

The remains of the rock is still to be seen, shaped by the flying sand into tables, pyramids, or beehive-like forms, or flattened quite to the ground. Midway between the Wanganui and Wangaehu larger portions remain, showing the ancient surface, and covered with shrubs and stunted trees, part of the original vegetation probably before the weathering took place.

Nothing can be more desert-like than this stony plain, especially where it extends for hundreds of acres south of the River Waitotara, from near the cliffs to the dunes some half-mile or more distant.

The vegetation reminds one more of the desert near Mount Ruapehu than of that of the dunes. Everywhere are dotted about the shrubs *Pimelea laevigata** and *Coprosma acerosa* in about equal quantities, and both flattened to the ground. The *Coprosma* has long woody roots running parallel to the surface, a plant 7 in. by 5 in., having a root more than 3 ft. long. The branches are in small wiry mats, with the thick linear leaves pressed close to the stem. In the lee of each plant is a long tongue of sand (see Photo. No. 12). The *Pimelea* is pale-green in colour, and contrasts with the yellow *Coprosma*. The plants are about a yard apart. Here and there are cushions of the silvery *Raoulia australis*. *Spinifex hirsutus* forms lines in places, as does *Scirpus frondosus*, but this is where the sand is finer. The small grass *Zoysia pungens* forms colonies here and there, its wiry rhizome spreading through the sand and gravel. Other plants are tussocks of *Festuca littoralis* and small yellowish cushions of *Scleranthus biflorus*. A slight breeze drives the sand along the ground, but in a gale much flies high into the air, striking one's face with stinging force.

The vegetation of the old land-surface, as seen on the summit of table-like hills south of Wanganui, consists of the ngaio (*Myoporum laetum*), the mapau (*Rapanea Urvillei*), the shrubby corokia (*Corokia cotoneaster*), the akeake (*Dorlonaea viscosa*). All are much wind-swept, and the *Myoporum* is almost prostrate.

IV. LIST OF WORKS CONSULTED.†

(A.) GENERAL LITERATURE.

1. Beck, G. von : " Die Vegetationsverhältnisse der Illyrischen Länder " ; 1901
2. Chrysler, M. A. : " Anatomical Notes on certain Strand Plants " ; Bot. Gaz., vol. 37, p. 461 ; 1904.
3. Clements, F. E. : " Research Methods in Ecology " ; 1905.
- 3a. ——— " Plant Physiology and Ecology," London ; 1907.
4. Cole, G. A. G. : " Aids to Practical Geology " ; 1902.
5. Cornish, V. : " On the Formation of Sand Dunes " ; Geog. Journ., vol. ix, p. 278 ; 1897.
6. ——— " On Desert Sand Dunes bordering the Nile Delta " ; Geog. Journ., vol. xv, p. 1 ; 1900.
7. ——— " On Sand-waves in Tidal Currents " ; Geog. Journ., vol. xviii, p. 170 ; 1901.
8. ——— " On Snow-waves and Snow-drifts in Canada " ; Geog. Journ., vol. xx, p. 137 ; 1902.
9. Coulter, S. : " A Catalogue of the Flowering-plants indigenous to Indiana " ; 1900.
10. Cowles, H. C. : " The Ecological Relations of the Vegetation of the Sand Dunes of Lake Michigan " ; Bot. Gaz., vol. xxvi, Nos. 2-5 ; 1899.
11. Diels, L. : " Die Pflanzenwelt von West Australien südlich des Wendekreises " ; 1906.
12. Fippin, E. O., and Rice, T. D. : " Soil Survey of Allegan County, Michigan " ; Field Operations of Bur. of Soils, 3rd Rep., p. 93 ; 1902.
13. Forsyth, T. D. : " On the Buried Cities in the Shifting Sands of the Great Desert of Gobi " ; Proc. R. Geog. Soc., p. 27 ; 1876.
14. Ganong, W. F. : " The Nascent Forest of the Miscou Beach Plain " ; Bot. Gaz., vol. xlii, p. 81 ; 1906.
15. Gerhardt, P. : " Handbuch des deutschen Dünenbaues " ; 1900. The geology by A. Jentzsch, the botany by J. Abromeit, and the forestry by P. Bock.
16. Hall, A. D. : " The Soil " ; 1904.
17. Harshberger, J. W. : " An Ecological Study of the New Jersey Strand Flora " ; Proc. Acad. Nat. Sci. Phil., pt. iii, p. 623 ; 1901.
18. ——— " Additional Observations on the Strand Flora of New Jersey " ; Proc. Acad. Nat. Sci. Phil., vol. liv, p. 642 ; 1903.
19. ——— " The Reclamation and Cultivation of Salt Marshes and Deserts " ; Bull. Geol. Soc. Phil. ; July, 1907.
20. ——— " The Comparative Leaf-structure of the Sand-dune plants of Bermuda " ; Proc. Am. Phil. Soc., vol. xlvii, p. 97 ; 1908.
21. Hitchcock, A. S. : " Methods used in Controlling and Reclaiming Sand Dunes " ; U.S. Dept. Agric., Bur. Pl. Ind., Bull. No. 57 ; 1904.
22. Kearney, T. H. : " The Plant Covering of Ocracoke Island " ; Contrib. U.S. Nat. Herb., vol. v, No. 6 ; 1900.
23. ——— " Report on a Botanical Survey of the Dismal Swamp Region " ; Contrib. U.S. Nat. Herb., vol. v, No. 6 ; 1901.
24. ——— " Are plants of Sea-beaches and Dunes true Halophytes " ; Bot. Gaz., vol. xxxvii, p. 424 ; 1904.
25. ——— " Agriculture without Irrigation in the Sahara Desert " ; U.S. Dept. Agric., Bur. Pl. Ind., Bull. No. 86 ; 1905.

* A common plant in the Ruapehu desert.

† A bibliography of 260 works, &c., is given by Gerhardt, but, of course, the greater part are in no New Zealand library.