

AN INTERESTING JAPANESE POLYPODY.*

BY WILLIAM R. MAXON.

The subject of these notes is a Japanese fern described by Franchet and Savatier as *Polypodium vulgare* var. *Japonicum*.†

Specimens in American herbaria referable to this form agree closely and are so totally distinct from what is known either in Europe or America as *Polypodium vulgare* that any observing botanist, conservative or otherwise, may scarcely question their claim to recognition as a valid species. The type specimens were collected at Ono, a small town on Honshu, the principal island of Japan, and at some locality (not mentioned) on Yezo, the northernmost of the group, usually known as Hokkaido. They are said by the authors to have grown "in rupibus, ad arbores, in silvis regionis submontanae." The specimens to which I have had access are as follows:

Hakodate (or Hakodadi), Hokkaido. C. Wright, coll. (N, E, G).‡

Sapporo, Hokkaido, 1878. Ex. herb. Sapporo Agric. Coll. (G).

Nanokawa, Tosa, Honshu. August 15, 1890. (G).

Sapporo, Hokkaido. A. W. Stanford, coll. July, 1894. (N).

Yoshino, Yamato, Honshu. May, 1888. (N).

Japan, W. P. Blake, coll. 1862. (E).

Sapporo, Hokkaido, A. W. Stanford, coll. August, 1894. (Y).

From these specimens I am enabled to draw the following description:

POLYPODIUM JAPONICUM (Fr. & Sav.)—Plant usually of small stature, but ranging from 8-23 cm. in height; fronds borne singly from a creeping brownish-chaffy rhizome; stipes 2-5 cm., nearly smooth; laminae usually lanceolate, sparingly glandular, the whole lower surface covered sparsely with long filiform hyaline scales, most noticeable along the rachis and veins; pinnae 12-28 pairs, borne from two to three times their width apart, decurrent on either side at base, 2-3 cm. long, 2-4 mm. broad, tapering gradually at apex, the margins nearly entire;

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†Enum. Pl. Jap. 2:244. 1879.

‡Following Professor Underwood's plan the letters E, G, N, Y, stand respectively for the Eaton, Gray, National and New York Botanical Garden herbaria.

veinlets free, branching 2-4 (usually 3) times, the first branch bearing at its enlarged extremity a single bright-brown sorus; the sori thus borne in two rows of 9-17 pairs, one on either side of the midvein at half the distance to the margin.

The original brief description of Franchet and Savatier may be translated as follows: "The *Polypodium vulgare* of Japan, as we have seen it, is much smaller than the specimens of Europe; the pinnae are more remote, narrower, and often more pointed; the spores are yellowish, rugose, and very finely muricate." The extremely narrow pinnae and presence of the peculiar hair-like chaff serve readily to distinguish the species. Many of the fronds exhibit a marked tendency to coil, the pinnae remaining flat, but the rachis making one or even two sidewise revolutions. The result is very curious. I have seen nothing exactly comparable to it, although the authors mention a similar peculiarity in *P. Nipponicum*, another Japanese species. *P. Japonicum* is said to occur throughout the Empire.

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THE GENUS EQUISETUM IN NORTH AMERICA.

BY ALVAH A. EATON.

TENTH PAPER.

VARIETIES OF *E. LITORALE*.

Although so diverse in appearance there are no well characterized varieties as that term is generally understood, all forms being readily accounted for by environment alone, and may be produced from one root-stock. In order to present a clear idea of the species, however, it is necessary to give definite descriptions of the extremes of appearance. The gaps can usually be filled, where it is abundant, with a complete set of intergrades. The illustrations of this species have been selected with a view of showing the connecting links, both between varieties and related species.

1. *Humile* Milde. Stem stout, 12-14 angled, decumbent at base, then ascending or erect, branchless, or basal internodes, bearing a few stem-like branches, or with scattered or verticillate