

III. THE EASTERN AMERICAN VARIETY OF *POLYSTICHUM*
BRAUNII

(Plate 159)

THE plant which has been passing in eastern America as *Polystichum Braunii* (Spenner) Fée abounds in rich woodlands and glades or on shaded talus and rock-slides of northern and western Newfoundland, Anticosti Island and the Gaspé Peninsula of Quebec. Westward and southward it becomes more local, extending west to Algoma District, Ontario and south (at low altitudes) to Cape Breton Island and Colchester and Kings Counties, Nova Scotia and Charlotte County, New Brunswick, and (chiefly in the mountains) to Aroostook, northern Penobscot, northern Piscataquis, northern Somerset and Franklin Counties, Maine, Carroll and Grafton Counties, New Hampshire, Berkshire County, Massachusetts, Ulster and Delaware Counties, New York, Sullivan County, Pennsylvania and Keweenaw County, Michigan. It is thus completely isolated from *P. Braunii* of Europe, which is there a plant of decidedly southern range: localized in upland woods of the Caucasus and southern Russia, and from the Transylvanian and Croatian Alps to the Maritime Alps and the Pyrenees, extending northward in the mountains to southern Germany, where (according to Milde) it is abundant in some regions of Silesia. North of southern Germany it is found at two stations in southernmost Sweden and at scattered stations in southern Norway, thence extending to a point (Brönnö) about midway along the western coast of Norway. It is not in arctic Europe, nor does it reach the British Isles, Iceland and Greenland; and the plant of eastern America does not extend north of the St. Lawrence basin, being decidedly a Canadian type. Outside Europe, *P. Braunii* is known in Eurasia only in northeastern Asia, whence it apparently extends across into southern Alaska. The Japanese plant is at least varietally distinct, var. *japonicum* Christ; and in Alaska there is a related plant, *P. alaskense* Maxon, which in its more attenuate pinnae and more tapering bases of the pinnules closely simulates the Kamtchatkan *P. Braunii*, var. *kamtschaticum* C. Chr. & Hultén, Kungl. Vet. Akad. Handl. v. no. 1: 38, t. 2 (1927), but its fronds are simply bipinnate, those of var. *kamtschaticum* tripinnatifid. European authors are in the habit of citing the Hawaiian Islands as also having *P. Braunii*, but the Hawaiian plants, *P. haleakalense* Brack. and *P. Hillebrandii* Carruth., are thoroughly distinct in many obvious characters. The Alaskan

material which may belong to *P. Braunii* is fragmentary and its identity, therefore, not readily settled, and at least some of the plants of eastern Asia are more like the eastern American than the European plant.

The plant of the Canadian forest of southeastern Canada and the northeastern states, unknown on the Labrador Peninsula or in Greenland, has obviously been long isolated from the European plant, unknown in arctic Europe, the British Isles and Iceland. As a general rule, flowering plants with such ranges would be found to have quite definite characters of flower and fruit and would stand as good species: such pairs as *Carex loliacea* L. (Eu., e. Asia and n.w. Am.) and *C. trisperma* Dew. (Atl. N.A.), *C. alba* Scop. (Eu., e. Asia) and *C. eburnea* Boott (Atl. N. A.), *Luzula pilosa* (L.) Willd. (Eu. and w. Asia) and *L. saltuensis* Fern. (Atl. N.A.), *Hepatica nobilis* Schreb. (Eu.) and *H. americana* (DC.) Ker. (Atl. N.A.), etc., etc.; but, although showing recognizable, though slight, differences in the scales of the stipe and rachis, in the texture of the frond and the tothing of the pinnules, the American and European plants have essentially identical spores.

