Ptilota
formosissima, Mont.
Pandorea
traversii, J. Ag., n. g.
Griffithsia
sonderiana, J. Ag., n. sp.
antarctica, J. H. and Harv.
gracilis, Harv.
Or an allied species in a sterile state.
Ballia
brunonis, Harv.
scoparia, Harv.
Caulerpa
furcifolia, J. H. and Harv.
Codium
tomentosum, Ag.
adhærens, Ag.
Bryopsis
prolifica, J. Ag.
Ulva
rigida, Ag.

ART. XXXVIII.—*Notes on the Flora of the Province of Wellington, with a List of Plants collected therein.* By JOHN BUCHANAN, of the Geological Survey of New Zealand.

[*Read before the Wellington Philosophical Society, 16th January*, 1874.]

THE following list of plants has been determined from specimens chiefly collected in the southern portion of the Province of Wellington. The district now under notice may be defined as south of a line drawn between the Wanganui River on the west and Castle Point on the east. The surface features of this area will be found to present two main lines of watershed with a north and south axis, the altitudes ranging up to 5,000 feet. The relative area of bush and open land are, according to Mr. J. T. Stewart, nearly equal,* the bush being more confined to the western range, while the great central river basin and hills of the eastern range are comparatively open land, and covered by a vegetation of fern, grass, and low-growing plants, little having as yet been done to improve upon the primitive condition of the country, except partial clearing by fire.

The river basins of this district are well adapted for agriculture; the inorganic matter from the wear of rocks, brought down by the streams from mountain ranges of a varied geology, with the added organic matter of a luxuriant natural vegetation—the accumulation of ages—present all the elements of a fertile soil. The extension of pasture is the main object at present in clearing land, but where bush is cleared for this purpose the rough and slovenly method usually adopted does not produce a first-class pasture, although bush soil is capable of growing excellent crops of either roots or cereals.

On the extensive hill lands of the eastern division of the district, however,

* Trans. N.Z. Inst., Vol. II., Art. XLVIII., "On the River System of the South Portion of the Province of Wellington," by J. T. Stewart.

where the tertiary limestones prevail, and where there is comparatively little bush, sufficient has been done by a few enterprising settlers to show that this open land is capable of carrying a pasture equal to any in New Zealand, and must, when improved extensively, become a source of great wealth in the future.

Soils vary according to the character of the rock formations from which they are derived, and, by thus supplying in certain cases adaptative food to certain species of plants, influence their geographical distribution; on some such theory only can we account for the presence of particular species within certain areas, and the apparent inadaptative nature of those areas for other species. So strong is this influence in some cases that soil appears to dominate over temperature. The selected habitats of the *Fagus* species in Wellington is a notable instance of this, and so well marked is it in the Upper Wairarapa valley, that if we view the Tararua mountains from a distance of five to seven miles from the east, we may be able to determine the geological formation of the range by its botanical facies.

The rugged outline of the alpine region is clearly shown against the sky at a varying altitude of 3,000 to 5,000 feet. The vegetation consists of grass with low-growing plants, the result of a low temperature and fierce cold winds. The soil here is derived from palæozoic rocks, but sufficient observations have not been made to show the relation between varieties of soil in this region and the distribution of species, temperature ruling supreme as regards size.

The middle altitudes of the range show, in the uniform dull-green colour and even surface, the unmistakable presence of *Fagus* bush, one species creeping up the gullies till it becomes gnarled and stunted in growth. In this middle region the rocks are triassic, and reach to a considerable altitude. The same formation on Wellington harbour hills carries the same species of *Fagus* from the level of the sea. No doubt the species of this genus have an extensive range, both laterally and altitudinally, for in the South Island they reach altitudes of at least 4,000 feet; but within this natural range of temperature they show a decided preference for soils derived from mesozoic rocks.

The vegetation of the lower altitudes of the Tararuas is chiefly composed of that mixed bush so characteristic of New Zealand scenery, numerous specimens of *Fagus* being also scattered amongst it. This region is the habitat of the pines and numerous other genera of varied foliage, the whole, when brightened by the showy flowers of such species as *Metrosideros robusta* or *Weinmannia racemosa*, forming a very pleasing picture. This mixed bush has several lateral extensions on the river flats, and indicates on the hills the area of the tertiary rocks.

The climate of Wellington, as regards temperature, is mild and equable.

The influence of temperature, however, in producing a luxuriant plant-growth is of less importance than humidity, whether derived from the normal humid condition of the prevailing winds, or locally by the evaporation from swamp lands or the cover of bush. The amount of humidity present in the atmosphere differs much in different districts, and can be easily known without the aid of meteorological instruments by the greater or less abundance of those low forms of vegetable life—the lichen-fungi—whose minute forms often give a colouring to rocks and bark of trees. They are seldom found where dry winds prevail, but often in great profusion on the coast line, and inland for several miles, and at altitudes on the hills where rain-clouds hang. The normal condition of the sea-winds at Wellington is humid, but for short periods cold arid winds accompanied by rain prevail, whose blighting influence on some plants, especially those with membranaceous leaves, or tender introduced species, is almost destructive, and, but for the shelter of more robust species, many (such as *Piper excelsum*) would become extinct. This blighting influence of the sea-winds has been erroneously ascribed to the presence of salt carried from the ocean; but if this were the case every storm should produce the same blighting effect, whereas it occurs seldom more than once or twice in a year, and only for a few hours.

For convenience the flora of Wellington will be arranged under five natural divisions: bush, open land, alpine, littoral, and marine. From the equability of the climate, the species of the first and second divisions are very uniformly distributed over their own areas up to 2,000 feet. It is presumed, therefore, that any artificial system of zones of altitudinal distribution in a district where the greatest altitudes are only 5,000 feet would fail in correctness, as it has been already shown that the selection of habitat by species within this limit is more influenced by soil than temperature.

The geographical position of the timber trees is a subject of much importance in a commercial point of view. As the country is opened up by railroads it will be found that the species easiest reached differ in different districts, both in kind and value. The value of any timber being proportionate to its strength and durability for constructive or other works, these qualities again are entirely ruled by the kind of soil and the amount of exposure under which it is grown. For it is an erroneous idea that if once some particular kind of tree, such as totara, has produced durable timber, all totara will be durable; for that which is grown on rich alluvial sheltered bottoms will, undoubtedly, be inferior in durability to that which is grown on exposed hill-ridges, the growth of the latter being much slower, producing a timber of greater specific gravity and containing more secreted oil. So, also, does soil and exposure influence the strength of those timbers which are selected for building purposes (such as rimu), where capacity to resist transverse strain is

required. In experiments made on the strength of timbers for the New Zealand Exhibition Commissioners, it was clearly proved that in certain localities the timber of rimu was much stronger than in others, and the only reason that can be assigned for this is the difference in soil and exposure.

But little need be said on the vegetation of the open land, which, in almost every locality, is either grass or fern, with intervals of scrub. A list of the plants of this division has already been given in a paper on the flora of the Miramar Peninsula (Trans. N.Z. Inst., Vol. V., p. 349).

The indigenous grasses are sparsely spread, but improve by grazing if not too often burned. They generally disappear before British grasses, not from possessing a lesser vitality, but from being unduly handicapped in the struggle. There is probably no instance of the native grass-seeds being collected and sown, while this is frequently done with the British species, some of which would, no doubt, disappear also but for being re-sown.

The alpine region in Wellington is but little known. Those plants collected prove to be chiefly South Island species, with a few Ruahine Mountain species, the latter having been first collected there by Mr. Colenso. Many new species may still be expected to be found in this region when more thoroughly examined.

The littoral region differs little over the entire coast of New Zealand, thus proving a great uniformity in the conditions of plant-life there. A list of the species peculiar to this division will be found in Trans. N.Z. Inst., Vol. V., p. 349.

In the marine region the Algæ of the southern coast of Wellington are peculiarly rich in the Melanospermæ, or large-sized species of the order, masses of them having, no doubt, been drifted by the currents and storms of the south from other islands, although the same species are also indigenous to New Zealand. In proof of this, and as fixing the locality whence some may have come, *Ostrea virginica*, a mollusc of the Chatham Islands, has been found attached to one of these floating masses; again, *Acanthocætes ovatus*, a rare mollusc founded by Captain Hutton on a single specimen (of unknown locality), has since been found deeply imbedded in a large floated stem of *Macrocystus pyrifera*, from which it may be inferred that both plant and mollusc are immigrants to New Zealand.

The storm-beaten shores of Wellington, with limited shelter, are but little adapted to the growth of the more delicate Rhodospermæ, hence the fewness of those found, except when parasitic on the larger species.

