

ART. XXXV.—Descriptions of New Native Plants, and Notes.

By D. PETRIE, M.A.

[Read before the Auckland Institute, 5th August, 1901.]

1. *Epilobium erectum*, sp. nov.

Stems simple, erect, rigid, terete, stout, 3 ft.—5 ft. high, reddish, glabrescent or sparingly pubescent with rather long curved hairs, marked by ridges decurrent from the edges of the sessile leaves, sparingly leafy, the successive leaves or pairs of leaves barely overlapping or more distant. Leaves contracted at the broadly sessile base, opposite below, alternate above, ovate-lanceolate to linear-lanceolate, tapering uniformly to the acute tips, membranous, $1\frac{1}{2}$ in.— $2\frac{1}{2}$ in. long; closely, shortly, bluntly, and regularly toothed along the margin, the midrib and nerves prominent; glabrous or pubescent on the midrib, nerves, and edges, gradually diminishing upwards, the lower often bearing undeveloped shoots in their axils. Inflorescence much branched, the lower branches long and leafy, all springing from the axils of leafy bracts. Flowers numerous, clustered, short, nearly sessile, densely and loosely pubescent, opening singly and for a short time only. Calyx deeply divided, the lobes narrow linear-lanceolate, acute, finely pilose. Petals magenta or paler, one-half longer than the calyx (rarely twice as long), shortly 2-lobed, the lobes obtuse. Pedicels of mature capsules $\frac{1}{2}$ in. long or less, capsules slightly curved, $2\frac{1}{2}$ in. long, tapering at the apex; like the pedicels, hoary with fine loosely appressed longish pubescence. Seeds ovate, flattened on one side; testa papillose.

Hab. Wet and boggy stations in the lowlands of Auckland Province—Dargaville, Whangarei, St. John's Lake (Auckland), Port Charles, marshes of Lower Waikato, Morrinsville, Pongakawa, Matata; Kaitoke Valley (Wellington); and north-western lowlands of Nelson. I have not observed it in Canterbury or Otago.

The leaves are sometimes gradually narrowed at the base, especially in shaded situations. Where several stems grow up together, as sometimes happens when the main stem is broken off or arrested, the lower leaves often present the same feature. The ridges on the internodes are usually four, but occasionally adjoining pairs coalesce. At Kaitoke, in a small bog surrounded by tall forest, I gathered specimens 6 ft. high and as stout as one's little finger.

The present species is *E. junceum*, Solander, var. *macrophylla*, Haussknecht. Mr. Kirk appears not to have known

it, as he does not refer to the variety in his "Students' Flora of New Zealand." It differs from *E. junceum* in a number of characters that are constant throughout a range extending over more than half the colony. These characters are the simple stout glabrescent, tall stems, the large ovate- or linear-lanceolate membranous glabrescent strongly nerved leaves, and the much-branched leafy inflorescence with shortly pedicelled capsules. The spacing of the leaves on the stems is remarkably uniform and elegant. Only *E. pallidiflorum*, Solander, and *E. chionanthum*, Haussk., approach it in height and robustness. It is not a hybrid between these species or any others. In the marshes of the Waikato it is a most abundant plant, and imparts to them a distinct facies that is easily recognised from the windows of railway-carriages.

2. Note on *Ehrharta thomsoni*, Petrie.

I can now record the occurrence of this grass in the Auckland Islands, having recently found a number of short flowerless stems in a tuft of *Poa* gathered there by Mr. F. R. Chapman in January, 1890. The foliage of the species is so characteristic that I have no doubt of the accuracy of this determination. In Mr. Cheeseman's herbarium I have also seen similar flowerless specimens from the mountains in the neighbourhood of Westport, where they were collected by Mr. Townson. The species thus proves to have quite an extensive range.

3. Note on *Danthonia australis*, Buchanan.

This species extends to Campbell Island, as is proved by a specimen given me, a good many years ago, by Mr. Buchanan, under the name "*Danthonia raoulii*, Hook. f." The specimen is quite distinct from the latter species, and is doubtless part of a young tuft of *D. australis*. The stem is short and unbranched, but in all other respects the grass matches typical specimens from the mountains of the Nelson District. The occurrence of these grasses on the southern off islands establishes further links in the close botanical connection between them and the main islands of New Zealand.

