

almost filiform, densely hairy especially at top; hairs short, white, strigose pointing upwards. Spike small, broadly-oblong, 3-4 lines long, subcylindrical, 7-12-flowered; flowers sessile, close. Bracts broadly ovate, subapiculate, glabrous, purple (brown in age), with broad black thick keel. Calyx sepals similar but smaller, extending beyond circumciss of capsule. Corolla small, very membranous, narrow-triangular-ovate, white, erect, sometimes adpressed to capsule. Anthers slightly exserted, cordate-orbicular, strongly apiculate, red-brown. Style largely exserted, flexuous, shaggy. Capsule large, ovoid, shining, beak stout. Seeds 5, oblong, obtuse, white, shining, minutely and closely pitted.

Hab. Among grasses and other small herbage on banks of a small stream, open plain, Tahoraiti, south of Dannevirke, County of Waipawa, where it forms pretty large patches; 1890-91: *W. C.*

Obs. A species having near affinity with *P. picta*, mihi (Trans. N.Z. Inst., vol. xxii., p. 481), but differing in several characters.

ART. XXXVI.—*Description of Three Species of Newly-discovered New Zealand Ferns.*

By W. COLENZO, F.R.S., F.L.S., &c.

[Read before the Hawke's Bay Philosophical Institute, 12th October, 1891.]

Hemitelia, Br.

1. *H. (Amphicosmia) falciloba*, sp. nov.

Caudex erect, stoutish, woody, 6ft. high. Fronds spreading, bipinnate, submembranous, brownish-green above, pale (sometimes nearly white) below with minute shining specks widely dispersed, glabrous, with a few scattered weak hairs on costa and veins, and mostly on upper surface; basal scales, subulate, 2in. long, $\frac{1}{2}$ in. wide at base with a small circular hole, very acuminate, tips filiform acute, margins plain, dark-brown finely and much striate, crinkled, very glossy. Rhachis unarmed, rather narrow, deeply sulcate on upper side, filiform at tip (and also subrhachises), densely clothed with weak reddish woolly down, intermixed with scattered long flat narrow crumpled red scales, $\frac{1}{2}$ in.— $\frac{3}{4}$ in. long, nearly 1 line wide at base (some narrow throughout), very acuminate, tips setigerous black, centre thickish dark-brown, sides semi-pellucid, margins distantly and roughly setigerous-serrate, teeth black. Pinnæ remote 3in. (or more) apart, subopposite (alternate towards apex), subpetiolate, 15in. long, 6in. broad, oblong,

tip acuminate; rhachis slender, flattish, reddish, deeply sulcated above; pinnules extending close to rhachis, 2-3 at base a little shortened. Pinnules 3in. long, $\frac{3}{4}$ in. broad, linear, tips very acuminate acute, shortly stipitate, pinnatifid, cut almost to costa, subpectinate, rather distant $\frac{1}{2}$ in. apart, free, alternate, spreading, horizontal; lobes alternate, remote, free falcate, semisubulate, tips acuminate, acute, margins recurved, plain, slightly serrulate towards apex. Veins pinnate, distant, very clear; veinlets forked and triple, when triple the lower one is invariably single, the upper forked. Sori small globular, regular near costa on forks of veinlets, usually 2 on a lobe one on each side of vein, and 4-5 (rarely 6) on lowest basal lobes. Involucre a very small concave greyish scale on the posterior side, margin entire; veins much coarsely reticulated, black (under lens).

Hab. On the side of a precipitous gully overhanging a small streamlet, in a forest south of Dannevirke, County of Waipawa; January, 1889: *W. C.*

Obs. This species is very distinct from those New Zealand species already described,* apparent at first sight. Unfortunately I have not obtained complete specimens, or, rather, what I have are partial and young, though perfect in themselves. This fern has a little history: I was returning one evening rather late and tired from my usual botanizing excursion during a hot day at midsummer, when on nearing the edge of a deep gully I noticed two tree-ferns overhanging it. From their appearance I thought them different from others, and I exerted myself to secure portions of their fronds for examination. Being higher than myself, with fallen trees and broken branches around, I could scarcely get at them; moreover, on the side towards me their fronds had been broken off short, as if by a falling tree; so I only brought away tips of fronds (8in.-10in.), and perfect full-size barren pinnæ from about the middle of a frond, and young pinnæ from newly-developed immature fronds bearing fruit; and when I next visited that spot (purposely, I may say) I found it had been ravaged by fire (a too common thing in those woods), and those two tree-ferns were consumed. I have since assiduously sought another specimen in my frequent visits to those forests, but without success.

