

Receptacle flat ; alveola with scarious margins.

Heads $1\frac{1}{2}$ to 2 inches across ; florets of the ray white, very narrow, $\frac{1}{2}$ inch long ; anthers tailed ; pappus of one equal series of rigid, scabrous, white hairs, slightly thickened at the tips.

Achene glabrous, narrow, linear, flattened and grooved.

This remarkable addition to the flora of New Zealand was collected by Dr. Hector on the Buller River, Nelson province, in January, 1872.

The magnificent floral display of this species, and others such as *Senecio glastifolius* with similar white rayed flowers, can only be seen to advantage in their natural humid habitats, and it is doubtful if any cultivation short of shelter under glass will be successful in rearing them in gardens.

Grows along the banks of the Buller River, and in rich bottom shrubberies between the River Mangles and the Inangahua ; not observed in the lower gorge, nor near the sea. Also collected by Dr. Hector inland from Collingwood, and reported by Mr. W. T. L. Travers as occurring at Wangapeka and a few other localities in the Nelson province, where he collected specimens many years ago.

ART. XLVI.—*List of Plants found on Miramar Peninsula, Wellington Harbour.** By JOHN BUCHANAN.

[Read before the Wellington Philosophical Society, 25th September, 1872.]

THE flora of the Miramar Peninsula may be arranged under plants of the bush, plants of the open country, and plants of the swamp, the latter including those of the sea-side and those of the sand-hills.

The bush, which has no doubt at a very recent period covered the greater part of the hills, is now confined to a few gullies in the northern portion of the peninsula. Several of the following species are few in numbers, and none are large timber trees. No pines are present, they having been cut down for building purposes, as the stumps of totara piles may still be seen in what have been the defence works of Maupui Pa, and it is unlikely the timber was brought from a distance.

The following is a list of the trees and shrubs still existing :—

Clematis indivisa, Willd. *Melicytus ramiflorus*, Forst. *Elæocarpus dentatus*, Vahl. *Melicope ternata*, Forst. *Melicope mantelli*, Buch. *Dysoxylum spectabile*, Hook. f. *Pennantia corymbosa*, Forst. *Corynocarpus lævigata*, Forst. *Carpodetus serratus*, Forst. *Metrosideros florida*, Sm. *Myrtus bullata*, Banks & Sol. *Myrtus ralphii*, Hook. f. *Fuchsia excorticata*, Linn. f. *Passiflora tetrandra*, Banks & Sol. *Panax*

* Written to accompany paper by J. C. Crawford, F.G.S., on the Miramar Peninsula, see Art. LVII.

arboreum, *Forst.* Coprosma robusta, *Raoul.* Brachyglottis repanda, *Forst.* Myrsine urvillei, *DC.* Veronica arborea, *sp. nov.* Myoporum lætum, *Forst.* Knightia excelsa, *Br.* Piper excelsum, *Forst.* Rhipogonum scandens, *Forst.* Cordyline australis, *Hook. f.* Freycinetia banksii, *A. Cunn.*

The plants of the open country, popularly named scrub, are chiefly composed of species of shrubs, many of which usually grow up after the destruction of bush. With the exception of one shrub, *Carmichaelia australis*, restricted to the northern half of the Peninsula, they are generally distributed over the whole area.

The following list includes the most prominent :—

Clematis colensoi, *Hook. fil.* *Discaria toumatou*, *Raoul.* *Coriaria ruscifolia*, *Linn.* *Carmichaelia australis*, *Br.* *Rubus australis*, *Forst.* var. *a & g.* *Leptospermum scoparium*, *Forst.* *L. ericoides*, *A. Rich.* *Metrosideros scandens*, *Banks & Sol.* *Aciphylla squarrosa*, *Forst.* *Coprosma divaricata*, *A. Cunn.* *Olearia virgata*, *Hook. f.* *O. solandri*, *Hook. f.* *Vittadinia australis*, *A. Rich.* *Cassinia leptophylla*, *Br.* *Gaultheria antipoda*, *Forst.*, var. *a.* *Muhlenbeckia adpressa*, *Lab.* *M. complexa*, *Meisn.* *Parsonsia albiflora*, *Raoul.* *Pimelea prostrata*, *Vahl.* *Phormium colensoi*, *Hook. f.* *Libertia ixioides*, *Sprengel.*

The following species usually form an undergrowth among scrub, or on rocks and banks :—

Ranunculus lappaceus, *Sm.* var. *multiscapus.* *Nasturtium palustre*, *DC.* *Sisymbrium novæ-zealandiæ*, *Hook. f.* *Viola cunninghamii*, *Hook. f.* *Colobanthus subulatus*, *Hook. fil.* *Hypericum gramineum*, *Forst.* *Geranium molle*, *Linn.* *Oxalis corniculata*, *Linn.* *Potentilla anserina*, *Linn.* *Acæna sanguisorbæ*, *Vahl.* *Haloragis alata*, *Jacq.* *Epilobium nummularifolium*, *A. Cunn.* *E. macropus*, *Hook.* *E. rotundifolium*, *Forst.* *E. pubens*, *A. Rich.* *Lagenophora forsteri*, *DC.* *Cotula australis*, *Hook. fil.* *Craspedia fimbriata*, *DC.* *Gnaphalium filicaule*, *Hook. f.* *Taraxacum dens-leonis*, *Desf.* *Wahlenbergia gracilis*, *A. Rich.* *Leucopogon frazeri*, *A. Cunn.* *Dichondra repens*, *Forst.* *Scleranthus biflorus*, *Hook. fil.* *Microtis porrifolia*, *Spreng.* *Thelymitra longifolia*, *Forst.*