4. *Poa seticulmis*, sp. nov.

Tufted or spreading, branched below, slender, smooth; pale-green or yellowish, 4 in.—10 in. high. Leaves shorter than the culms, very slender or filiform, erect, striate, smooth, involute. Sheaths broad, membranous, striate, and grooved; contracted just below the short broad ligule. Culms erect, slender, often filiform, perfectly smooth, clothed almost to the top by the sheaths of the cauline leaves. Panicle ovate, 1½ in.—3 in. long; the branches in pairs, ascending or

almost divaricating, sparingly subdivided, scabrid, bearing few shortly pedicelled spikelets at the tips of the branchlets. Spikelets rather small, narrow, very uniform, pale, polished and shining, glabrous, about $\frac{1}{2}$ in. long, 3- to 5-flowered, obscurely nerved. Empty glumes shorter than the flowering, about half the length of the spikelet, membranous, narrow, acute, subequal. Flowering-glumes coriaceous, subacute, faintly 3- to 5-nerved, glabrous or slightly downy on the back, webbed at the base, sometimes serrate along the midrib, as is occasionally the case in the empty glumes also; palea rather stiff

The typical state of this grass is that found on sandhills on the west coast of the North Island to the north of the Waikato Heads, but I cannot separate from it by any good or constant characters a darker-green inland form that ranges throughout both Islands as far south as Catlin's River, in the south-east of Otago.

Its closest affinity is with *Poa colensoi*, Hk. f., and *Poa pusilla*, Berggren. I consider it impossible to identify the typical sandhill plant with Berggren's species, but some of the inland forms included in my species approximate to what appear to be large forms of Berggren's plant. Specimens from distant and diverse stations display great uniformity of character. Variation is chiefly seen in the flatness or involution of the leaves, woodland specimens being decidedly flatter, the scabrid serrature of the back of the glumes, and the extent of the downiness and the webbing at the base of the flowering-glumes. I have not noticed any panicle having more than two branches at one node.

The present species has been long known, but it was confounded with *Poa breviglumis*, Hook. f., by most botanists, and most likely by Hooker himself. It is now certain that it does not belong to that species. The following stations are from labels in my herbarium: Typical form—Ahipara Bay, Maunganui Bluff, Kaipara Heads, Waitakerei West, Manukau Heads. Inland form—Opanaki (Kaihu Valley), Tirau (Upper Thames), Hiruharama (Waipiro Bay), Bealey (Canterbury Alps), Maungatua, Catlin's River. A number of my specimens have been received from Mr. Cheeseman and Mr. Kirk, those of the latter under the name "*Poa breviglumis*, Hk. f.," an identification which Mr. Kirk abandoned in later years.

5. *Poa matthewsii*, sp. nov.

A slender tufted or spreading grass, in the typical form sparingly leafy, 10 in.-20 in. high. Stems branched at the base, striate and grooved, smooth, clothed at anthesis to the base of the panicle by the sheaths of the cauline leaves. Leaves narrow, flat or involute, glabrous, longer than the

pale grooved sheaths; ligule oblong. Panicle narrow (in the typical form) or effuse, usually inclined, 10 in. long or less, distantly branched; branches 2-4, capillary, glabrous or scabrid, sparingly subdivided, bearing few small shortly pedicelled spikelets chiefly along their upper half. Spikelets small, narrow-ovate, $\frac{1}{3}$ in. long and about half as broad, usually 4- to 6-flowered, the flowers sessile and crowded on the rachis. Empty glumes unequal; membranous, subacute, half as long as the flowering-glume next above. Flowering-glumes compressed, green or pale, membranous, 5-nerved; acute, glabrous or slightly scabrid on the nerves, not webbed at the base; the midrib scabrid; palea two-thirds the length of the glume.

Hab. Waipahi, Kelso, and Cromwell, in Otago, on alluvial flats.

Besides the typical form, I have two well-marked varieties of this grass.