Genus 5. *Hymenophyllum*, Smith.

1. *H. polychilum*, sp. nov.

Plant terrestrial; rhizome subterranean, shortly creeping, naked, its rootlets very hairy; hairs dark-red, patent, often

* *H. smithii*, Hook. (described as *Cyathea smithii*, Flora N. Zealand), and *H. (Amphicosmia) stellulata*, Col., Trans. N.Z. Inst., vol. xviii., p. 222.

terminating in a minute round glandular-like ball. Frond membranous, 8in.—11in. high (stipe included), 3½in.—4in. broad at base, deltoid-acuminate, 3-pinnatifid, leafy, dark-green, suberect, slightly decurved; stipe (4in.—5in.) terete, glabrous, shining, rigid, more or less flexuous, dark-brown. Rhachis and subrhachises winged throughout, pinnae close overlapping, their tips often elongated, simple and forked at apices, the lower ones decurved; sometimes the second pair from base are the longest, the lowest pair opposite with their large basal segments meeting over rhachis, presenting a semi-crisp appearance; segments broad, laciniate; lobes narrow-linear, entire, obtuse. Involucres on all pinnae, but mostly very numerous on upper two-thirds of frond, marginal on all sides and tips of segments and lobes, very large, wider than lobe, oblate, hemispherical and oblong, 2–4-fid to base, open, spreading, sometimes 2–3 together; lips entire, truncate, broad, sometimes once-notched; here and there two clusters of sori are together within one involucre. Sori prominent, much exposed; capsules large, striking, each with a bright-red shining elastic ring.

Hab. Dry shaded woods south of Dannevirke, County of Waipawa; 1890–91: *W. C.*

Obs. This is another handsome fern; it forms small loose tufts or mats, on the ground among the trees. It is allied to *H. demissum*, from which species, however (and from all others known to me), it differs—in its large and peculiar involucres, also in its rhachis and subrhachises being winged throughout, in its darker-green colour, close and overlapping pinnae and segments, and in not creeping diffusely nor climbing trees like that species. It is also closely allied to *H. erecto-alatum*, Col. (*Trans. N.Z. Inst.*, vol. xi., p. 431), but that species is much smaller, and of a light-green colour, with the wings of its rhachis and subrhachises largely and vertically crisped, its stipe is also winged above, and its involucre though large is very different.

Genus 22. *Polypodium*, Linn.

1. *P. amplum*, sp. nov.

Plant terrestrial, forming large close beds or patches many yards in extent; stipites single, distant, suberect, fronds drooping. Rhizome creeping, slender, subterranean, somewhat brittle (as also stipites). Stipe 2ft. 8in. long (some shorter), as thick as a common-size lead pencil, obscurely triquetrous the back broadly rounded and the sides flattened, glabrous, shining, pale-brown, with minute sparsely-scattered darker-coloured points scarcely submuricate, deeply sulcated on upper side throughout the whole length, the lower part semi-scaberulous to the touch, the extreme base (also elon-