The greater portion of the peninsula is grass, with scattered scrub, the following indigenous species being still represented in the pasture :—

Echinopogon ovatus, *Palisot.* *Dichelachne crinita*, *Hook. f.* *Agrostis parviflora*, *Br.* *A. æmula*, *Br.* *A. billardieri*, *Br.* *Apera arundinacea*, *Hook. f.* *Danthonia semiannularis*, *Br.* *Koeleria cristata*, *Pers.* *Poa foliosa*, *Hook. f.* *P. anceps*, *Forst.* *P. australis*, *Br.* var. *lævis.* *Triticum scabrum*, *Br.*

None of the large coarse tussock grasses are present, but on portions of the valley and enclosing hills where the surface is retentive of moisture a large growth of tussock-rushes prevails, formed chiefly of *Leptocarpus simplex* and *Juncus australis*.

The swamp, sand-dune, and sea-side botanical regions having here an esturine relation, may be grouped as one; spreading, as many of the species do, over the whole district, it would be difficult to separate them on the experience of this locality alone.

The *Phormium tenax*, which forms the principle feature in this group, is

noticeable from its great size, flower-stalks having been measured twelve feet high; *Arundo conspicua*, ten feet high; and the wide spread swamp plant, raupo (*Typha angustifolia*), ten feet high; the whole forming a close and safe refuge to many of the native water-fowl.

Ranunculus rivularis, *Banks & Sol.* *Hymenanchera crassifolia*, *Hook. f.* *Colobanthus billardieri*, *Fenzl.* *Spergularia rubra*, *Pers.* var. *marina*. *Elatine americana*, *Arnott.* *Plagianthus divaricatus*, *Forst.* *Linum monogynum*, *Forst.* *Corynocarpus lævigata*, *Forst.* *Tillæa moschata*, *DC.* *Drosera binata*, *Labill.* *Myriophyllum elatinoides*, *Gaud.* *M. pedunculatum*, *Hook. f.* *Epilobium tetragonum*, *Linn.* *E. billardierianum*, *Seringe.* *E. pallidiflorum*, *Sol.* *Mesembryanthemum australe*, *Sol.* *Tetragonia expansa*, *Murray.* *Hydrocotyle novæ-zealandiæ*, *DC.* *H. asiatica*, *Linn.* *H. elongata*, *A. Cunn.* *Coprosma acerosa*, *A. Cunn.* *Galium umbrosum*, *Forst.* *Cotula coronopifolia*, *Linn.* *C. perpusilla*, *Hook. f.* *C. minuta*, *Forst.* *Raoulia australis*, *Hook. f.* *Gnaphalium keriense*, *A. Cunn.* *G. luteo-album*, *Linn.* *G. involucratum*, *Forst.* *Erechtites quadridentata*, *DC.* *Senecio lautus*, *Forst.* *Microseris Forsteri*, *Hook. f.* *Sonchus oleraceus*, *Linn.* *Lobelia anceps*, *Thunb.* *Selliera radicans*, *Cavan.* *Cyathodes acerosa*, *Br.* *Samolus littoralis*, *Br.* *Convolvulus sepium*, *Linn.* *C. soldanella*, *Linn.*, *Limosella aquatica*, var. *tenuifolia*, *Linn.* *Veronica parviflora*, *Vahl.* *Euphrasia cuneata*, *Forst.* *Chenopodium triandrum*, *Forst.* *Salicornia indica*, *Willd.* *Polygonum minus*, *Huds.* var. *decipiens*. *Pimelea arenaria*, *A. Cunn.* *Euphorbia glauca*, *Forst.* *Typha angustifolia*, *Linn.* *Lemna minor*, *Linn.* *Potamogeton natans*, *Linn.* *Phormium tenax*, *Forst.* *Juncus vaginatus*, *Br.* *J. australis*, *Hook. f.* *J. maritimus*, *Lam.* *J. bufonius*, *Linn.* *J. communis*, *E. Meyer.* *J. capillaceus*, *Hook. f.* *Luzula campestris*, *DC.* *Leptocarpus simplex*, *A. Rich.* *Gaimardia setacea*, *Hook. f.* *Cyperus ustulatus*, *A. Rich.* *Scirpus maritimus*, *Linn.* *S. triquetter*, *Linn.* *Eleocharis gracilis*, *Br.* *Isolepis prolifer*, *Br.* *I. riparia*, *Br.* *Desmoschoenus spiralis*, *Hook. f.* *Cladium junceum*, *Br.* *Lepidosperma tetragona*, *Labill.* *Uncinia australis*, *Pers.* *Carex teretiuscula*, *Good.* *C. virgata*, *Sol.* *C. ternaria*, *Forst.* *C. testacea*, *Sol.* *C. pumila*, *Thunb.* *C. forsteri*, *Wahl.* *C. dissita*, *Sol.* *Spinifex hirsutus*, *Labill.* *Arundo conspicua*, *Forst.* *Arundo* —, *sp. nov.* *Festuca littoralis*, *Br.* *Azolla rubra*, *Br.*

