

Notes on American Ferns—XIX¹

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POLYPODIUM THYSSANOLEPIS A. Br.—Diminutive specimens of this extremely variable species, collected at Fort Davis, Texas, August 26, 1913, have recently been received from D. M. Andrews. Though common throughout a large part of tropical America, *P. thysanolepis* has hitherto been known from the United States solely upon specimens collected in the Huachuca Mountains, Arizona. Like the latter, the present plants have the fronds only scantily scaly beneath, in marked contrast to tropical material. As to small size they are matched by part of the specimens distributed from Chihuahua by Pringle under no. 443.

SELAGINELLA STANDLEYI Maxon.—At the time this species was described² it was known only from a single collection from Alberta (*Brown* 95) and an extensive series of specimens collected in Glacier National Park, Montana, chiefly by Mr. Standley. Its range must now be extended to include British Columbia and Colorado. From British Columbia specimens were collected by Holway and Butters in August, 1904, the exact locality being Yoho Valley, altitude 2,400 meters; on "rocky slopes near Yoho Lake," by Titus Ulke, July 25, 1921; and from shale soil at Sentinel Pass, altitude about 2,560 meters, by Titus Ulke, August 25, 1922. During the summer of 1922, also, Ivan M. Johnston collected it in quantity on Pikes Peak, Colorado, at altitudes ranging from 3,390 to 4,200 meters, in the Arctic-Alpine zone. The plants were commonly associated here with *S. densa* Rydb., and grew abund-

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² *Smiths. Misc. Coll.* 72⁵: 9. pl. 6. 1920.

antly in various exposed situations, sometimes quite carpeting portions of steep, north-facing, alpine slopes and rocky meadows. The following numbers were collected: *Johnston* 3876, 3881a, 3882a, 3883, 3884a, 3886, 3887, 3888a, 3899, 3901a, 3903, 3905. No. 3882a, consisting of a few small portions mixed with *S. densa*, was collected at 4,200 meters altitude, about 30 meters below the summit of the peak. Though obviously related to *S. Watsoni* Underw., *S. Standleyi* is readily distinguished by the characters emphasized in the original description.

SELAGINELLA WATSONI Underw.—This species, founded on specimens from Cottonwood Canyon, Utah, is well known to extend westward to the high mountains of California (Nevada County to Riverside County), being apparently a common species of rocky slopes and cliffs in the Hudsonian and Arctic-Alpine zones. In Utah it ascends to 3,450 meters. An unexpected extension of range is noted in a Montana specimen recently received from the Forest Service for identification. This was collected on Cornet Mountain, Beaverhead National Forest, at an elevation of 2,700 meters, August 28, 1921, by T. D. Howe (no. 66).

SELAGINELLA LEPIDOPHYLLA (Hook. & Grev.) Spring.—Though commonly given a range from "Texas to Arizona," this species, the well-known "resurrection plant," is omitted from the Flora of New Mexico (1915), by Wootton and Standley, who mention two regions in the southern part of the state where it might be expected to occur. Specimens are now at hand from two parts of New Mexico, these collected early in 1923 by James H. Ferriss. One specimen (no. 1) is from foot-hills of the Magdalena Mountains in west-central New Mexico; the other (no. 2) is from the San Andreas

range, near the south-central part of the state. Both are quite characteristic for the species, agreeing closely with Mexican material.

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A Study of Variation in *Polypodium californicum* Kaulf.

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The work on which this paper is based was done in 1921 and gave evidence for justification of the position taken by Eaton (1879) in dividing *P. californicum* into two varieties: a coastal one with coriaceous leaves, var. *Kaulfussii*, and a more common one with thinner leaves and extending from the coast inland, var. *intermedium*. In 1922 Fernald transferred these to varietal rank under *P. vulgare*. While the work herein reported was under way, it seemed as if some such final disposition would be desirable, but it still seems worth while to put on record more detailed figures and measurements for Californian material than have heretofore been available.

The work was carried on under the direction of Dr. Philip A. Munz of Pomona College, to whom I express deep gratitude for his helpful supervision and encouragement. Material was collected in many inland localities centering about the Pomona Valley of Southern California and in the coastal region at San Diego and Laguna Beach. In all, 174 specimens were collected, 50 of these being of the *Kaulfussii* type. Additional material was available in the Baker Herbarium of Pomona College and from the Herbarium of the University of California.

¹ Contribution from the Botanical Laboratory of Pomona College, Claremont, Calif.