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REPORT UPON A COLLECTION OF FERNS
FROM WESTERN SOUTH AMERICA

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The specimens of ferns and fern allies discussed in the following pages are part of an interesting collection made in Peru, Bolivia, and Chile in the latter half of 1914 by Dr. and Mrs. J. N. Rose. They were gathered incidentally during the progress of a field investigation of the cactus flora of western South America by Doctor Rose, as Research Associate in Botany, Carnegie Institution of Washington, under the joint auspices of the Carnegie Institution and the New York Botanical Garden, this exploration being part of a larger project looking to the preparation of a monograph of the Cactaceae by Doctor Rose and Dr. N. L. Britton. It being impracticable to make large general collections, attention was given to a few groups, other than the Cactaceae, such as the ferns, grasses, and certain genera of Compositae. Of the ferns and fern allies, 25 species were collected, five of which are apparently new. These are described herein, together with a Peruvian species of *Notholaena* first gathered by the Wilkes Expedition and never properly distinguished under a valid name. The rather high proportion of new species is suggestive of the great amount of botanical exploration yet to be done in these interesting regions.

A duplicate set of the ferns, as well as of other herbarium material of this collection, is deposited in the herbarium of the New York Botanical Garden. The numbers are in continuation of Doctor Rose's earlier series, given mainly to Mexican plants.

POLYPODIACEAE

CAMPYLONEURUM AUGUSTIFOLIUM (Swartz) Fée

PERU: Cuzco, alt. 3,300 meters (19062). Vicinity of Oroya, alt. 3,700 meters (18691).

POLYPODIUM MOLLENDENSE Maxon, sp. nov.

Rhizome creeping, curved or subintricate, 2 to 3 cm. long, 2 mm. in diameter, coarsely radiceous, densely paleaceous, the scales widely imbricate, appressed, 2.5 to 3.5 mm. long, very narrowly attenuate-

acuminate from a deltoid-ovate rounded base (here 0.7 to 1.1 mm. broad), light brown in mass, definitely but not sharply bicolorous, the darker median area composed of short to elongate, distinctly luminous cells with reddish brown sclerotic partition walls; marginal zone composed of mostly transverse, thin-walled, whitish cells in 2 to 4 rows, the outermost ones disposed as a deeply and irregularly denticulate margin, the teeth cleft. Fronds several, approximate, 4 to 8 cm. long; stipe 1.5 to 3 cm. long, light brownish, narrowly marginate along the ventral face; lamina deltoid-oblong, long-acuminate, 2.5 to 5.5 cm. long, 1 to 2.5 cm. broad, obliquely pinnatifid to within 1.5 mm. of the rachis, the rachis evident beneath, dark brown; segments 5 to 9 pairs, oblong to linear-oblong, dilatate, unequal, the upper ones gradually shorter, finally evident as short oblique lobes merging into the narrowly elongate apex; margins subentire to lightly crenate; midveins concealed; veins 4 to 6 pairs in the larger segments, wide-spreading, mostly once forked half way to the margin, the sori terminal upon the first branch, the other branch ending in a minute depressed hydathode near the margin; lower surface sparsely paleaceous, the scales resembling those of the rhizome in general structure, but much shorter (0.3 to 0.5 mm. long) and commonly elongate-deltoid, the dark cells with larger lumina, the margins more deeply lacerate-denticulate; sori 3 to 6 pairs, medial, not concealed by scales; sporangia glabrous, the annulus 14-celled; spores diplanate, pale, granulose. Leaf tissue elastico-coriaceous, the segments tortuous or irregularly involute in drying, or the whole lamina reversely circinnate.

Type in the U. S. National Herbarium, no. 700538, collected in low hills back from the coast near Mollendo, Peru, August 5, 1901, by R. S. Williams (no. 2978). Collected also at the same locality, August 25-26, 1914, by Dr. and Mrs. J. N. Rose (no. 18989).

Related closely to *P. pycnocarpum* and several allied South American species variously confused under this name. These are treated at length in a paper soon to be published in the Contributions from the U. S. National Herbarium.

POLYPODIUM PYCNOCARPUM C. Chr.

PERU: Near Oroya, alt. 3,700 meters (19467).