The other orders of the Cryptogamia have their habitats spread over all the regions of the Phanerogamia. The alpine forms are little known, and the whole, especially Fungi, still offer a rich field for further research in Wellington.

In Musci and Hepaticæ the list now offered may still be incomplete, as it is compiled only from the collection of the writer, in whose hands they have all undergone a recent microscopical examination, and, although some errors may occur in his determination of the species of this interesting though difficult order, the list must still include all the most prominent forms which are likely to be found in the district under notice.

In Lichenes I am indebted to Dr. Stirton, of Glasgow, for the greater part of the determinations, and among several sent to him he has been fortunate in discovering many new species, as also a few species new to New Zealand, but known previously to science. He has also kindly sent descriptions of the new species which will be found appended to this paper, and which will no doubt prove useful to local botanists.

The Fungi I had intended to have left entirely out, but having drawings of some easily recognized species, they have, with a few others, been added.

The additions to the flora of Wellington, which have been placed in the Colonial Herbarium by others than the writer during the last five years, are a collection of flowering plants from the neighbourhood of the City of Wellington by Mr. Holmes. The more rare additions are a collection made by Dr. Hector from the Upper Rangitikei District and the East Coast, where he determined the most northern locality for *Celmisia coriacea*, and the most southern for *Pomaderris phylicifolia;* a collection of alpine plants, made by Mr. Mitchell, of the Provincial Survey Department, whose zeal in the cause of science is worthy of imitation by others having similar opportunities; and a collection of a few rare plants of northern type from the West Coast, made by Mr. Hamilton, including *Rhabdothamnus solandri*, *Pomaderris phylicifolia*, and *Sparganium simplex.*

The number of species in my list as compared with the whole flora of New Zealand is as follows:—

	Wellington.	New Zealand.
Phanerogamia	486	980
Filices	105	134
Musci	160	343
Hepaticæ	86	232
Lichenes	151	212
Fungi	52	219
Algæ	100	319
	1,140	2,439

DICOTYLEDONS.

RANUNCULACEÆ.

Clematis indivisa, Willd. Fl. Aug.—Nov.; white.
hexasepala, DC. Fl. Oct., Nov.; white.
parviflora, A. Cunn. Fl. Oct., Nov.; greenish yellow.
colensoi, Hook. f. Fl. Oct.—Dec.; greenish white, sweet scented.
Myosurus aristatus, Benth. Ocean Beach, Island Bay.
Ranunculus insignis, Hook. f. Tararua Mountains. Fl. yellow.
nivicola, Hook. Upper Rangitikei. Fl. Feb.; yellow.
plebeius, Br. Fl. Oct.—July; yellow.
lappaceus, Sm., var. *multiscapus*. Fl. Nov.—March; yellow.
macropus, Hook. f. Fl. Dec., Jan.; Wainuiomata; yellow.
rivularis, Banks and Sol., vars. *a.* and *b.* Fl. Nov.—March; yellow.
acaulis, Banks and Sol. Ocean Beach. Fl. Nov.—Jan.; yellow.
parviflorus, Linn., var. *australis*. Fl. Nov., Dec.; yellow.

MAGNOLIACEÆ.

Drimys axillaris, Forst. Fl. Aug.—Dec.; fl. white, berries red.
colorata, Raoul. Fl. Sept.—Dec.; fl. white, berries black.

CRUCIFERÆ.

Nasturtium palustre, DC. Upper Wairarapa. Fl. Nov., Dec.; yellow.
Barbarea vulgaris, Linn. Fl. Sept.—Feb.; yellow.
Cardamine hirsuta, Linn., vars. *a.* and *b.* Fl. through the year; white.
Lepidium oleraceum, Forst. Ocean Beach. Fl. Nov., Dec.; white.

VIOLARIEÆ.

Viola filicaulis, Hook. f. Fl. Dec.—Feb.; white.
cunninghamii, Hook. f. Fl. Dec., Jan.; white.
Melicytus ramiflorus, Forst. Fl. Oct.—April; greenish yellow, sweet scented.
lanceolatus, Hook. f. Wainuiomata. Fl. Dec.—Feb.
micranthus, Hook. f. Upper Wairarapa.
Hymenanthera crassifolia, Hook. f. Fl. July, Aug.; pale yellow.
latifolia, Endl. A plant from the Upper Rangitikei, in fruit, with coriaceous leaves three to four inches long, serrated, and acuminate at both ends, may be this.

PITTOSPOREÆ.

Pittosporum tenuifolium, Banks and Sol. Fl. Oct.—Dec.; dark purple.
colensoi, Hook f, Upper Rangitikei. Fl. Oct.—Dec.; dark purple.
buchanani, Hook. f. Wanganui. Fl. Oct.—Jan.; dark purple.
eugenioides, A. Cunn. Fl. Oct., Nov.; pale yellow, sweet scented.
cornifolium, A. Cunn. Fl. Sep., Oct.; dark purple.

CARYOPHYLLEÆ.

Stellaria parviflora, Banks and Sol. Fl. Dec., Jan.; white.
elatinoides, Hook. f. Fl. Dec., Jan.; white.
gracilenta, Hook. f. Fl. Dec., Jan.; white.
Colobanthus billardieri, Fenzl. Fl. Aug.—Dec.
subulatus, Hook. f.
acicularis, Hook. f.
Spergularia rubra, Pers., var. *marina*. Fl. Aug.—Dec.; pink.

PORTULACEÆ.

Montia fontana, Linn. Fl. Dec.; white.

ELATINEÆ.

Elatine americana, Arnot. Island Bay.

HYPERICINEÆ.

Hypericum gramineum, Forst. Fl. Dec.—March; yellow.
japonicum, Thunb. Upper Rangitikei.

MALVACEÆ.

Plagianthus divaricatus, Forst. Evans Bay. Fl. Aug.—Nov.
betulinus, A. Cunn. Fl. Oct., Nov.; white.
Hoheria populnea, A. Cunn.
var. *b. lanceolata.* Fl. Dec., Jan.; white.
var. *c. angustifolia.* Upper Wairarapa. Fl. Jan., Feb.; white.

TILLIACEÆ.

Aristotelia racemosa, Hook. f. Fl. July—Nov.; pink.
erecta, n.s. Upper Rangitikei. Fl. Dec., Jan.; pink.
fruticosa. Upper Rangitikei. Fl. Dec., Jan.; pink.
Elæocarpus dentatus, Vahl. Fl. Nov., Dec.; white.
hookerianus, Raoul. Wainuiomata. Fl. Nov., Dec.; white.

LINEÆ.

Linum monogynum, Forst. Fl. through the year; white.
marginale, A. Cunn. Upper Rangitikei. Fl. Dec.; white.

GERANIACEÆ.

Geranium dissectum, Linn., var. *carolinianum.* Fl. Dec.—March.
microphyllum, Hook. f. Fl. Dec.
sessiliflorum, Cav. Fl. Nov., Dec.; pink.
molle, Linn. Fl. Nov.—Feb.; white or pinkish.
Pelargonium australe, Willd., var. *clandestinum.* Fl. Dec., Jan.; pink.
Oxalis corniculata, Linn. The vars. of this sp. fl. during summer—yellow.
magellanica, Forst. Fl. Nov., Dec.; white.

RUTACEÆ.

Melicope ternata, Forst. Fl. Aug.—Nov.; pale greenish yellow.
mantellii, n. s. Fl. Aug.—Nov.; pale greenish yellow.
simplex, A. Cunn. Fl. Oct., Nov.; pale greenish white.

MELIACEÆ.

Dysoxylum spectabile, Hook. f. Fl. April—Sep.; white.

OLACINEÆ.

Pennantia corymbosa, Forst. Fl. Nov., Dec.; white.

RHAMNEÆ.

Pomaderris phylicifolia, Lodd. Otaki, Upper Wairarapa. Fl. Dec., Jan.
Discari toumatou, Raoul. Fl. Oct.—Jan.; white.

SAPINDACEÆ.

Dodonæa viscosa, Forst. Fl. Nov., Dec.; white.
Alectryon excelsum, DC. Fl. Nov., Dec.; greenish white.

ANACARDIACEÆ.

Corynocarpus laevigata, Forst. Fl. Sep.—Nov.; white.

CORIAREÆ.

Coriaria ruscifolia, Linn. Fl. Oct.—Dec.
thymifolia, Humb. Upper Rangitikei.

LEGUMINOSEÆ.