The ferns are few both in species and numbers, many having no doubt disappeared with the bush which gave them shelter:—

Cyathea dealbata, *Swartz.* *C. medullaris*, *Swartz.* *Hymenophyllum tunbridgense*, *Smith.* *H. polyanthos*, *Swartz.* *Adiantum diaphanum*, *Blume.* *A. affine*, *Willd.* *Pteris aquilina*, *Linn.*, var. *esculenta*. *P. incisa*, *Thunb.* *Lomaria filiformis*, *A. Cunn.* *L. membranacea*, *Colenso.* *Lomaria procera*, *Spreng.*, vars. *L. banksii*, *Hook. f.* *Asplenium obtusatum*, *Forst.*, var. *g. lucidum*. *A. hookerianum*, *Col.* *A. bulbiferum*, *Forst.* *Aspidium richardi*, *Hook.* *Nephrodium hispidum*, *Hook.* *Polypodium serpens*, *Forst.* *P. billardieri*, *Br.* *P. pustulatum*, *Forst.* *P. pennigerum*, *Forst.* *Gymnogramme leptophylla*, *Desv.* *Lycopodium volubile*, *Forst.*

Introduced species of plants are comparatively few, and have made little progress towards displacement of the indigenous species; this may be accounted for in some measure by the isolated situation, but mostly by the vigorous growth of the plants in possession; only where the scrub is burnt and nothing useful sown, as on the southern sea slopes, or on blown sand where there is only a sparse vegetation, can even the thistle find a holding ground.

In the following list many of the species are poorly represented, and many are confined to the sea shore, while none of them have attained the same extent here as in other parts of the province :—

Carduus lanceolatus, Linn. *Helminthia echioides*, Gaertn. (rare). *Cerastium vulgatum*, Linn. *Sherardia arvensis*, Linn. *Anagallis arvensis*, Linn. *Euphorbia peplus*, Linn. *Erodium cicutarium*, Sm. *Stellaria media*, With. *Polycarpon tetraphyllum*, Linn. (abundant on the sea-shore). *Geranium molle*, Linn. *Fumaria officinalis*, Linn. - *Apargia hispida*, Willd. *Leontodon taraxacum*, Linn. *Hypochæris radicata*, Linn. (not common.) *Sagina procumbens*, Linn. *Rumex viridis*, Sibth. *Rumex maritimus*, Linn. *Rumex acetosella*, Linn. *Lythrum hyssopifolia*, Linn. *Nasturtium officinale*, Br. *Plantago lanceolata*, Linn. *Centaurea solstitialis*, Linn. (spreading on the sea-shore). *Prunella vulgaris*, Linn. *Rosa canina*, Linn. (not common). *Cytisus scoparius* (yellow broom), DC. (confined to one patch near Maupui Pa). *Ulex europæus*, Linn. (furze). This dangerous weed is limited at present to a small patch on the shore of Evans Bay, and another near the old Pilot Station.

Of useful plants as pasture, the following were collected :—

Melilotus officinalis, Linn. (spreading over blown sand, and acting as a binder by its deep rooting.) *Medicago lupulina*, Linn. *Trifolium repens*, Linn. *Holcus lanatus*, Linn. *Lolium perenne*, Linn. *Festuca bromoides*, Linn. *Gastridium ligidigerum*, Beauv. *Lagurus ovatus*, Linn. *Poa annua*, Linn. *P. pratense*, Linn. *Anthoxanthum odoratum*, Linn. *Dactylis glomerata*, Linn. *Bromus commutatus*, Schrad. *B. arvensis*, Linn. *B. mollis*, Linn. *Ammophila arundinacea*, Host.

Some are probably omitted from want of flowering or fruiting specimens to determine the species.

ART. XLVII.—*On the Fertilization of the New Zealand Species of Pterostylis.*

By THOS. F. CHEESEMAN.

(With Illustration.)

[Read before the Auckland Institute, 14th October, 1872.]

PERHAPS the most interesting study connected with the structural peculiarities of Orchids is that of the varying means by which, in the majority of the species, fertilization by insect agency is secured. The wonderful co-adaptation of all the parts of the flower to effect this end, the degree in which organs have become modified to uses widely different from their normal functions, and the general fertility of contrivance exhibited, can never fail to excite our admiration and surprise.

Although none of the New Zealand Orchideæ exhibit a mode of fertilization, founded on such complexity of structure and specialization of parts, as occurs in some of the tropical American and Asiatic genera; and although probably none equal in this respect the British species of *Orchis* and *Ophrys*, yet several kinds present interesting and noteworthy peculiarities. These are