P. Braunii of Europe is generally described as having herbaceous fronds: "Blätter . . . weich . . . nicht überwinternd"—Luerssen; "Textur krautig"—Christ; "*Fronde*s . . . seulement membraneuses"—Rouy; but in the plant of eastern America they are subcoriaceous. Consequently, in the European plant the venation of the pinnules is distinctly seen under low magnification; in the American ordinarily it is rather obscure. The largest scales of the stipe-bases in the European plant are rather firm and are prolonged into bristle-tips 5–8 mm. long; in the eastern American they are much thinner and shorter-pointed (the bristle-tip 1–4 mm. long). Under considerable magnification the median cells of the large scales of the European plant appear elongate-linear, with heavy cell-walls and extremely narrow lumina; while in the eastern American plant the thinner scales show shorter-linear to oblong cells (mostly 100–300 μ long) with very thin walls and broad lumina, a difference similar to that separating the European *Thelypteris spinulosa*, var. *dilatata* (Hoffm.) St. John and the American var. *americana* (Fischer) Weatherby. In the European plant the back of the rachis (especially the lower half) bears innumerable retrorse soft acicular scales which are far more numerous than the lanceolate scales; in the eastern American plant the relation is

reversed, the lanceolate scales being more abundant than in the European, the acicular scales fewer and shorter. In the European plant the terminal (and often the marginal) bristles of the pinnules are 1–2 mm. long; in the plant of eastern America 0.5–1.3 mm. long. Only a few good indusia of the European plant have been available for study, consequently it has not been possible to make a satisfactory comparison of this organ in the two plants; but, as stated, the spores present no appreciable difference unless it is that the American are minutely larger.

With essentially identical spores and outline of frond, pinnae and pinnules, the two plants illustrate the conservatism of the ferns. They have obviously been long isolated but their segregation has proceeded only far enough to affect the superficial vegetative characters. These, however, are sufficient to make it clarifying to distinguish the eastern American (and northern Chinese) plant as a geographic variety; and since the first American record of the plant was based upon its discovery by Frederick Pursh in the Green Mountains of Vermont in 1807 it is appropriate that it be called

POLYSTICHUM BRAUNII (Spenner) Fée, var. **Purshii**, n. var., forma typica recedit frondibus subcoriaceis; stipitis squamis scariosis latis-simis acutis vel breviter aristatis, arista 1–4 mm. longa, cellulis mediis oblongis vel linearibus 100–300 μ longis lumine lato parietibus tenuibus pallidis; rhacheos squamis lanceolatis fibrillosisque illis pluribus; pinnularum aristis terminalibus 0.5–1.3 mm. longis.—Cool woods, glades and shaded talus, northern and western Newfoundland, Anticosti Island and Gaspé Peninsula, Quebec to Algoma District, Ontario, south to Cape Breton and Colchester and Kings Counties, Nova Scotia, York and Charlotte Counties, New Brunswick, Aroostook, northern Penobscot, northern Piscataquis, northern Somerset and Franklin Counties, Maine, Carroll and Grafton Counties, New Hampshire, Berkshire County, Massachusetts, Ulster and Delaware Counties, New York, Sullivan County, Pennsylvania and Keweenaw County, Michigan; southward chiefly at altitudes from 300–1525 m. (1000–5000 feet); also northern China and Sachalin Island. TYPE: Smuggler's Notch, Vermont, August 9, 1877, *C. E. Faxon* (in Gray Herb.), distributed as *Aspidium aculeatum*, var. *Braunii*.

This is the plant which has regularly passed in eastern America as *Aspidium aculeatum*, *A. aculeatum*, var. *Braunii*, *Polystichum aculeatum*, var. *Braunii* and *Polystichum Braunii*.

EXPLANATION OF PLATE 159

POLYSTICHUM BRAUNII, var. *PURSHII*. A small plant, $\times \frac{1}{3}$, from Colebrook, New Hampshire, Pease, no. 10,387. Photograph by Professor J. F. Collins.

(To be continued)



New England Plants from the Herbarium of A. S. Peck
Presented to the New England Botanical Club, May, 1912

var. *Purshii* Fern., n. s.

10,367 HERBARIUM OF ARTHUR STANLEY PECK
FLORA OF COOS CO., N. H.

Polystichum Braunii (Spenn.) Fée
Damp wooded roadside N. of Braintree
Falls, Colebrook
18 July, 1907

Det. A. S. P.

POLYSTICHUM BRAUNII, VAR. PURSHII. $\times \frac{1}{3}$.



Fernald, Merritt Lyndon. 1928. "The eastern American variety of *Polystichum braunii*." *Contributions from the Gray Herbarium of Harvard University* (79), 28–30. <https://doi.org/10.5962/p.336097>.

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