Var. minor.—Plant shorter and more densely tufted; leaves slender, involute, much shorter than the culms; panicles shorter and more effuse; spikelets smaller and fewer flowered. This variety grows at Ngapara, near Oamaru, and is most abundant on alluvial flats in the Manuherikia Plain, in Central Otago. A form closely akin to it occurs at Kakanui Mouth, but its panicle is long and very effuse, and the flowers, though small, are normal in number.

Var. tenuis.—Very slender, spreading, with flat leaves and long narrow green spikelets; flowers more distant, with acute strongly nerved glumes that are sometimes slightly webbed at the base. This variety was abundant in valley-bottoms in the Catlin's River district before settlement began. The clearing of the bush and the attacks of stock have since almost exterminated it in this district. A better series of specimens than I now possess might prove that *var. tenuis* is an independent species. Unfortunately, the rich collection of specimens from various stations that I once possessed has been lost, through being lent to the late Mr. T. Kirk to aid him in his preparation of a new Flora of New Zealand.

The present grass is of considerable economic value, and would well repay cultivation. It is now to be found only in spots protected from cattle and sheep by shrubby thickets and bushes of *Phormium*. *Var. minor* is, however, still abundant, but its value is much less.

Poa matthewsi is, no doubt, one of the grasses of the main islands that Sir Joseph Hooker included in *Poa breviglumis*, a species, so far as we know, confined to the southern off islands. It is easy to understand how Hooker, with his scanty materials and his desire to avoid setting up invalid

species, came to mass into one specific congeries several distinct plants. It is certain that no form of *Poa breviglumis*, Hk. f., collected on the main islands exists in any colonial herbarium.

The species is named in compliment to Mr. H. J. Matthews, of the State Forest Department, who has contributed much useful material to my collection, and has for a number of years done notable service to New Zealand botany by collecting and growing numbers of alpine and other interesting native plants. His cultivated series of *Veronicas*, *Celmisias*, *Olearias*, *Ourisias*, &c., are of remarkable interest. His garden at Hawthorn Hill, Mornington, Dunedin, is well worth a visit from any one interested in the rarer and more beautiful native plants.

6. *Poa incrassata*, sp. nov.

A very short, densely tufted, perfectly glabrous grass, 2 in.—3 in. high. Culms hardly exceeding the leaves, but elongating slightly in fruit, branched at the base, glabrous. Leaves folded, the folded sides appressed, not involute, nearly setaceous; sheaths broader, grooved, almost as long as the blades; ligule very short. Panicle $\frac{1}{2}$ in.—1 in. long, branches few and short, not scabrid. Spikelets 6 or fewer, on pedicels twice their own length, $\frac{1}{2}$ in. long and nearly as broad, turgid, purplish-brown, usually 4-flowered. Empty glumes unequal, broad, obtuse, half as long as the nearest flowering-glume. Flowering-glumes slightly incurved at the tip, obtuse, coriaceous, distinctly 5-nerved, the midrib very prominent, not scabrid and not webbed at the base; palea nearly as long as the glume.

Hab. Auckland Islands. Collected by Mr. F. R. Chapman, of Dunedin, in January, 1890.

7. *Poa chathamica*, sp. nov.

Loosely tufted or spreading by wiry rhizomes, leafy below, 1 ft.—1 $\frac{1}{2}$ ft. high, growing in *Sphagnum* swamps. Leaves flat, narrow, grooved and striate, subrigid, ending in stiff rather sharp points; the lower sheaths much shorter than the blades; ligule very short, marked by a band of short stiff hairs. Culms 1 ft.—1 $\frac{1}{2}$ ft. high, erect, rigid, smooth, pale. Panicles contracted, narrow-ovate or almost linear, 2 in. long or less, sparingly branched; the branches capillary, scabrid, springing in pairs from alternate sides of the rachis. Spikelets 4- to 5-flowered, ovate, $\frac{1}{2}$ in. long, pale or purplish, almost sessile. Empty glumes nearly equal, lanceolate, acute, somewhat incurved, 3-nerved, scabrid along the midrib above, half as long as the spikelets. Flowering-glumes subacute, strongly 5-nerved, glabrous (in the typical form),

more or less ciliate along the margin and the midrib, sparingly webbed at and above the base; palea almost as long as the glume, 2-nerved, nerves ciliate.