Carmichellia australis, Br. Fl. Dec., Jan.
odorata, Col. Upper Wairarapa. Fl. white purple.
flagelliformis, Col. Patea plains.
Sophora tetraptera, Aiton.
var. *a. grandiflora*. Fl. Oct., Nov.; yellow.
var. *b. microphylla*. Upper Wairarapa. Fl. Oct., Nov.; yellow.

ROSACEÆ.

Rubus australis, Forst.
var. *a. glaber*. Fl. Oct.; white.
var. *b. schmidelioides*. Fl. Oct., Nov.; white.
var. *c. cissoides*. Fl. Oct., Nov.; white.
Potentilla anserina, Linn. Fl. Dec.—Feb.; yellow.
Geum urbanum, Linn., var. *strictum*. Upper Wairarapa. Fl. Dec.; yellow.
Acœna sanguisorbæ, Vahl. Fl. during summer.

SAXIFRAGEÆ.

Carpodetus serratus, Forst. Fl. Dec.; white.
Weinmannia racemosa, Forst. Fl. Nov., Dec.; pinkish white.

TILLÆA.

Tillæa verticillaris, DC. Fl. Oct.—Dec.
purpurata, Hook. f. Sinclair Head.

DROSERACEÆ.

Drosera binata, Labill. Fl. Nov., Dec.; pinkish white.
auriculata, Back. Fl. Oct.—Dec.; pinkish white.

HALORAGEÆ.

Haloragis alata, Jacq. Common near Wellington.
tetragyna, Labill. Wairarapa.
depressa, Hook. f.
Myriophyllum elatinoides, Gaud. Fl. Nov., Dec.
pedunculatum, Hook. f. Evans Bay.
Gunnera prorepens, Hook. f. Upper Wairarapa.

MYRTACEÆ.

Leptospermum scoparium, Forst. Fl. through the year; white.
ericoides, A. Rich. Fl. Dec., Jan.; white.
Metrosideros florida, Sm. Fl. through the year; red.
lucida, Menz. Fl. Nov.—Jan.; red.
diffusa, Smith. Tararua Mountains. Fl. Oct., Nov.; red.
hypericifolia, A. Cunn. Fl. Dec., Jan.; white.
colensoi, Hook. f. Fl. Dec., Jan.; white.
robusta, A. Cunn. Fl. Nov.—Jan.; red.
scandens, Banks and Sol. Fl. Feb., March; white.

Myrtus bullata, Banks and Sol. Fl. Jan., Feb.; white.
ralphii, Hook. f. Fl. Dec., Jan.; white.
obcordata, Hook. f. Fl. Nov.—Jan.; white.
pedunculata, Hook. f. Fl. Dec., Jan.; white.
Eugenia maire, A. Cunn. Fl. June, July; white.

ONAGRARIEÆ.

Fuchsia excorticata, Linn. f. Fl. Sep.—Jan.; red.
colensoi, R. Cunn. Fl. Nov.—Jan.; red.
Epilobium nummularifolium, A. Cunn. Fl. Sep.—March.
linnæoides, Hook. f. Fl. Sep.—Dec.
macropus, Hook. Fl. Nov.—Jan. Wainuiomata.
confertifolium, Hook. f., var. *a*. Fl. Dec., Jan.
alsinoides, A. Cunn. Fl. Nov., Dec.
rotundifolium, Forst. Fl. Nov.—March; white.
glabellum, Forst. Fl. Nov.—Feb. Wainuiomata.
melanocaulon, Linn. Fl. Dec.
tetragonum, Linn. Fl. Dec., Jan.
pubens, A. Rich. Fl. Oct.—Jan.
billardierianum, Seringe. Fl. Nov.—Jan.; pinkish.
pallidiflorum, Sol. Fl. Nov.—Feb.; pinkish.

PASSIFLOREÆ.

Passiflora tetrandra, Banks and Sol. Fl. Dec., Jan.; white or yellow, with sometimes coloured markings.

FICOIDEÆ.

Mesembryanthemum australe, Sol. Fl. Aug.—Feb.; pinkish.
Tetragonia expansa, Murray. Fl. Dec.—Feb.; yellow.

UMBELLIFERÆ.

Hydrocotyle elongata, A. Cunn. Fl. Jan., Feb.
americana, Linn. Fl. Dec.—Feb.
asiatica, Linn. Fl. Dec.—March.
novæ zealandiæ, DC. Fl. Dec.—Feb.
moschata, Forst. Fl. Jan.—March.
Crantzia lineata, Nutt. Lyall Bay. Fl. Jan., Feb.
Apium australe, Thouars. Fl. Aug.—March.
filiforme, Hook. Fl. Sept.—March.
Eryngium vesiculosum, Labill. Sinclair Head.
Aciphylla squarrosa, Forst. Wellington Harbour. Fl. Dec., Jan.
colensoi, Hook. f. Tararua Mountains.
Ligusticum lyallii, Hook. f. Tararua Mountains.
aromaticum, Banks and Sol. Patea Plains.
Angelica gingidium, Hook. f. Upper Wairarapa. Fl. Nov.—Jan.
rosæfolia, Hook. Upper Rangitikei. Fl. Jan.; white.
geniculata, Hook. f. Kaiwarra. Fl. Nov., Dec.
Daucus brachiatus, Sieber. Upper Wairarapa.

ARALIACEÆ.

Panax simplex, Forst. Fl. Sep.—Nov.
edgerleyi, Hook. f. Fl. Nov., Dec.
anomalum, Hook.
crassifolium, Dcne. and Planche.
arboreum, Forst. Fl. Aug.—March.

Schefflera digitata, Forst. Fl. Jan., Feb.

CORNEÆ.

Griselinia lucida, Forst. Fl. Oct.—Dec.; greenish white.
littoralis, Raoul. Fl. Oct.—Dec.; greenish white.
Corokia cotoneaster, Raoul. Upper Wairarapa. Fl. Nov., Dec.; yellow.

LORANTHACEÆ.

Loranthus colensoi, Hook. On *Pittosporum tenuifolium.*
flavidus, Hook. f. On *Fagus.*
micranthus, Hook. f. Common on various plants.
Tupeia antarctica, Cham. and Schl. Fl. Aug.
Viscum salicornioides, A. Cunn. Common on manuka.

CAPRIFOLIACEÆ.

Alseuosmia macrophylla, A. Cunn. Fl. Dec.; greenish white, sweet scented.

RUBIACEÆ.

Coprosma lucida, Forst. Fl. July—Nov.
grandifolia, Hook f. Fl. July—Oct.
baueriana, Endl. Fl. July—Dec.
petiolata, Hook. f. Fl. Dec.
robusta, Raoul. Fl. July—Dec.
cunninghamii, Hook. f. Fl. Aug.—Oct. Hutt.
rotundifolia, A. Cunn. Nov.
tenuicaulis, Hook. f. Fl. Sep.—Oct.
rhamnoides, A. Cunn. Fl. Sep., Oct.
divaricata, A. Cunn. Fl. Aug.—Oct.
parviflora, Hook. f. Fl. Aug., Sep.
propinqua, A. Cunn. Fl. Sep., Oct.
fœtidissima, Forst. Fl. Oct., Nov.
acerosa, A. Cunn. Fl. July, Aug.
depressa, Col. In fruit Nov.
microcarpa, Hook. f. In fruit Nov.
Nertera dichondræfolia, Hook. f. Fl. Nov., Dec.
setulosa, Hook. f. Wainuiomata. Fl. Dec.
Galium tenuicaule, A. Cunn. Fl. Nov., Dec.
umbrosum, Forst. Fl. Nov., Dec.
Asperula perpusilla, Hook. f. Fl. Dec.

COMPOSITÆ.

Olearia colensoi, Hook. f. Tararua Mountains.
nitida, Hook. f. Fl. Oct.—June; white.
ilicifolia, Hook. f. Tararua Mountains. Fl. Dec., Jan.; white.
cunninghamii, Hook. f. Fl. Oct.—Dec.; white.
lacunosa, Hook. f. Tararua Mountains. Fl. Dec., Jan.; white.
excorticata, sp. nov. Tararua Mountains. Fl. Dec., Jan.
nummularifolia, Hook. f. Upper Rangitikei. White.
forsteri, Hook. f. Fl. March, April; white.
virgata, Hook. f., var. *a.* Upper Wairarapa. Fl. Nov., Dec.; white.
solandri, Hook. f. Fl. Nov.—July; white.
Celmisia densiflora, Hook. f. Tararua Mountains. White and yellow.
coriacea, Hook. f. East Coast. White and yellow.
spectabilis, Hook. f. East Coast. White and yellow.