gating tips or shoots of rhizome) densely clothed with very short shining reddish-brown terete jointed appressed hairs, their tips obtuse. Frond ample, subdeltoid, 3ft. 6in. long (some smaller), 3ft. 2in.—3ft. 6in. broad at base, tripinnate (or subquadripinnate), green, very membranous, glabrous, with small weak shrivelled whitish strangulated scaly hairs scattered singly on veins and veinlets both surfaces; pinnæ large, distant, loose, horizontal; rhachis and subrhachises pale, stramineous, smooth and glossy on the under-side, with minute greyish scaly hairs on the upper. Pinnæ, primaries distant on main rhachis, lowest pair 6in. from the next, which is 5in. from the next above; sub-ovate- (or deltoid-) acuminate, 20in.—21in. long, 10in.—11in. wide at base, the lowest pair always opposite (and the next two pairs nearly so), their petioles lin. long; secondaries petiolate, alternate (the lowermost pair subopposite), free, 2in. apart, 5in.—6in. long, 2in. wide, sub-ovate-acuminate, tips caudate acute their lobes very small confluent; rhachis remarkably slender, almost filiform. Pinnules alternate (the three lower pairs opposite), free, distant, spreading, 1½in. long, 4 lines wide, narrow oblong broadest at base, flat, deeply pinnatifid, subsessile (or much contracted subpetiolate), narrowly decurrent, the superior base also runs up (*sursum currens*), so that both sides join on to the next pinnule, tips rounded and bluntly 4–6-toothed, midrib undulate. Lobes opposite, usually six pairs (decreasing in number towards tips), distant, broadly oblong, sub-falcate, narrowly margined, margins pale and shining, entire (sometimes a single large crenate tooth on anterior margin), irregularly undulate, sinuses rounded, tips rounded very obtuse, 2–3-toothed, teeth obtuse. Veins pinnate, 3-jugate; costa forked at apex; veinlets simple and forked, free, distant, extending to margin. Sori round, distant, regularly disposed opposite in pairs, one on a lobe on the lowest inner veinlet, and 2 opposite on the basal lobes, about 4–5 pairs on a large pinnule (confined to the lower lobes), submarginal and near to sinus, pale- and light-brown.

Hab. Edge of wood, south of Dannevirke, County of Waipawa; May, 1891: *W. C.*

Obs. I. This fern, which I call a remarkable one, has both pleased and puzzled me. Fortunately I found it growing in abundance, forming large tangled brakes, much like *Pteris esculenta* in growth and habit, and like that also in it being difficult to get through—in which respect it is almost worse than the *Pteris*, from it being so brittle and entangled, the long tender fronds breaking and impeding. From the extreme tenderness of its fronds it is also difficult to obtain a perfect specimen, even in a young state the tips of its long flaccid pinnæ being generally broken and imperfect.

II. I again visited its place of growth in September, and was surprised to find not a single frond living. All had died quite down to their roots, and were prostrated and soft; but fine stout green leafy young fronds 8in.—10in. high were everywhere vigorously shooting.

III. It is pretty nearly related (*primâ facie*) to *P. punctatum*, Thunb. (*P. rugulosum*, and *P. rugosulum*, of authors), but differs from that fern in many characters, and particularly from the drawings of it, with dissections and descriptions, as given in Labill., Flora Nov. Holl., and in Beddome's Ferns of S. India. Our N.Z. *P. punctatum* is a much smaller plant, its pinnæ and pinnules close and compact, with differently-shaped pinnules and lobes, that are thicker and very viscid (adhering to drying-papers), with its numerous crowded sori situate on middle of veinlet, and has dark-red rough muricated stipes and rhachises with numerous coarse red and patent hairs. A good and peculiar differential character is to be found in this fern (*P. amplum*), in its broad and flat pinnules, which are semi- (or constricted-) adnate, with their extreme bases narrowly extending both upwards and downwards on their subrhachises (requiring, however, when dried, a good lens to detect), and also in the very acuminate and narrow tips to its pinnæ.

ART. XXXVII.—*A List of New Species of Hepaticæ novæ-zelandiæ, named by F. STEPHANI, Leipzig.*

By W. COLENZO, F.R.S., F.L.S., &c.

[Read before the Hawke's Bay Philosophical Institute, 12th October, 1891.]

LAST year (1890) I completed the somewhat arduous task I had imposed on myself—viz., the putting-up for Kew the numerous specimens of the smaller Cryptogams (*Hepaticæ* and *Fungi*) I had discovered during the last few years in our inland forests. They arrived safely at Kew, and the Director, Mr. Thiselton-Dyer, sent the *Hepaticæ* to Leipzig, to the celebrated cryptogamist, Mr. F. Stephani, for examination and determination. And in February last I received from Mr. Thiselton-Dyer the following list of *species novæ* that had been determined and named* by Mr. Stephani, and of others already known to science, but now detected here:—

* Many of these *Fungi* were determined and named last year by Dr. Cooke, and are already published in Trans. N.Z. Inst., vol. xxiii., p. 391.