Hab. *Sphagnum* bogs at the Chatham Islands, where it was collected by Messrs. L. Cockayne and F. A. D. Cox in January, 1900.

Mr. Cockayne writes me that he considers this a grass of great economic importance. He has seen about 100 acres of worthless quaking peat bog, from which the natural covering of heath and sedge had been burned off, occupied so closely by this grass that the land looked like a planted cornfield. He thinks it will prove of great value in wet, sour lands. The rhizomes spread with such vigour that it would not be readily eaten out by stock.

In my collection are specimens of this grass from the Auckland or Antipodes Islands, collected by Mr. T. Kirk, and sent to me under the name of "*Festuca scoparia*, Hook. f." It differs from the typical plant of the Chatham Islands in the long, rigid, involute leaves equalling the culms, in the nearly linear panicle, and in the soft pubescence of the glumes. It is clearly a form of the present species, and presents only such subvarietal differences as might be expected from the difference of habitat combined with long isolation. It is no doubt the same grass as Mr. Buchanan referred to *Poa foliosa*, Hook. f. It is much more closely related to *Poa anceps*, Forster.

8. *Agropyrum covii*, sp. nov.

Densely tufted, slender, leafy, about 18 in. high. Leaves longer than the culms, very slender, involute, terete, perfectly smooth, limp and pliant, midrib and striæ obscure, the lower incurved edges delicately serrate. Sheaths much shorter than the blades, and three or four times as broad, smooth, finely puberulent, striate but not grooved; ligule short. Culms erect or slightly geniculate, slender, leafy to the base of the flowering-spike, which is 3 in. long. Rachis once branched at the base, the branch short and bearing two or three spikelets. Spikelets (including the awns), $\frac{7}{8}$ in. long, 3- to 5-flowered, the lower pedicellate, the upper sessile. Empty glumes half as long as the spikelet or less, unequal; the lower narrow-linear, acute, ending in a terete scabrid point, midrib obscure; the upper narrow-lanceolate, 3-nerved below, produced into a long terete scabrid point. Flowering-glumes coriaceous, boat-shaped, produced into a long, tapering, scabrid awn that is as long as the glume or longer than it, faintly nerved, finely scabrid, serrate along most of the back; veins of the palea prominent, remotely ciliate.

Hab. Seaside rocks and sands at the Chatham Islands. Collected by Messrs. L. Cockayne and F. A. D. Cox.

This grass is no doubt a true *Agropyrum*, in spite of its branching rachis and pedicellate spikelets. The species is named in compliment to Mr. Cox, who has done a great deal to advance our knowledge of the interesting flora of the Chatham Islands, where he has long been resident.

ART. XXXVI.—*The Vegetable Caterpillar* (*Cordiceps robertsii*).

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Plate XXI.

THERE is a small company of active scientific inquirers along the east coast of this North Island. In order to put down their thoughts and gain information from others of like tastes to themselves they issue a newspaper in manuscript, known as the "East Coast Naturalist." In one of the numbers of this interesting publication appears a letter signed "W. M.," in which the writer calls attention to an article by James Buckland on the "Vegetable Caterpillar." "W. M." does not say where the article appears, but mention is made of the differences between the generally accepted information concerning the caterpillar (*Cordiceps robertsii*) and the information given by Mr. Buckland. No doubt there is a good deal of misapprehension with respect to this curious product, and it may be that a study of its life-history will even prove of benefit to the students of bacteria in relation to their effects on animal organisms.

Comparatively little appears to be known concerning the vegetable caterpillar beyond the fact that it is found in certain places in the North Island of New Zealand. The first published account of the caterpillar is in the "Tasmanian Journal of Science" for the year 1842. In vol. i., pages 307, 308, there is an account, accompanied by two illustrations, of the bulrush caterpillar (*Sphæria robertsii*), native name "aweto-hotehe," by the Rev. R. Taylor, Waimate, New Zealand. "This singular plant"—so runs the account—"which is a native of New Zealand, may be classed amongst the most remarkable productions of the vegetable kingdom. . . . The aweto is only found at the root of a particular tree—the rata. The female pohutakara (*sic*), the root of the plant which in every instance exactly fills the