Celmisia (continued)
longifolia, Cass. East Coast. White and yellow.
hectori, Hook. f. Tararua Mountains.
glandulosa, Hook. f. Upper Rangitikei. White and yellow.
Vittadinia australis, A. Rich. Fl. Dec.—March; white.
Lagenophora forsteri, DC. Fl. Nov.—April; white.
petiolata, Hook. f. Fl. Dec.; white.
Brachycome sinclairii, Hook. f. Nov.—Feb.; white.
odorata, Hook. f. Wanganui. Fl. Dec., Jan.; white.
Cotula coronopifolia, Linn. Fl. through the year; yellow.
australis, Hook. f. Fl. through the summer; pale yellow.
minor, Hook. f. Fl. through the summer; pale yellow.
perpusilla, Hook. f. Fl. Dec.—March; pale yellow.
divica, Hook. f. Fl. Dec.—Feb.; pale yellow.
minuta, Forst. Fl. Dec., April; pale yellow.
Craspedia fimbriata, DC. Fl. Jan.—March; pale yellow.
alpina, Back. Fl. Jan.—March; pale yellow.
Cassinia leptophylla, Br. Fl. Oct.—April; white.
fulvida, Hook. f. Fl. Jan.—March; white.
Ozothamnus glomeratus, Hook. f. Fl. Nov.—March; white.
Raoulia australis, Hook. f. Fl. Nov., Dec.; white.
tenuicaulis, Hook. f. Fl. Nov., Dec.; white.
grandiflora, Hook. f. Fl. Nov.—Jan.; white.
mammillaris, Hook. f. Tararua Mountains. White.
Gnaphalium prostratum, Hook. f. Fl. Nov.—Feb.; white.
bellidioides, Hook. f. Fl. Nov.—Feb.; white.
keriense, A. Cunn. Upper Wairarapa. Fl. Nov., Dec.; white.
var. *b. linifolia*, Wanganui. Fl. Nov., Dec.; white.
filicaule, Hook. f. Fl. Nov.—Feb.; white.
luteo-album, Linn. Fl. Nov.—March; pale yellow.
involucratum, Forst. Fl. Nov.—March; pale yellow.
collinum, Labill. Fl. Dec.; pale yellow.
Erechtites prenanthoides, DC. Fl. Nov., Dec.
arguta, DC. Fl. Nov., Dec.
scaberula, Hook. f. Upper Rangitikei.
quadridentata, DC. Fl. Nov.—Feb.
Senecio lagopus, Raoul. Fl. Dec., Jan.; yellow.
latifolius, Banks and Sol. Fl. Jan., Feb.; yellow.
lautus, Forst. Fl. through the year; yellow.
glastifolius, Hook. f. Sub-alpine. Fl. Oct.—Dec.; white and yellow.
elæagnifolius, Hook. f. Sub-alpine. Fl. Jan.—March; yellow.
bidwillii, Hook. f. Tararua Mountains, 5,000 feet.
Brachyglottis repanda, Forst. Fl. Oct., Nov.; white.
Microseris forsteri, Hook. f. Fl. Dec., Jan.; yellow.
Sonchus oleraceus, Linn. Fl. Dec.—June; yellow.

STYLIDIEÆ.

Helophyllum colensoi, Hook. f. Tararua Mountains. Fl. Feb.; white.

CAMPANULACEÆ.

Wahlenbergia gracilis, A. Rich. Fl. Nov.—March; blue.
saxicola, A. DC. Sub-alpine. Fl. Jan.; blue.
cartilaginea, Hook. f. Upper Rangitikei.

Lobelia anceps, Thunb. Fl. Nov.—May; blue.
Pratia angulata, Hook. f. Fl. Dec.—Feb.; pale blue.
macrodon, Hook. f. Fl. Jan.; pale blue.
Sellieria radicans, Cav. Fl. Nov., Dec.; white.

ERICEÆ.

Gaultheria antipoda, Forst.
var. *a*. Wairarapa. Fl. Nov.—Jan.; white.
var. *b*. Upper Rangitikei. Fl. Dec., Jan.; white.
var. *c*. Upper Rangitikei. Fl. Dec., Jan.; white.
rupestris, Br.
var. *a*. Tararua Mountains. Fl. Dec., Jan.; white.
var. *c*. Lowry Bay. Fl. Dec., Jan.; white.
Cyathodes acerosa, Br. Fl. Aug.—Dec.; white.
empetrifolia, Hook. f. Patea District.
Leucopogon fasciculatus, A. Rich. Fl. Aug.—Dec.; white.
frazeri, A. Cunn. Fl. Sep.—Jan.; white.
Dracophyllum recurvum, Hook. f. Patea District.
urvilleanum, A. Rich. Fl. Jan., Feb.; white.
rosmarinifolium, Forst. Tararua Mountains. Fl. white.

MYRSINEÆ.

Myrsine salicina, Heward. Fl. Oct., Nov.
urvillei, A. DC. Fl. April, May.
divaricata, A. Cunn.
nummularia, Hook. f. Upper Rangitikei.

PRIMULACEÆ.

Samolus littoralis, Br. Fl. Dec.—March; white.

JASMINEÆ.

Olea cunninghamii, Hook. f.

APOCYNEÆ.

Parsonsia albiflora, Raoul. Fl. Oct.—May; white.
rosea, Raoul. Fl. Nov.—March; white.

LOGANIACEÆ.

Geniostoma ligustrifolium, A. Cunn. Fl. Oct.—Dec.; greenish white.

GENTIANEÆ.

Gentiana montana, Forst. Fl. March, April. Tararua Mountains.
pleurogynoides, Grisel. Fl. March, April. Tararua Mountains.
saxosa, Forst. Fl. March, April. Tararua Mountains.

BORAGINEÆ.

Myosotis antarctica, Hook. f. Fl. Jan.; white.
forsteri, Rœm. and Sch. Fl. Jan., Feb.; white.

CONVOLVULACEÆ.

Convolvulus sepium, Linn. Fl. Dec., Jan.; white.
tuguriorum, Forst. Fl. Dec., Jan.; white or pink.
soldanella, Hook. f. Fl. Nov.—Jan.; white or pink.
erubescens, Br. Fl. Dec.—Feb.; white or pink.
Dichondra repens, Forst. Fl. Dec.—Feb.; greenish white.

SOLANEÆ.

Solanum aviculare, Forst. Fl. Oct.—Jan.; purple.
nigrum, Linn. Fl. Oct.—Jan; white.

SCROPHULARINEÆ.

Mimulus radicans, Hook. f. Fl. Nov., Dec.; bluish.
Mazus pumilio, Br. Otaki. Fl. Dec., Jan.; bluish.
Gratiola sexdentata, A. Cunn. Fl. Jan., Feb.
Limosella aquatica, var. *tenuifolia*, Linn. Lyall Bay.
Veronica salicifolia, Forst. Wairarapa. Fl. Sep., Oct.; white.
parviflora, Vahl. Wellington Harbour. Fl. Feb.—June; white.
arborea, sp. nov. Fl. Jan.—April; white or pale purple.
ligustrifolia, A. Cunn. Upper Rangitikei. Fl. Jan.; white.
lævis, Benth. Tararua Mountains. Fl. March; white.
tetragona, Hook. Tararua Mountains. Fl. Jan.; white.
nivalis, Hook. f. Patea country.
lyallii, Hook. f. Wanganui. Fl. Jan.; white.
cataractæ, Forst. Upper Wairarapa. Fl. Dec.
„ var. *b. diffusa*. Tararua Mountains. White.
Ourisia macrophylla, Hook. Wainuiomata. Fl. Dec., Jan.; white.
colensoi, Hook. f. Upper Rangitikei. Fl. Jan.; white.
Euphrasia cuneata, Forst. Tararua Mountains, etc. Fl. March, April; white.
antarctica, Benth. Upper Wairarapa.

GESNERACEÆ.

Rhabdothamnus solandri, A. Cunn. Horokiwi. Fl. Dec.—Feb.; striped red and yellow.

LENTIBULARIEÆ.

Utricularia novæ-zealandiæ, Hook. f. Wainuiomata. Fl. Jan.

VERBENACEÆ.

Teucridium parvifolium, Hook. f. Upper Wairarapa. Not in flower.
Myoporum lætum, Forst. Fl. Oct.—Jan.; white, spotted pink.

LABIATÆ.

Mentha cunninghamii, Benth. Wanganui. Fl. Jan.; white.

PLANTAGINEÆ.

Plantago brownii, Rapin. Manawatu.
raoulii, Decaisne. Upper Rangitikei.

CHENOPODIACEÆ.