ADIANTUM EXCISUM Kunze

CHILE: Vicinity of Choapa, alt. 235 meters (19511).

ADIANTUM GLANDULIFERUM Link

CHILE: Near Valparaiso, near sea-level (19125). Vicinity of Choapa, alt. 235 meters (19220). Between La Ligua and Los Molles, Province of Aconcagua, alt. about 100 meters (19394).

ADIANTUM ORBIGNYANUM Mett.

PERU: Vicinity of Oroya, alt. 3,700 meters (18700).

ADIANTUM SCABRUM Kaulf.

CHILE: Vicinity of Choapa, alt. 235 meters (19512).

CHEILANTHES ORNATISSIMA Maxon, sp. nov.

Rhizome multicipital or usually single, erect, woody, bulbiform, 1 to 1.5 cm. high, 1 to 2 cm. in diameter, densely paleaceous, the scales erect, very closely tufted, fulvous to castaneous, 5 to 10 mm. long, mostly less than 0.3 mm. broad at the base, nearly capillary (the cells long and extremely narrow, attenuate, the walls nearly hyaline), slightly tortuous, with a few distant, minute, mainly antrorse teeth. Fronds numerous, cespitose, erect or ascending, mostly arcuate, 8 to 16 cm. long, very densely paleaceous; stipes 1 to 4 cm. long, 1.3 to 1.8 mm. in diameter, brown and sublustrous beneath a dense persistent covering of imbricate scales similar to those of the under side of the lamina; lamina linear to oblong-lanceolate, 6 to 14 cm. long, 1.5 to 6 cm. broad, exactly tripinnate, long-acuminate; pinnæ 15 to 20 pairs, mostly imbricate, the larger ones 3 to 4 cm. long, 7 to 12 mm. broad, oblong to linear-oblong from a slightly broader base, obtuse or acutish, sessile, spreading or upwardly falcate, the lower surface wholly obscured by a dense covering of very large, widely imbricate, brownish-centered scales, the broad, diaphanous, whitish borders irregularly denticulate-ciliate to copiously lacerate-filamentose, the tangled capillary divisions recurved, mostly extending between the segments to the upper surface of the lamina and nearly covering it; pinnules 6 to 9 pairs in the larger pinnæ, approximate, broadly oblong, pinnate, the 2 or 3 pairs of segments distant, minute, sub-globose, crenately lobed, conspicuously revolute, the minute few-sporangiate sori borne on the back of the lobes at the wholly unchanged margin; sporangia glabrous; spores triplanate, closely tuberculate.

Type in the U. S. National Herbarium, no. 515998, collected in the high mountains back of Lima, Peru, March, 1892, by William E.

Safford (no. 996). Besides additional material of the type collection there are at hand two further collections: (1) a small but complete specimen of the Wilkes Exploring Expedition, hitherto unnamed and not mentioned by Brackenridge, labelled merely "Peru," and (2) excellent small specimens collected near Oroya, Peru, altitude 3,700 meters, July 14, 1914, by Dr. and Mrs. J. N. Rose (no. 18707). All of these specimens are clearly of one species, despite the extremes of size.

Cheilanthes ornatissima is without much doubt the species illustrated by Hooker¹ as "*Cheilanthes scariosa* Presl," and probably represents the species passing under this name in herbaria. It is not, however, the Peruvian plant which Presl had in hand in describing his *Cheilanthes scariosa*, which appears to be a form of *C. myriophylla*. Presl cites as a synonym *Acrostichum scariosum* Swartz, 1806, founded on a Mexican plant first described as *Acrostichum lanuginosum* Willd., 1802 (not *A. lanuginosum* Desf., 1800); but this again is different, being reckoned a *Notholaena* by Christensen under the name *N. scariosa* (Swartz) Baker. Obviously, then, since the name *Cheilanthes scariosa* Presl was not originally proposed for a supposed new species, but was intended as a transfer of the older name *Acrostichum scariosum* Swartz, it is inadmissible to use it for a second species, as has been done by Christensen. But leaving out of consideration the matter of nomenclature, it will be seen from a careful reading of Presl's description that Hooker's plant is very different from Presl's. The former is almost certainly that here described as *C. ornatissima*; the latter is, in all probability, *C. myriophylla* Desv.

