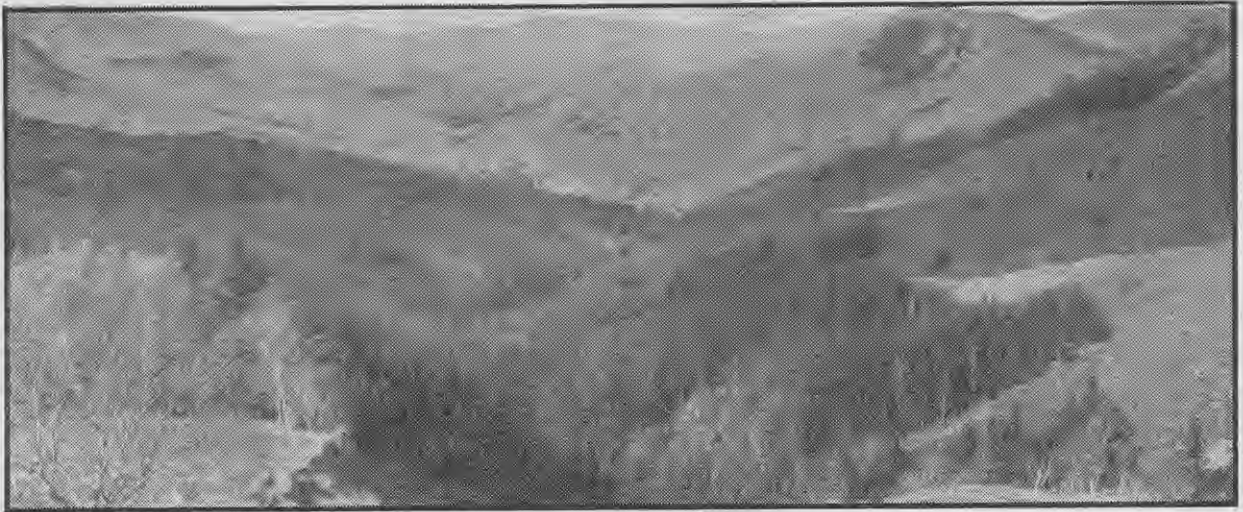


TREE PLANTING ON EAST COAST HILL COUNTRY



Pinus radiata planted on the margin of bush and to hold moving ground on the upper slopes of the watershed.

After the first few years of clearance, and especially after heavy rainfall in 1916-17, the effects of clearing the absorbent and anchoring tree layer began to be apparent in slips, soil slumping, stream aggradation, and cutting of gullies and streambanks. General instability of the upper soil layers occurred in certain areas of slope. The owners then realised that some means must be found to counteract the effects of loss of forest cover and to hold up the movement of land in vulnerable areas.

In 1902 tree planting had been started in the vicinity of the home-stead site and block plantations were established on the slopes of hills. Experience with these projects suggested that, with the erection of physical barriers and groynes, the planting of certain types of trees on unstable areas acted as a brake on the movement of the ground by anchoring the surface layers at various points.

The usefulness of willow and poplar planting to arrest the movement of soil on unstable areas was noted and the practice was increased until gradually it became the basis on which all subsequent protective planting has been carried out.

The first introduced trees were planted on the holding in 1902 in the home plantation, and plantation formation was carried out annually in the years following until the First World War, the greater part of the early planting being done in 1907.

Some block plantations were formed between 1916 and 1939 in which trials were made of new species—conifer, broad-leaved, and eucalyptus species—and also of silvicultural methods and combinations. The technique of tree planting to arrest erosion was continually developed and put into practice as necessity arose in the main watershed areas where movement threatened.

Residual bush covers about 60 acres, and about 180 acres have been planted

in utility species of trees in plantation formation; this is about 3 per cent. of the total area of the holding. The area covered by widespread protective planting of broad-leaved trees is impossible to assess, as much of this planted ground is now back to grazing use. However, the majority of the wide valley bottoms now have a protective cover of wide-spaced willows and poplars.

Objects and Methods of Planting

With the methods of bush clearing by burning in use when this land was taken up it was not possible to select areas of forest for preservation or to protect isolated areas, because clearing fires could not be controlled and frequently spread further than was intended. However, the owners of the

station were governed by an inherent impulse to plant trees, and the replacement of native forest by plantations of exotic species was a routine part of early station management. Tree planting at that period was primarily as shelter for stock and to produce farm timber, but general beautification of the station was also a strong consideration. After the value of these plantings in restraining threatened soil movements was recognised other objects of tree planting became an adjunct to the control of erosion.

In parts of the area deep gulches have been formed by flooded stream wash and marginal slipping, and it is necessary to attempt the arrest or control of further destructive action by treatment in each individual case or



The house was on a site at the right of this illustration which was abandoned when the land began to slump down behind it. The fence was built to enclose the moving gully from stock and the area was then planted with spaced willows and poplars.