

in comparatively few cases. A small percentage of silver-birch along the margins of blocks were broken off from two-thirds of their height: but beyond this little damage was done to the plantation as a whole, which is surprising, considering the severity of the storm and the depth of snow. Nevertheless, the snow greatly hampered operations generally, and caused much additional labour in the matter of pruning and repairs to fences, roads, &c. The telephone-lines also required a good deal of repair to put them into working-order again. The opening of tracks to enable the carting of stores, firewood, hay, &c., entailed much additional labour.

Due attention was given to the safeguarding of the plantations against fire by the ploughing of boundary firebreaks, but owing to the shortage of teams internal breaks were not touched. On these breaks, where grassed, the growth was allowed to mature, and was cut before being properly ripe in order to minimize the danger from fire: the result being the maintenance of a satisfactory degree of firebreak efficiency at a minimum cost, and the production of some 20 tons of fair-quality feed for winter use. Cropping operations produced about 50 tons of good oatsheaf. The grazing of sheep on firebreaks would be a payable proposition when trees on the more recently planted areas attain sufficient size; but against this must be placed the difficulty of mustering, the animals being apt to disappear among the trees immediately work commences. The usual attention was directed towards the elimination of the rabbit pest by trapping and poisoning, the efforts in this direction meeting with a fair measure of success. The destruction of noxious weeds—such as gorse, broom, briars, &c.—occupied the attention of the staff for some time. Damage by red deer was not noticed to any extent, but four of these animals were destroyed during the snow period.

Though adverse weather conditions prevailed throughout the year, the standard of tree-growth was well maintained, and evidence of disease was not noticeable. The thinning of shelter-belts of *Pinus muricata* produced a considerable amount of saleable timber for firewood, and the greater part was disposed of locally after departmental requirements were met. The cutting-out of larch felled by snow resulted in about five hundred excellent poles, a number of which were profitably disposed of during the year.

The surveying of blocks was taken in hand by Mr. A. J. Mountfort, and, though extremely severe weather conditions had to be contended with, the work was put through expeditiously. Attached hereto are details of trees planted and areas covered since the initiation of tree-planting at this station, area approximate only.

The daily average of men employed throughout the year was 6·8.

The expenditure for the year amounted to £1,066 4s. 2d., and the total expenditure to date is £27,627 18s.

*Summary showing Area of Hammer Springs Plantation (2,886½ Acres in Trees).*

How occupied.	Acres.
Pines .. .. .	1,409
Pines and Douglas fir mixture .. .. .	140½
Larch .. .. .	1,177
Spruce .. .. .	60
Alder .. .. .	71½
English birch, poplars, willows, &c. .. .. .	28½
Paddocks and cropping-areas .. .. .	250
Roads and firebreaks .. .. .	150
Land unsuitable for planting (including swamps, river-beds, &c.) .. .. .	381½
Total.. .. .	3,668

(Survey incomplete; areas approximate only.)

BALMORAL PLANTATION, CANTERBURY.

(Area, 7,636 acres; altitude, 550 ft.; commenced operations, 1916.)

A general review of the third year's operations at this station does not disclose such favourable results as those of the two preceding seasons; but, taking into consideration the shortage of suitable labour and the phenomenally severe winter, the results are satisfactory.

Work was totally suspended during the whole of July and part of August by an extremely heavy snowfall, unprecedented in this district. Tree-planting was commenced on the 19th June and was completed on the 21st September, the total number planted being 395,100, of which 248,000 were used to cover new area and 147,100 to replace failures in former plantings. The varieties dealt with were as follows: *Pinus radiata*, 186,800; *Pinus ponderosa*, 44,000; *Pinus Laricio*, 153,300; *Pinus muricata*, 11,000, the latter being used for marginal planting at 6 ft. apart. The death-rate, which was higher than usual, was mostly confined to *Pinus radiata*, an experimental planting of seedlings of this tree proving a total failure; the two-year-olds, however, showed to better advantage, and results were fair. The heavy death-rate may be partly attributed to the fact that a large percentage of these trees were bundled ready for transfer before the snowfall, and were buried for some weeks, which would have a detrimental effect on their vitality. Severe early spring nor-westers immediately following the planting of the trees would, however, contribute 90 per cent. of the cause of failure.

All established trees are doing markedly well, especially *Pinus ponderosa*, which in many cases has made a vertical growth of 18 in. for the season. At the present time we are experiencing a prolonged spell of hot dry weather, and although all grass and herbage is parched up the trees have not suffered in the slightest.