Chenopodium triandrum, Forst. Fl. Dec., Jan.
glaucum, var. *ambiguum*. Fl. Dec., Jan.
carinatum, Br. Fl. Jan.
Suæda maritima, Dumont. Island Bay, Wellington.
Atriplex cinerea, Poiret. Evans Bay.
Salsola australis, Br. Pipitea Point, Wellington.
Salicornia indica, Willd. Evans Bay. Fl. Oct., Nov.

PARONYCHIEÆ.

Scleranthus biflorus, Hook. f. Fl. Dec.—Feb.; white.

POLYGONEÆ.

Polygonum minus, Huds., var. *decipiens*. Fl. Sept.—Dec.
aviculare, Linn. Fl. Oct.—Jan.
Muhlenbeckia adpressa, Lab. Fl. Oct.—March.
complexa, Meisn. Fl. Dec.—April.
axillaris, Hook. f. Upper Wairarapa.

LAURINEÆ.

Nesodaphne tawa, Hook. f. Fl. July, Aug.

MONIMIACEÆ.

Atherosperma novæ-zealandiæ, Hook. f. Fl. Dec., Jan.
Hedycarya dentata, Forst. Fl. Oct.—Dec.; greenish white.

PROTEACEÆ.

Knightia excelsa, Br. Fl. Nov., Dec.; red.

THYMELEÆ.

Pimelea virgata, Vahl. Upper Wairarapa. Fl. Nov., Dec.; white.
arenaria, A. Cunn. Fl. Dec.—April; white.
urvilleana, A. Rich. Fl. Jan., Feb.; white.
prostrata, Vahl. Fl. during the year; white.

SANTALACEÆ.

Santalum cunninghamii, Hook. f.

EUPHORBIACEÆ.

Euphorbia glauca, Forst. Fl. Aug.—Dec.

CUPULIFERÆ.

Fagus menziesii, Hook. f.
fusca, Hook. f.
solandri, Hook. f.

URTICEÆ.

Epicarpurus microphyllus, Raoul. Fl. Sept., Oct.
Urtica australis, Hook. f. Fl. Nov., Dec.
ferox, Forst. Fl. Nov., Dec.
Parietaria debilis, Forst.
Australina pusilla, Gaud. Fl. Oct., Nov.
Elatostemma rugosum, A. Cunn. Fl. Dec., Jan. Otaki.

PIPERACEÆ.

Peperomia urvilleanum, A. Rich. Fl. Aug., Sep.
Piper excelsum, Forst. Fl. Sep.—Nov.

CONIFERÆ.

Libocedrus doniana, Endl. Tararua Mountains.
Podocarpus ferruginea, Don. Fl. Oct.
nivalis, Hook. f. Tararua Mountains.
totara, A. Cunn. Fl. Oct.
spicata, Br. Fl. Oct.
dacrydoides, A. Rich.
Dacrydium cupressinum, Sol. Fl. Sept., Oct.
Phyllocladus trichomanoides, Don. Tararua Mountains.

MONOCOTYLEDONS.

Orchideæ.

Earina mucronata, Lindl. Fl. Oct., Nov.; white, spotted pink.
autumnalis, Hook. f. Fl. Feb., March; white.
Dendrobium cunninghamii, Lindl. Fl. Nov.—Jan.
Bolbophyllum pygmæum, Lindl.
Sarcochilus adversus, Hook. f. Fl. Dec.; yellowish green.
Gastrodia cunninghamii, Hook. f. Fl. Nov.; white.
Acianthus sinclairii, Hook. f. Fl. March. Wanganui.
Corysanthes triloba, Hook. f. Fl. Oct., Nov.; purple.
rotundifolia, Hook. f. Fl. Oct., Nov.; purple.
Microtis porrifolia, Spreng. Fl. Nov., Dec.; yellowish green.
Caladenia minor, Hook. f. Fl. Nov., Dec.; pale greenish white.
Pterostylis banksii, Br. Fl. Nov., Dec.; pale green.
graminea, Hook. f. Fl. June—Aug.; pale green.
micromega, Hook. f. Fl. Oct.—Dec.
Thelymitra longifolia, Forst. Fl. Nov., Dec.; white and purple.
colensoi, Hook. f. Fl. Nov., Dec.; yellowish green.
Prasophyllum colensoi, Hook. f. Fl. Nov., Dec.; yellowish green.
nudum, Hook. f. Fl. Nov., Dec.; yellowish green.
Orthoceras solandri, Lindl. Wainuiomata. Fl. Dec., Jan.; yellowish green

Irideæ.

Libertia ixioides, Spreng. Fl. Sep.—Dec.; white.
micrantha, A. Cunn. Fl. Nov., Dec.; white.

Pandaneæ.

Freycinetia banksii, A. Cunn. Fl. Sep., Oct.; white.

Typhaceæ.

Typha angustifolia, Linn. Fl. Dec.
Sparganium simplex, Huds. Fl. Dec.; white. Wanganui.

Naiadeæ.

Lemna minor, Linn.
Triglochin triandrum, Mich. Fl. Dec., Jan.
Potamogeton natans, Linn. Fl. Dec.
gramineus, Linn.
Ruppia maritima, Linn.
Zannichellia palustris, Linn.
Zostera marina, Linn.

Liliaceæ.

Rhipogonum scandens, Forst. Fl. Dec.; yellowish green.
Callixene parviflora, Hook. f. Wainuiomata.
Cordyline australis, Hook. f. Fl. Nov., Dec.; white.
banksii, Hook. f. Fl. Nov., Dec.; white.
indivisa, Kunth. Fl. Jan.; white.
pumilio, Hook. f. Fl. Jan.; white.
Dianella intermedia, Endl. Fl. Dec.
Astelia cunninghamii, Hook. f. Fl. Dec., Jan.
linearis, Hook. f. Upper Wairarapa. Not in flower.
solandri, A. Cunn. Fl. Jan., Feb.
grandis, Hook. f. Fl. Oct., Nov.

Arthropodium cirrhatum, Br. Fl. Nov., Dec.; white.
candidum, Raoul. Fl. Nov., Dec.; white.
Phormium tenax, Forst. Fl. Oct.—Dec.; dark brownish purple.
colensoi, Hook. f. Fl. Sept.—Dec.; pale yellow and red.

PALMEÆ.

Areca sapida, Sol. Fl. May, June.

JUNCEÆ.

Juncus
vaginatus, Br.
australis, Hook. f.
maritimus, Lam.
communis, E. Mayer.
planifolius, Br.
bufonius, Linn.
Juncus (continued)
novæ-zealandiæ, Hook. f.
capillaceus, Hook. f.
Luzula
campestris, DC.
" var. *b.* (Wairarapa).
oldfieldii, Hook. f.

RESTIACEÆ.

Leptocarpus
simplex, A. Rich.
Calorophus
elongata, Labill.

CYPERACEÆ.

Cyperus
ustulatus, A. Rich.
Schœnus
axillaris, Hook. f.
tenax, Hook. f.
pauciflorus, Hook. f.
concinnus, Hook. f.
nitens, Hook. f.
Carpha
alpina, Br.
Scirpus
maritimus, Linn.
lacustris, Linn.
triqueter, Linn.
Eleocharis
gracilis, Br.
gracillima, Hook. f.
acuta, Br., var. *platylepis*.
ambigua, Kirk.
Isolepis
nodosa, Br.
prolifer, Br.
globosa, n. s.
riparia, Br.
cartilaginea, Br.
aucklandica, Hook. f.
Desmoschœnus
spiralis, Hook. f.
Cladium
glomeratum, Br.
junceum, Br.
Gahnia
setifolia, Hook. f.
procera, Forst.
ebenocarpa, Hook. f.
lacera, Steud.
Lepidosperma
tetragona, Labill.
Oreobilis
pumilio, Br.
Uncinia
leptostachya, Raoul.
sinclairii, Boott.
australis, Persoon.
cæspitosa, Boott.
filiformis, Boott.
Carex
pyrenaica, Wahl.
colensoi, Boott.
stellulata, Good.
teretiuscula, Good.
virgata, Sol.
" var. *secta*.
ternaria, Forst.
raoulii, Boott.
lucida, Boott.
pumila, Thunb.
forsteri, Vahl.
cataractæ, Br.
dissita, Sol.

GRAMINEÆ.

