

so successfully grassed. Up to the present the settlers themselves have worked out their own salvation. When the land was taken up originally neither the Department of Agriculture nor the Department of Lands had any exact information to give on grassing and managing the hill-country lands of New Zealand. Recently experiments have been started in a small way in the Whangamomona County, and, while these in themselves are excellent, yet the whole question of hill-country farm management and farm economics should be the subject of an exhaustive research by the Government. Experimental work on hill country is not a matter of small plots: whole paddocks, and in certain instances whole farms, should be taken over and treated and kept under close supervision by scientific men trained to the work. Some of the leading problems calling for investigation are—

- (i.) Study of exact conditions that determine dominance and succession in secondary growth:
- (ii.) An exact study of all known pasture species on the various soil types, and a trying-out of new and additional species, should be undertaken:
- (iii.) Thorough study of the economics of cattle as a means of secondary-growth control:
- (iv.) Study of general methods of management:
- (v.) Costs of maintaining the country:
- (vi.) Study of methods of fertility upkeep.

The hill grasslands comprise some 11,000,000 acres, approximately 75 per cent. of the total deforested lands in New Zealand. Of this area during the last eight years, according to official statistics, approximately 1,100,000 additional acres have reverted to fern, scrub, and secondary growth. To try to stay this deterioration, expenditure on research work is amply justified. Necessary funds and men should be forthcoming so that this work is in no way hampered, and provision should be made not only for the immediate future, but for a period extending over not less than ten years, so that a sustained effort at carrying out this important piece of work could be made. A few good men forming a small branch of the Fields Division of the Department of Agriculture, working in conjunction with the field officers of the Lands Department, could do invaluable service to the country at the present time.

POSSIBILITIES OF THE COUNTRY.

The report, as set out above, is necessarily bristling with the word "deterioration," and the committee feels that some injustice may be done the country as a whole without some word as to the possibilities of the country once it is shown that the area can be successfully brought back to grass. Generally speaking, it may be said that strong growth of secondary scrub, &c., tells of possibilities in the country rather than of impossibilities. The very factors that favour strong secondary growth alike favour good grass-growth once the sward is established, and once the secondary growth is controlled. The country generally is well watered, and healthy for both sheep and cattle. A surprising feature in the deteriorated grasslands of many of the counties is the really high carrying-capacity of the land actually carrying grass. We think it is not too much to say that, once the country is sufficiently fenced and the secondary growth cleaned off, one to one and a half mixed sheep per acre, besides cattle, is not too high a carrying-capacity to expect over the majority of the country. With manuring, more could be carried. For some years the cost of maintenance will undoubtedly be high, but as the country ages, and as stumps, logs, pukahu, &c., rot away, difficulties and maintenance costs will gradually decrease—that is, just as long as the areas remain in occupation and the settler handles his country properly. Here and there are to be seen in a fairly clean condition successfully managed farms which stand out in contrast to much of the other land in the vicinity.

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