

the base; lowermost 1–1½ inches long distant and shortly peduncled, the upper approximate, sessile, becoming progressively shorter. Glumes ovate-oblong, membraneous, brown at the edges, produced into a cuspidate awn, usually bifid at the apex, but sometimes acute. Utricle as long as the glumes, shortly stipitate, strongly nerved, usually deep-brown above, narrowed into a short bifid beak. Arms of style 3.

Hab.—Glory Cove, Paterson's Inlet, Stewart Island. Gathered January, 1880,

ART. LIII.—Notes on *Epacris microphylla* in New Zealand.

By A. T. URQUHART.

[Read before the Auckland Institute, 5th September, 1881.]

IN comparing the flora of New Zealand with that of Australia, the striking fact presents itself to us, that nearly all the species which are identical, and peculiar to the two countries, are plants bearing seeds specially adapted for dispersal by wind. Any evidence bearing on the interchange of species, by natural means, between Australia and New Zealand in the past, and more especially the present time, is of some value in assisting us in solving the problem of insular floras. In a partially occupied country positive evidence can hardly be expected; however, as the placing on record the time when a new species was first observed, independently of its possible mode of introduction, will be of great assistance to future botanists, my friend Mr. T. F. Cheeseman, F.L.S., suggested I should send a few notes on the discovery I made, about six years ago, of three plants of *Epacris* on the southern side of Manukau Harbour; which have since been determined by him as the Australian *E. microphylla*. It differs from any of our described species.

Shrub 2–3 feet in height, with virgate slender branches, stem often much branched. Leaves cordate, broadly ovate, shortly acuminate, tip slightly recurved, concave, spreading, 3 millimètres long. Flowers small, white, numerous, often one in each axil, almost sessile, or on peduncles 1 mm. long. Bracts and sepals obtuse, or almost acute, sepals 1½–2 mm. long. Corolla tube shorter than the calyx; lobes 5, as long as the tube. Anthers wholly included. Hypogynous scales short. Style short. Seeds indefinite, extremely minute. Commences flowering in February, and attains its maximum of bloom in July.

The spikes are visited by the bee (*Apis mellifica*) and a number of small insects (*Colaspis*). As some of the plants are now growing under slightly changed conditions, it is not improbable their visits are beneficial. It is a shrub of great fertility and constitutional vigour. Considering it has had

to compete against a hardy indigenous vegetation, its increase has certainly been rapid, especially within the last two years. It now forms a dense mass sixty yards in circumference; the intermediate vegetation, *Leptospermum*, *Pteris*, and *Pomaderris*, is almost completely destroyed. From the main mass seeds are being disseminated in a line with the prevailing winds.

Probably the reason that *E. microphylla* has become so firmly established in its new habitat is that when the seeds (or seed) fell they met with favourable conditions; that is, they germinated in a moist loamy hollow, and being unpalatable to all kinds of stock escaped destruction.

As to how it was introduced, I can only satisfactorily account for it on the hypothesis that the seeds were carried over from Australia by aerial currents; it is not improbable that was the way *E. purpurascens* (discovered nearly forty years ago by the late Dr. Sinclair) reached Manurewa, four miles N.E. of the present station of *E. microphylla*. Upwards of 1,300 miles may seem an enormous distance for seeds to be transported across the sea, independent of oceanic currents; and I would have hesitated in asserting that that was the way *E. microphylla* was introduced, only that I cannot account for its having reached so isolated a district except by natural means.

It may be of interest to mention that there are two plants of *E. purpurascens* established on the southern side of the river Pahurehure, about 5 and 7 miles southwest of Manurewa.

ART. LIII.—*On the Sugar Values of Beet-roots grown in the Waikato District.*

By J. A. POND.

[Read before the Auckland Institute, 5th September, 1881.]

DURING the session of 1880 a paper was read before this Institute entitled "On the growth of Sugar-beet in New Zealand," by Dr. S. M. Curl.* In this paper the writer very ably reviewed the subject and placed much valuable data before us, but when speaking of the values of sugar in the different varieties of beetroot examined by him, he claimed to have found as high as 17.5 per cent. This excessive amount, and the fact that Parliamentary Papers had been published giving analysis of New Zealand grown beets, showing much less favourable results, and the absence of any details of examination, led me to take up this subject with the view of practical operations should the experiments justify it. About this period also, I had interested myself in the matter of sugar-beet, owing to some superior seed having been brought from Hamburgh by Mr. G. S. Graham, and finding it had been distributed amongst some of the Waikato settlers for planting,