Microlæna
stipoides, Br.
avenacea, Hook. f.
Alopecurus
geniculatus, Linn.
Hierochloe
redolens, Br.
Spinifex
hirsutus, Labill.
Panicum
imbecille, Trinius.
Echinopogon
ovatus, Palisot.
Dichelachne
crinita, Hook. f.
Agrostis
canina, Linn., var. *b.*
parviflora, Br.
æmula, Br.
billardieri, Br.
quadriseta, Br.
Arundo
conspicua, Forst.
fulvida, n. s.
Danthonia
cunninghamii, Hook. f.
Danthonia (continued)
raoulii, Steud.
semi-annularis, Br.
Kœleria
cristata, Persoon.
Trisetum
antarcticum, Palisot.
subspicatum, Palisot.
Glyceria
stricta, Hook. f.
Catabrosa
antarctica, Hook. f.
Poa
imbecilla, Forst.
anceps, Forst.
australis, Br.
colensoi, Hook. f.
Festuca
littoralis, Br.
duriuscula, Linn.
Bromus
arenarius, Lab.
Triticum
scabrum, Br.
Gymnostichum
gracile, Hook. f.

FILICES.

Gleichenia
dicarpa, Br.
cunninghamii, Hew.
Cyathea
dealbata, Swartz.
medullaris, Swartz.
cunninghamii, Hook. f.
Hemitelia
smithii, Hook.
Dicksonia
squarrosa, Swartz.
antarctica, Br.
Hymenophyllum
tunbridgense, Smith.
" var. *a. minimum.*
" var. *b. cupressiforme* and *unilaterale.*
bivalve, Swartz.
multifidum, Swartz.
rarum, Br.
pulcherrimum, Col.
javanicum, Spreng.
polyanthos, Swartz.
demissum, Swartz.
Hymenophyllum (continued)
scabrum, A. Rich.
flabellatum, Labill.
subtilissimum, Kuntze.
Trichomanes
reniforme, Forst.
humile, Forst.
colensoi, Hook. f.
venosum, Br.
rigidum, Swartz.
" var. *b. elongatum.*
Davallia
novæ zealandiæ, Col.
Lindsaya
linearis, Swartz.
trichomanoides, Dryan.
" var. *b. lessonii.*
Adiantum
hispidulum, Swartz.
diaphanum, Blume.
affine, Willd.
fulvum, Raoul.
Hypolepis
tenuifolia, Bernh.

Hypolepis (continued)
distans, Hook.
Pellæa
rotundifolia, Forst.
Pteris
aquilina, Linn., var. *g. esculenta.*
tremula, Br.
scaberula, A. Rich.
incisa, Thunb.
macilenta, A. Rich.
Lomaria
filiformis, A. Cunn.
procera, vars. *a.*, *b.*, *c.*, *d.*
fluviatilis, Spreng.
membranacea, Col.
vulcanica, Blume.
patersoni, Spreng.
lanceolata, Spreng.
discolor, Willd.
alpina, Spreng.
banksii, Hook. f.
nigra, Col.
Doodia
caudata, Br.
" var. *b. falcata* (scented).
Asplenium
obtusatum, Forst.
" var. *c. lucidum.*
trichomanes, Linn.
flabellifolium, Cavan.
falcatum, Lam.
hookerianum, Col.
colensoi, Hook. f.
bulbiferum, Forst.
" var. *b. laxa.*
" var. *c. tripinnata.*
richardi, Hook. f.
flaccidum, Forst.
" vars. *a.*, *b.*, *c.*, *d.*

Aspidium
aculeatum, Swartz.
" var. *b. sylvaticum.*
richardi, Hook.
oculatum, Hook.
cystostegia, Hook.
capense, Willd.
Nephrodium
velutinum, Hook f.
decompositum, Br.
" var. *b. fasciculata.*
hispidum, Hook.
Polypodium
australe, Mett.
grammitides, Br.
tenellum, Forst.
rugulosum, Labill.
pennigerum, Forst.
serpens, Forst.
cunninghamii, Hook.
Polypodium
pustulatum, Forst.
billardieri, Br.
Gymnogramme
leptophylla, Desv.
Todea
hymenophylloides, Rich. and Less.
superba, Col.
" var. *b. intermedia.*
Ophioglossum
vulgatum, Linn.
" var. *b. costatum.*
lusitanicum, Linn.
" var. *e. minimum.*
Botrychium
circutarium, Swartz.
" vars. *a.*, *b.*

LYCOPODIACEÆ.

Lycopodium
billardieri, Spreng.
laterale, Br.
scariosum, Forst.
Lycopodium (continued)
volubile, Forst.
Tmesipteris
forsteri, Endl.

MARSILEACEÆ.

Azolla rubra, Br.

CRYPTOGAMIA.

MUSCI.

Gymnostichum
calcareum, Nees and Horns.
Weissia
controversa, Hedw.

Weissia (continued)
flavipes, Hook. f. and Wils.
irroratum, Mitt.
rufa, Stirton.
Symblepharis
perichætialis, Wils.
Fissidens
asplenioides, Swartz.
tenellus, Hook. f. and Wils.
dealbatum, Hook. f. and Wils.
rigidulus, Hook. f. and Wils.
bryoides, Hedw.
viridulus, Wahl., var. *acuminatus*
„ var. *incurvus*.
Dicneum
calycinum, Wils. and Hook.
Leucobryum
candidum, Hampe.
Dicranum
tasmanicum, Hook. f.
dicarpon, Hornsch.
robustum, Hook. f. and Wils.
„ var. *b. pungens*.
fasciatum, Hedw.
billardieri, Brid.
setosum, Hook. f. and Wils.
menziesii, Tay.
Campylopus
introflexus, Hedw.
appressifolius, Mitt.
torquatus, Br.
Trematodon
suberectus, Mitt.
Trichostomum
leptodon, Mitt.
phæum, Hook. f. and Wils.
mutabile, Bruch.
laxifolium, Hook. f. and Wils.
elongatum, Hook. f. and Wils.
Tortula
muelleri, Br. and Schimp.
serrulata, Hook. and Grev.
rubra, Mitt.
knightii, Mitt.
calycina, Schwægr.
Ceratodon
purpureus, Brid.
Grimmia
apocarpa, Hedw.
pulvinata, Smith.
„ var. *africana*.
trichophylla, Grev.
buchanani, Stirton.
Racomitrium
crispulum, Hook. f. and Wils.
protensum, Braun.
lanuginosum, Brid., var. *pruinosum*.
Schlotheimia
brownii, Schwægr.
Macromitrium
longipes, Schwægr.
gracile, Schwægr.
microphyllum, Hook. and Grev.
microstomum, Schwægr.
Zygodon
brownii, Schwægr.
menziesii, Mitt.
Leptostomum
inclinans, Br.
macrocarpum, Br.
Bryum
pyriforme, Hedw.
truncorum, Bory.
campylothecium, Tay.
obconicum, Horns.
lævigatum, Hook. f. and Wils.
chrysoneurum, C. Muell.
pachytheca, C. Muell.
torquescens, Bruch. and Schimp.
annulatum, Hook. f. and Wils.
contortum, Stirton.
Mnium
rostratum, Schwægr.
Conostomum
australe, Swartz.
Cryptopodium
bartramioides, Brid.
Bartramia
halleriana, Hedw.
papillata, Hook. f.
australis, Mitt.
divaricata, Mitt.
Funaria
hygrometrica, Hedw.
Physcomitrium
apophysatum, Tay.
pyriforme, Bruch. and Sch.
Eremodon
octoblepharis, Hook. f. and Wils.
„ var. *c. major*.
Polytrichum
australe, Hook. f. and Wils.
magellanicum, Hedw.
tortile, Swartz.
juniperinum, Hedw.

Polytrichum (continued)
commune, Linn.
gracile, Menz.
Dawsonia
superba, Grev.
Fabronia
australis, Hook.
Leptodon
smithii, Brid.
Cladomnion
ericoides, Hook. f. and Wils.
Meteorum
molle, Hook. f. and Wils.
flexicaule, Hook. f. and Wils.
Cryaphœa
acuminata, Hook. f. and Wils.
Cyrtopus
setosus, Brid.
Phyllogonium
elegans, Hook. f. and Wils.
Neckera
pennata, Hedw.
lævigata, Hook. f. and Wils.
Trachyloma
planifolium, Brid.
Isothecium
pandum, Hook. f. and Wils.
arbuscula, Hook. f. and Wils.
ramulosum, Mitt.
angustatum, Mitt.
pulvinatum, Hook. f. and Wils.
gracile, Hook. f. and Wils.
spininervium, Hook. f. and Wils.
" var. *b. arcuatum.*
marginatum, Hook. f. and Wils.
comosum, Hook. f. and Wils.
Entodon
truncorum, Mitt.
Hypnum
furfurosum, Hook. f. and Wils.
fulvastrum, Mitt.
sparsum, Hook. f. and Wils.
læviusculum, Mitt.
denticulosum, Mitt.
brachiatum, Mitt.
hispidum, Hook. f. and Wils.
joliffii, Mitt.
leptorhynchum, Brid.
chrysogaster, C. Muell.
cupressiforme, Linn.
mundulum, Hook. f. and Wils.

