植物學雜誌第五卷第四十八號

明治廿四年二月十日

THE BOTANICAL MAGAZINE.

[Vol. V.

Feb. 10, 1891.

No. 48.]

A New Japanese Polypodium.

Ryōkichi Yatabe, Sc. D.

Polypodium Okuboi, sp. nov.

Nom. Jap. Ōkubo-shida. オホシボシダ

(Plate XXI.)

Rhizome small, erect, 1-2 mm. long, sending out numerous fine branched roots. Fronds rosulate at the apex of the rhizome, perennial, subcoriaceous, pale green, pinnatifid deeper than midway between the margin and costa, oblong-lanceolate oblong-linear, or linear, tapering at the base into a short stipe, pilose on both surfaces, usually 1-2 cm. long, sometimes 3 cm. long, 3-5 mm. broad. Lobes 4-20 on each side of the costa, oblong or ovate, entire, obtuse, 1-1½ mm. long, ½-1 mm. broad. Veins proceeding from the costa, simple, subclavate at the apex, terminating below the apex of each lobe. Sori on the back of the vein, globose, in 2 series, one at the base of each lobe.

This fern was found by Mr. Samurō Ōkubo at a certain locality near Ashinoyu in the Hakone mountain, and was collected by him at different times, the last in October, 1890. It was found growing on old stone-walls and tombstones in dry situations. The altitude of the locality is about 3000 feet.

The short rhizome is furnished with small scales, which are lanceolate or linear-lanceolate in outline and brown in color; the larger of them are about 1.5

mm. long and 0.3 mm. broad. The vertical section of the rhizome shows a sheath of brownish-red sclerenchyma, and, inside of it, bundles of scalariform cells, which anastomose here and there. The transverse section of the rhizome, as figured in the plate, shows three groups of scalariform cells, and outside each of them a group of sclerenchymatous cells. The continuation of the scalariform cells and sclerenchyma into the stipe and root is well seen in the vertical and transverse sections of the rhizome. The young and undeveloped fronds at the apex of the rhizome are invested with minute segmented hairs. The roots are branched and about 0.2 mm. in diameter; their transverse section shows, within a layer of parenchyma two cells thick, a ring of sclerenchyma consisting of one or two layers of cells, interrupted here and there; and in the center is seen a delicate vascular bundle. The epidermal cells of the root are flattened, depressed at the middle, and elevated at the edges. The hairs of the root are unicellular, simple or branched, longitudinally striated, and brown in color. The short stipe is nearly terete and about 0.3 mm. in diameter at the base, but is winged above, the wings passing into the lowest lobes. Its transverse section at the base is similar to that of the root, except that the ring of sclerenchyma is more massively developed and the epidermal cells are not flattened. The veins which proceed from the costa and enter into the lobes of the frond are somewhat geniculate and thickened at the angle, and the sorus is borne on the thickened point. The hairs on the frond are stiff, spreading, and brown in color, consisting of obliquely jointed and thick-walled cells; the larger hairs consist of about 6 cells, and are more than 1 mm. long. On the upper surface of very old fronds hairs are not found. Besides these hairs, there are, on the under surface of the lobe, minute delicate hairs consisting of two or three joints. Stomata are found on the under surface of

the lobe, and in greater number towards its apical portion, where there are about 36 in a square mm. They are of ordinary structure and form, and about 0.054 mm. long and 0.045 mm. broad. The cross-section of the lobe shows a layer of subquadrate epidermal cells with moderately thin cuticle, mesophyll of stellate cells, and a single vascular bundle. The naked sorus occupies the whole breadth of the lobe at its base, and consists of numerous sporangia mixed with ordinary hairs of the frond. The sporangia are long-stalked and much bulged out on the side opposite to the annulus; their diameter is about 0.2 mm. The number of segments of the incomplete annulus is about 20. The spores are spherical, green, minutely granular on the surface, and about 0.046 mm. in diameter. They germinate soon after sowing. It is not uncommon to find spores divided into two hemispheres by a wall.

This is a very small species of *Polypodium*, of which I do not find any description either in books and articles on plants of Japan and adjacent countries, or in works on ferns in general and of particular regions. It may be placed near *P. andinum*, Hooker, *P. subpinnatifidum*, Hooker, *P. organense*, Hooker, *P. trichomanoides*, Swartz, and the like. But from all these larger species it differs in various respects, and especially in its veins being simple instead of forked.

Plate XXI. Fig. 1, large specimen of the plant (nat. size); 2, frond ($\times 3$); 3, portion of frond showing the sori ($\times 5$); 4, sporangium ($\times 88$); 5, spore ($\times 240$); 6, spore divided into two hemispheres by a wall ($\times 240$); 7, hair of frond ($\times 88$); 8, scale at the base of stipe ($\times 53$); 9, minute hair on the under surface of lobe ($\times 88$); 10, vertical section of fertile lobe ($\times 26$), a termination

of the vein, *b* transverse section of the midrib; 11, transverse section of lobe ($\times 150$), *a* stoma, *b* base of hair, *c* vein; 12, stomata seen from above ($\times 240$); 13, vertical section of rhizome ($\times 26$), *a* base of stipe, *b* that of root, the dark portion in the figure showing the sclerenchymatous sheath, and the shaded portion the course of scalariform cells; 14, transverse section of rhizome ($\times 88$), *a* base of stipe, *b* that of root; 15, transverse section of the base of stipe ($\times 150$); 16, transverse section of root ($\times 150$); 17, hairs of root ($\times 150$).

佐 渡 植 物 一 班

大 久 保 三 郎

此ニ掲載スル處ノ表ハ明治十九年夏期休業中矢田部長吉, 柘植千嘉衛, 矢戸一郎, 染谷徳五郎, 内山富次郎等諸氏ト共ニ佐渡ニ趣キ兩三日間同地植物ヲ採集セシ時ノ植物録ナリ元ヨリ僅少ノ日數ノ事ナルヲ以テ洩ル、處多キハ勿論且ツ春秋ノ頃ニ在リテハ如何ナル植物ヲ生ズルヤ知ル能ハズ然レドモ同島ノ植物ハ未ダ世人ノ普ク知ル所ニハ非ザルベキヲ以テ其大略ヲ報ズルハ敢テ無用ニハ非ザル可シ

RANUNCULACEÆ. 毛茛科

Clematis paniculata, *Thunb.* センニンサウ

羽黒山

„ *tubulosa*, *Turcz.* シサボタン

金北山

Thalictrum tuberiferum, *Maxim.* ミヤマカラマツ

金北山

„ *minus*, *L.* アキカラマツ

羽黒山, 金北山

Ranunculus acris, *L.* キンボウグ