# RECLAMATION OF SAND-DUNES.

By E. PHILLIPS TURNER, Officer in Charge of Forestry Branch, Lands Department.

IN the reclamation of sand-dunes it is essential that operations be started where the sand-drift has its source, which in the case of coastal dunes is high-water mark. The area under treatment should be fenced off from stock, and rabbits exterminated.

It is best not to plant trees until a protective littoral dune has been raised, or a belt along the coast planted with marram-grass.

## THE LITTORAL DUNE.

In France the first operation is to build up a littoral dune or artificial bank or foredune immediately behind high-water mark. This is done by erecting two parallel sand-catching fences 6 ft. or 7 ft. apart and some distance to the landward of high-water mark. This distance should be so selected that advantage can be taken of the highest parts of the banks of sand that have accumulated naturally along the shore. If there is no kind of natural littoral dune the sand-catching fences will be continuous, but where the former already exists it should be utilized as much as possible, and the sand-catching fences need be erected only in the top ends of the hollows (on the seaward slope) in order to gather enough sand to fill them up to the level of the existing mounds. When the top ends of the hollows have been filled up another similar fence should be erected lower down on the seaward side of each hollow, repeating the work till the whole hollow is filled. An ideal foredune should have a height of from 30 ft. to 35 ft., with a long easy slope to the seaward and a steep slope to the landward. It should be as straight as the coast-line will allow, and the slopes as uniform as possible.

When a foredune has been raised to the desired height it may then be planted with marram-grass. The seaward side of the foredune is always kept under marram; and should the grass fail at any places or be blown out by storms the gaps made must be at once repaired and replanted.

## SAND-CATCHING FENCES.

For their sand-catching fences the French use sawn pickets, which are driven into the sand and afterwards raised when they are nearly covered up. Where, however, there is an abundance of manuka in New Zealand a cheaper fence can be made by using thin manuka sticks about 4 ft. or 5 ft. long and inserting them firmly in the sand, leaving a space between each equal to the diameter of the stick. Another method is to use light manuka scrub and lace it between wires or thin rails fixed to posts. Care must be taken, however, not to have the scrub too dense, as if the wind cannot pass through it hollows will be blown out at its base and no accumulation of sand will take place. The object of the fences is not to stop the wind, but merely to so lessen its force that the sand it is carrying will be deposited on the lee side of the fence. Two fences are more effective than one, but where