Hypnum (continued)
pulchellum, Dicks.
sandwichense, Hook. and Arnot.
muricatulum, Hook. f. and Wils.
austrinum, Hook. f. and Wils.
tenuifolium, Hedw.
amiantum, Stirton.
rutabulum, Linn.
wellingtonii, Stirton.
polygonum, Bruch. and Schimp.
aciculare, Labill.
clandestinum, Hook. f. and Wils.
chlamydophyllum, H. f. and Wils.
extenuatum, Brid.
politum, Hook. f. and Wils.
Omalia
pulchella, Hook. f. and Wils.
falcifolia, Hook. f. and Wils.
Rhizogonium
distichum, Brid.
pennatum, Hook. f. and Wils.
bifarium, Schimp.
mnioides, Hook. f. and Wils.
Hymenodon
piliferus, Hook. f. and Wils.
Hypopterygium
filiculæforme, Brid.
viridulum, Mitt.
novæ-zealandiæ, C. Muell.
glaucum, Sull.
tamariscinum, Sull.
ciliatum, Brid.
concinnum, Brid.
struthiopteris, Brid.
Cyathophorum
pennatum, Brid.
" var. *b. minus.*
Calomnion
lætum, Hook. f. and Wils.
Racopilum
strumiferum, Hook. f. and Wils.
cristatum, Mitt.
lætum, Mitt.
Hookeria
pulchella, Hook. f. and Wils.
adnata, Hook. f. and Wils.
microcarpa, Hook. f. and Wils.
quadrifaria, Smith.
robusta, Hook. f. and Wils.
nigella, Hook. f. and Wils.
cristata, Arnot.

HEPATICÆ.

Jungermannia
(*Solenostoma*) *inundata*, H. f. and Tay.
Plagiochila
pleurota, H. f. and Tay.
stephensoniana, Mitt.
gigantea, Lindb.
annotina, Lindb.
dicksonii, H. f. and Tay.
fasciculata, Lindb.
deltoidea, Lindb.
incurvicolla, H. f. and Tay.
lyallii, Mitt.
Leioscyphus
repens, Mitt.
Lophocolea
triacantha, H. f. and Tay.
novæ-zealandiæ, Mitt.
australis, Mitt.
bidentata, Nees.
lenta, H. f. and Tay.
muricata, Nees.
Gottschea
unguicularis, H. f. and Tay.
appendiculata, Nees.
nobilis, Nees.
Chiloscyphus
fissistipus, H. f. and Tay.
supinus, H. f. and Tay.
colensoi, Mitt.
coalitus, Nees.
physanthus, Mitt.
piperitus, Mitt.
echinellus, Mitt.
Adelanthus
falcatus, Mitt.
Lepidozia
microphylla, Lindb.
capilligera, Lindb.
lævifolia, H. f. and Tay.
lindenbergii, Gottsche.
capillaris, Lindb.
Mastigobryum
tenacifolium, H. f. and Tay.
involutum, Lindb.
affine, Mitt.
Isotachis
lyallii, Mitt.
subtrifida, H. f. and Tay.
Trichocolea
lanata, Nees.
tomentella, Nees.
Trichocolea (continued)
polycantha, H. f. and Tay.
Sendtnera
(*Leperoma*) *ochroleuca*, Nees.
flagellifera, Nees.
Polyotus
clavigera, Gottsche.
Radula
buccinifera, H. f. and Tay.
uvifera, H. f. and Tay.
Madotheca
stangeri, Gottsche.
Lejeunia
olivacea, H. f. and Tay.
anguiformis, H. f. and Tay.
papillata, Mitt.
cucullata, Nees.
latitans, H. f. and Tay.
tumida, Mitt.
Frullania
squarrosula, H. f. and Tay.
falciloba, H. f. and Tay.
cranialis, Tay.
spinifera, H. f. and Tay.
deplanata, Mitt.
reptans, Mitt.
pentapleura, H. f. and Tay.
hypoleuca, Nees.
fugax, H. f. and Tay.
congesta, H. f. and Tay.
(*Polyotus*) *allophylla*, H. f. and Tay.
Podomitrium
phyllanthus, Mitt.
Symphyogyna
flabellata, Montagne.
leptoda, H. f. and Tay.
hymenophyllum, Montagne.
subsimplex, Mitt.
Metzgera
furcata, Nees.
Aneura
alterniloba, H. f. and Tay.
palmata, Nees.
pinnatifida, Nees.
multifida, Dumort.
cochleata, Mitt.
eriocaula, Mitt.
Marchantia
tabularis, Nees.
nitida, Lehm. and Lindb.
macropora, Mitt.

Dumortiera
hirsuta, Nees.
Fimbriaria
tenera, Mitt.

Nitella
hyalina, Agardh.

Collema
nigrescens, Ach.
fasciculare, Ach.
Leptogium
scoticum, Fries.
tremelloides, Fries.
chloromellum, Nyl.
bullatum, Nyl.
Sphærophoron
compressum, Ach.
coralloides, Pers.
tenerum, Laur.
Bæomyces
rufus, DC.
roseus, Pers.
pertenuis, Stirton.
granosus, sp. nov.
subgranosus, sp. nov.
arcuatus, sp. nov.
Cladonia
pyxidata, Fries.
cariosa, Flœrke.
capitellata, Bab.
furcata, Hoffm.
rangiferina, Hoffm.
aggregata, Esch.
retipora, Flœrke.
cornucopioides, Fries.
digitata, Hoffm.
Stereocaulon
colensoi, Bab.
ramulosum, Ach.
Usnea
barbata, Fries.
„ var. *florida*.
„ var. *ceratina*.
„ var. *trichodea*.
melaxantha, Ach.
Alectoria
ochroleuca, Nyl.
Ramalina
calicaris, Fries.
„ var. *praxinea*.
„ var. *farinacea*.
„ var. *pusilla*.

Fimbriaria (continued)
australis, H. f. and Tay.
Anthoceros
lævis, Linn.

CHARACEÆ.
Nitella
hookeri, Braun.

LICHENES.
Nephroma
australe, A. Rich.
Peltigera
polydactyle, Hoffm.
Sticta
fragillima, Bab.
hookeri, Bab.
crocata, Ach.
carpoloma, Delise.
filicina, Ach.
variabilis, Ach.
cinereo-glauca, Tay.
orygmæa, Ach.
urvillei, Delise.
aurata, Ach.
fossulata, Dufour.
freycinetia, Delise.
dissimulata, Nyl.
hirta, Stirton.
Ricasolea
coriacea, Nyl.
montagnei, Nyl.
Parmelia
caperata, Ach.
perforata, Ach.
perlata, Ach.
olivacea, Ach.
physodes, Ach.
pertusa, Schærer.
angustata, Pers.
chrysophthalma, DC.
parietina, Ach.
cæsia, Ach.
Psoroma
sphinctrinum, Nyl.
„ var. *crispellum*.
arthroophyllum, Stirton.
implexa, Stirton.
Pannaria
crustata, Stirton.
immixta, Nyl.
parfossa, sp. nov.
variegata, sp. nov.
Squammaria
gelida, Delise.

Squammaria (continued)
thaumaster, Stirton.
Phlyctis
uncinata, sp. nov.
subuncinata, sp. nov.
oleosa, sp. nov.
Lecanora
cerina, Ach.
chrysosticta, Tay.
subfusca, Nyl., var. *argentata*.
varia, Ach.
argopholis, Nyl.
atra, Ach.
homologa, Nyl.
thiomela, Nyl.
vallata, sp. nov.
flavopallida, sp. nov.
Pertusaria
subverrucosa, Nyl.
circumcincta, sp. nov.
Thelotrema
lepadinum, Ach.
obovatum, Stirton.
hians, sp. nov.
Ascidium
elatius, sp. nov.
Cœnogonium
linkii, Ehrenb.
Lecidea
margini flexa, Tay.
contigua, Fries.
stellulata, Tay.
flavido-atra, Nyl.
rivulosa, Ach.
coarctata, Nyl.
otagensis, Nyl.
melanotropa, Nyl.
myriocarpa, DC.
grossa, Pers.
fuscolutea, Dicks.
denigrata, Nyl.
millegrana, Tay.
luteola, Ach.
kelica, Stirton.
campylospora, Stirton.
maculosa, Stirton.
insidens, Stirton.
implicata, Stirton.
fuscocincta, sp. nov.
keratina, sp. nov.

