and these become weaker and weaker. Cattle break into the secondary growth, and owing to their not being such close grazers as sheep the pasture grasses are not so weakened. The ewes and the dairy cows are harder on the country than are dry stock, and the former class of stock cannot be forced to crush out secondary growth, or to clean up rough pasturage, in the same way as can the latter. The change to dairying forced on many settlers during the slump has been attended with deterioration of virtually all the steeper and more difficult portions of the farm.

(d.) *Sowing of grasses and clovers not wholly adapted to the country.*

In the early days of felling and sowing country in the above counties the grasses mainly used were rye-grass, cocksfoot, red and white clover, with a good sprinkling in some cases of timothy,