

the Great Northern sand-dune areas (coastal) are sufficiently covered with native growth—silvery sand-grass (*Spinifer hirsutus*), tea-tree, tauhinu-korokio, and flax principally—and the spreading-out of the California tree-lupin established to commence at any season a system of tree-planting.

The Department has an example of the growth that takes place, once trespassing stock is removed, by the native growth that is commencing to reclaim the at-one-time unstable sand-drifts on the Waipu-Ruakaka sand-dune areas. In some of the hollows along the coastal dune areas flax and cabbage-trees (*Cordyline australis*) have made their appearance, as well as tea-tree and introduced grasses and clovers. Both on the coastal dunes and to the limits of the inland drift the silvery sand-grass, pingao, toetoe, and the sand-sedge are spreading out and covering sand that before the removing of stock were open sand-drifts. And before this event, when stock roamed at will on the sand-dune areas in question, the native growth was eaten down to the sand, and in many places completely destroyed.

The Burning-off Menace.—The burning-off of the native growth on the Great Northern sand-dune areas is becoming a serious menace to the progress of reclamation work. At Waihi some 5 acres of silvery sand-grass has been fired off, and burnt 6 chains of the lupin plantation. Both on the coastal dune areas and on the land bordering on to the inland sand-drift the tea-tree and other growth is being continually fired. Nor only is the tea-tree being fired off the land bordering on to the inland sand-drift, but it is being cut out and carted away, the tea-tree being a ready means to start a fire. This destruction is going on principally in the vicinity of Lake Waiparara and towards Selwyn's Swamp. The danger of the covering being destroyed is this: that the lupin plantations are in imminent danger of being burnt, and the destruction of the native covering by being cut and burnt provides unfavourable conditions for the extension of the lupin plantations.

It is assumed that there are three causes at work accountable for fires on coastal areas and land bordering on the inland drift: (1) By owners of stock who have cattle grazing thereon; (2) to provide dry firewood for camping-parties on the coast (Maoris and pakehas); (3) by negligent people out of pure mischievousness. The remedy—by appealing to the intelligent part of the community, by notices put up, to act as honorary rangers, with power to prosecute; by the appointment of an official ranger.

NORTHERN WAIROA SAND-DUNE RECLAMATION.

Area (approximate) of marram-grass established, 18th May, 1921, to 15th September, 1921, 8 acres. California tree-lupin seed sown, 1st May, 1921, to 14th May, 1921, 4 cwt.

As funds were not available to carry on the work, the reclaiming of the above sand-dune areas, which closed down on 15th September, 1921, has been in abeyance. From a report received from Mr. J. Glink, who resides near the coast, it appears that the plantations are progressing favourably.

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Overseer in Charge.

APPENDIX V.—REPORT ON SNOWSTORMS, SOUTHLAND.

(J. J. KEPPEL, Crown Lands Ranger, Invercargill).

AFTER a good deal of rain in the late autumn and early winter, heavy snow commenced to fall about the middle of June, and continued at intervals until the early part of July, when there would be about 18 in. on all the lower pastoral land in the lakes district, with a corresponding greater depth, running to 5 ft., on the higher parts, which are recognized as the summer country. Although probably less snow fell here than in 1918, the position was rendered equally serious owing to the heavy frost which set in holding the snow on the lower levels and the parts which are always considered safe winter country in ordinary seasons. At the request of the Southland Runholders' Association the greater parts of the affected districts were visited to see the actual conditions; and while an isolated case or so was met where the sheep were actually caught on the high country, and again where there was evidence of overstocking, it can be stated that generally the losses must be attributed to conditions over which the runholders had no control. The provision of free railage for stock and feed was appreciated, and in some cases was the means of saving stock; but as a general rule railing stock from a run to winter feed is only adopted as a last resort, and then always means a big loss, caused by driving and trucking weak stock; and where a run is well back from the railhead and access is bad, cartage of feed to provide for any long period is almost prohibitive.

There were no means of arriving at an estimate of the actual losses at the time; but now that shearing-tallies are available it is safe to say that runholders have had to face a loss of 25 per cent. in some cases, and unfortunately this loss was mostly represented by ewes in a few instances. Against this, however, there is always a yearly loss by various causes of 10 or 12 per cent. on those places in ordinary seasons. Again, the actual loss in deaths does not indicate the true position, as the surviving