Lecidea (continued)
epibysa, sp. nov.
aleuroides, sp. nov.
rubicundula, sp. nov.
nidulans, sp. nov.
wellingtonii, sp. nov.
nubilior, sp. nov.
Graphis
scripta, Ach.
„ var. *serpentina*.
puiziana, sp. nov.
Opegrapha
varia, Pers.
herpetica, Ach., var. *rubella*.
Platygraphis
inconspicua, Knight and Mitt.
Chiodecton
conchyliatum, sp. nov.
moniliatum, sp. nov.
sinuosum, sp. nov.
Arthonia
polymorpha, Ach.
ampliata, Knight and Mitt.
goniiza, sp. nov.
perangusta, sp. nov.
Melaspila
amphorodes, Stirton.
Trypethelium
madreporiforme, Esch.
cumingii, Mitt.
connivens, Nyl.
erumpens, Fée.
Astrothelium
prostratum, Stirton.
Verrucaria
maura, Wahl.
nitida, Schrad.
glabrata, Ach.
subtrahens, Nyl.
cyrtospora, Stirton.
leptiza, sp. nov.
belonize, sp. nov.
Tremotylium
occultum, sp. nov.
suboccultum, sp. nov.
Odontotrema
concentricum, sp. nov.
Thelonella
wellingtonii, Stirton.

FUNGI.

Agaricus
cartilagineus, Bulliard.

Agaricus
rebius, Fries.

Agaricus (continued)
campestris, Linn.
arvensis, Schœff.
semiglobatus, Batsch.
stuppeus, Berk.
Coprinus
colensoi, Berk.
Marasmius
caperatus, Berk.
Lentinus
novæ-zealandiæ, Berk.
Panus
stypticus, Fries.
Schizophyllum
commune, Fries.
Lentzites
repanda, Fries.
Polyporus
phlebophorus, Berk.
igniarius, Fries.
iridioides, Berk.
versicolor, Fries.
sanguineus, Fries.
Dædalea
pendula, Berk.
Favolus
intestinalis, Berk.
Stereum
phœum, Berk.
Corticum
tenerum, Berk.
polygonium, Fries.
Cyphella
densa, Berk.
Clavaria
lutea, Vitt.
flagelliformis, Berk.
arborescens, Berk.
Hirneola
auricula-judæ, Berk.
hispidula, Berk.
Aseroe
rubra, Labill.
Ileodictyon
cibarium, Tulas.
Secotium
erythrocephalum, Tulas.
Paurocotylis, sp.
Geaster
fimbriatus, Fries.
Bovista
brunnea, Berk.
Lycoperdon
cœlatum, Fries.
reticulatum, Berk.
microspermum, Berk.
Scleroderma
geaster, Fries.
Æthalium
septicum, Fries.
Cyathus
colensoi, Berk.
Crucibulum
vulgare, Tulas.
Phoma
acmella, Berk.
Uromyces
citriformes, Bàb.
Ustilago
endotricha, Berk.
bullata, Berk.
Æcidium
ranunculacearum, DC.
Peziza
stercorea, Fries.
kerguelensis, Berk.
Cordiceps
robertsii, Berk.
Nectria
polythalama, Berk.
illudens, Berk.
Antennaria
robinsonii, Mont.

ALGÆ.

MELANOSPERMEÆ.

Sargassum
longifolium, Ag.
plumosum, A. Rich.
sinclairii, H. f. and Harv.
bacciferum, Ag.
Carpophyllum
phyllanthus, H. f. and Harv.
maschalocarpum, H. f. and Harv.
Marginaria
boryana, A. Rich.
urvilleana, A. Rich.
Phyllospora
comosa, Ag.
Scaberia
agardhii, Grev.

Cystophora
monilifera, Ag.
retroflexa, J. Ag.
Landsburgia
quercifolia, Harv.
Fucodium, J. Ag.
gladiatum, J. Ag.
chondrophyllum, J. Ag.
Hormosira
billardieri, Mont.
" var. *sieberi*, Harv.
Splachnidium
rugosum, Grev.
Notheia
anomala, Bailly and Harv.
D'Urvillæa
utilis, Bory.
Carpomitra
cabrerœ, Kuetz.
halyseris, H. f. and Harv.
Macrocystis
pyrifera, Ag.
Lessonia
fuscescens, Bory.
Ecklonia
radiata, J. Ag.
Zonaria
sinclairii, H. f. and Harv.
interrupta, Ag.
velutina, Harv.
Dictyota
kunthii, Ag.
dichotoma, Lamour.
Asperococcus
sinuosus, Bory.
Chorda
lomentaria, Lyndb.
Adenocystus
lessonii, H. f. and Harv.
Scytothamnus
australis, H. f. and Harv
Chordaria
sordida, Bory.
Mesogloia
intestinalis, Harv.
Sphacelaria
paniculata, Suhr.
funicularis, Mont.
pulvinata, H. f. and Harv.

RHODOSPERMEÆ.

Rhytiphlœa
delicatula, H. f. and Harv.
Rhodomela
gaimardi, Ag.
cæspitosa, Harv.
glomeratula, Mont.
Polysiphonia
rudis, H. f. and Harv.
lyallii, H. f. and Harv.
aterrima, H. f. and Harv.
Polyzonia
harveyana, Decaisne.
Laurencia
virgata, J. Ag.
Cladymenia
oblongifolia, Harv.
Amphiroa
corymbosa, Decaisne.
elegans, H. f. and Wils.
Corallina
armata, H. f. and Harv.
Jania
cuvieri, Decaisne.
micrarthrodia, Lamour.
gracilis, Lamour.
Melobesia
patena, H. f. and Harv.
antarctica, H. f. and Harv.
Delessaria
hookerii, Lyall.
Nitophyllum
uncinatum, J. Ag.
palmatum, Harv.
suborbiculare, Harv.
Gracilaria
multipartita, var. *polycarpa*, Harv.
coriacea, Harv.
Caulacanthus
spinellus, Kuetz.
Pterocladia
lucida, J. Ag.
Apophlœa
sinclairii, Harv.
Rhodophyllis
angustifrons, Harv.
Rhodymenia
prolifera, Harv.
dichotoma, H. f. and Harv.
Plocamium
costatum, H. f. and Harv.
concinnum, Lyndb.

Plocamium (continued)
procerum, J. Ag.
Gymnogongrus
furcellatus, J. Ag.
vermicularis, J. Ag.
Callophyllus
asperata, Harv.
Gigartina
decipiens, Hook. f.
Iridæa
micans, Bory.
lanceolata, Harv.
Epymenia
obtusa, Kuetz.
Chylocladia
cæspitosa, Harv.
Ceramium
uncinatum, Harv.
Ptilota
formosissima, Mont.
Griffithsia
antarctica, H. f. and Harv.
Ballia
callitricha, Mont.

CHLOROSPERMEÆ.

Caulerpa
sedoides, Ag.
brownii, Endl.
furcifolia, H. f. and Harv.
Codium
tomentosum, Ag.
adhærens, Ag.
Bryopsis
plumosa, Ag.
Porphyra
lacinata, Ag.
capensis, Kuetz.
Ulva
latissima, Linn.
rigida, Ag.
crispa, Lightf.
bullosa, Roth.
Enteromorpha
intestinalis, Grev.
clathrata, Grev.
Conferva
darwinii, Kuetz.
Chroolepus
aureus, Harvey.

ART. XXXIX.—*Descriptions of some New Zealand Lichens, collected by John Buchanan in the Province of Wellington.* By JAMES STIRTON, M.D., Glasgow. Communicated by JOHN BUCHANAN.

[*Read before the Wellington Philosophical Society, 16th January*, 1874.]

Bœomyces pertexuis, Stirton.

THALLUS scarcely discernible; apothecia pale buff, concave, with a paler border, attached by a central axis; spores eight, exceedingly minute, elongate-elliptical, apparently simple, although there are occasional indications of a septum which a $\frac{1}{8}$ objective cannot distinctly resolve, in nearly single file in asci, which scarcely differ in size or thickness from the ordinary paraphyses. A section presents the characteristic appearance of lichens of this genus. In such an extreme case as this, it is necessary to remark that I have carefully discriminated between the oil globules that are seen in the paraphyses of one or two of the species of this genus and these minute spores, which still preserve their outline when free of the asci, and which, by the aid of a better objective, I find now are nearly constantly three-septate.

On trunks of tree-ferns, Botanical Garden, Wellington.