Cheilanthes ornatissima is the most densely and copiously paleaceous species of *Cheilanthes* known to the writer, the scales of the under side of the lamina being not only very large but widely overlapping and extending beyond the edges of the segments to form a thick, solid, unbroken protective covering, entirely concealing the segments. The cellular structure of the scales is very minute; the surfaces are finely lineolate, the cells being very narrow and greatly elongate, pointed, and with thin, almost colorless partition walls. This is in marked contrast to *C. Incarum*, described hereafter.

The upper surface of the lamina of *C. ornatissima* bears a lax but close covering of long, coarse, silky, white "wool," which upon careful dissection is found to proceed from the under side of the

¹ Sp. Fil. 2: pl. 104. A.

lamina and to consist of the copiously filamentose extremities of the widely imbricate scales just described. Aside from this derived covering the upper surface of the segments is glabrous, no scales or hairs whatever arising from it.

CHEILANTHES INCARUM Maxon, sp. nov.

Rhizome decumbent, woody, about 2 cm. in diameter each way, very coarsely radiceous beneath, densely paleaceous above, the scales flaccid but erect and closely tufted, light castaneous, 10 to 15 mm. long, 0.25 to 0.35 mm. broad, linear-ligulate, long-attenuate (the cells linear to narrowly oblong, indistinct, acutish or mostly obtuse), sharply flexuous toward the apex, here provided with numerous large, curved, elongate, mainly retrorse teeth, similar but smaller teeth borne upon the margins sparingly throughout. Fronds numerous, cespitose, erect, arcuate, 12 to 18 cm. long, densely paleaceous beneath; stipes 4 to 6 cm. long, 1 to 1.3 mm. in diameter, dull reddish brown beneath a persistent paleaceous covering like that of the lamina beneath; lamina narrowly lanceolate-elliptic, 9 to 12 cm. long, 1.8 to 2.8 cm. broad, attenuate at the apex, slightly narrowed at the base, bipinnate; pinnæ 13 to 18 pairs, sessile, the lowermost 2 or 3 pairs distant, the others adjacent but scarcely imbricate, the larger ones 1 to 1.6 cm. long, 5 to 7 mm. broad, elongate-deltoid, inequilateral, obtuse or acutish, broadly ascending, strongly involute, the lower surface wholly obscured by a dense covering of large, broadly imbricate, whitish or yellowish brown, nearly concolorous, deltoid-ovate, denticulate-ciliate scales, the acuminate tips of many of these recurved upon the upper side of the otherwise glabrous pinnæ; pinnules of the larger pinnæ 4 or 5 pairs, spreading, the larger ones pinnately divided with 1 or 2 pairs of sessile or semiadnate, roundish segments, the others crenately lobed, or the apical ones simple; segments not lobed, slightly revolute, the few-sporangiate sori terminal upon the veins at the slightly modified margin; sporangia glabrous; spores triplanate, closely tuberculate.

Type in the U. S. National Herbarium, no. 761644, collected near Cuzco, Peru, altitude 3,300 meters, September 1, 1914, by Dr. and Mrs. J. N. Rose (no. 19061).

Related to *C. ornatissima*, from which it differs in its less dissected lamina, more distant pinnæ, and less widely revolute segments, and in the character of its paleaceous covering. The scales of the under surface are deeply denticulate-ciliate but not at all filamentose, the upper side of the lamina being only partially covered by the slender

recurved apices of the dorsal scales and lacking altogether the fine silky white covering described as characteristic of *C. ornatissima*. Their structure is equally distinctive, the cells being mostly large, widely pentagonal or hexagonal, with yellowish sclerotic partition walls and large lumina, contrasting in a very pronounced way with the finely lineolate scales of *C. ornatissima*. The rhizome scales are very different also, as may be noted from the description, the divaricate-flexuose tips and strongly toothed margins of *C. Incarum* being characteristic.

CHEILANTHES MYRIOPHYLLA Desv.

PERU: Matucana, alt. 2,375 meters (19465).

CHEILANTHES PRUINATA Kaulf.

PERU: Juliaca, alt. 3,800 meters (19094).

NOTHOLAENA NIVEA (Poir.) Desv.

PERU: Vicinity of Oroya, alt. 3,700 meters (18701). Cuzco, alt. 3,300 meters (19063).

BOLIVIA: Vicinity of La Paz, alt. 3,600 meters (18917). Vicinity of Oruro, alt. 3,700 meters (18935).

NOTHOLAENA TENERA Gill.

PERU: Near Cuzco, alt. 3,300 meters (19471).

NOTHOLAENA HYPOLEUCA Kunze

CHILE: Near Valparaiso, at sea-level (19124). Vicinity of Choapa, alt. 235 meters (19457). Vicinity of Illapel, alt. 315 meters (19459).

NOTHOLAENA MOLLIS Kunze, *Linnaea* 9: 54. 1834.

CHILE: Cerro Grande, vicinity of La Serena, alt. 400 meters (19301). Vicinity of Illapel, alt. 315 meters (19245). Iquique, alt. 400 meters (19451).

It seems desirable to call attention again at this place to the fact, already indicated by Mettenius,¹ that *Notholaena doradilla* Colla, as originally described and figured,² is identical with *N. mollis* Kunze,

¹ Abh. Senckenb. Ges. Frankfurt 3: 74. 1859.

² Mem. Acad. Torino 39: 46. pl. 73. 1836.

published two years earlier. Even a cursory examination of Colla's illustration should be sufficient to make clear their identity. Baker,¹ however, wrongly associated the species name of Colla with a vastly different plant from Peru, collected by the Wilkes Expedition, which departs not only in gross structural characters but very conspicuously in its large, widely imbricate, denticulate-ciliate scales of the under surface, true *N. doradilla* being densely tomentose beneath with closely mingled stellate hairs. The Peruvian plant, having never been taken up under a valid name, is here described as *Notholaena Brackenridgei*, a name given by Baker but published only as a synonym, apparently. It seems to be a rare species and, so far as the writer is aware, has been recollected only by Mr. W. E. Safford. Further particulars are given after the following description:

NOTHOLAENA BRACKENRIDGEI Baker, sp. nov.

"*Notholaena doradilla*" Baker in Hook. & Baker, Syn. Fil. 371. 1868, not Colla, 1836.

Notholaena Brackenridgei Baker, loc. cit., as synonym.

Plants relatively large and coarse for the genus, erect, 18 to 30 cm. high. Rhizome ligneous, erect, 5 cm. high, 2 to 3 cm. thick, densely paleaceous at the summit, the scales closely impacted in an erect tuft, flaccid, linear-ligulate, 5 to 9 mm. long, 0.16 to 0.26 mm. broad at the base, sharply sinuate-flexuous in the apical half, yellowish brown, concolorous, finely lineolate (the cells very narrow, greatly elongate), distantly denticulate toward the apex. Fronds numerous, fasciculate in a peripheral crown, 15 to 28 cm. long, stiffly erect, mostly long-stipitate; stipes stout, 6 to 12 cm. long, 1 to 1.7 mm. in diameter, light brown, sublustrous, deciduously paleaceous; lamina narrowly oblong-lanceolate, 12 to 17 cm. long, 2.5 to 6 cm. broad, acuminate, slightly narrowed at the base, bipinnate-pinnatifid, the rachis stout, terete, similar to the stipe; larger pinnæ about 10 pairs, ascending (45°), petiolate, plicate in drying, the basal pair distant, subopposite, deltoid-ovate, about 3 cm. long, 2 cm. broad at the cordate base, acutish; middle pinnæ closer, larger, alternate, oblong-ovate, 2 to 4 cm. long, 1 to 2 cm. broad at the base, with 2 to 4 pairs of short-petiolate pinnules below the pinnately parted, short-acuminate tip; pinnules deltoid, the larger ones 7 to 11 mm. long, deeply pinnatifid or lobed, abruptly caudate, the lobes (2 or 3 pairs) spreading, oblong, rounded-obtuse; lower surface of the pinnæ densely paleaceous, the scales large, widely imbricate, reddish brown in mass, deltoid-

¹ Syn. Fil. 371. 1868.

oblong, long-acuminate, evenly denticulate-ciliate, nearly homogeneous in structure, the partition walls sclerotic, those of the smaller (outer) cells paler, strongly sinuate, the cells irregular; upper surface dull green, glabrescent, a few minute, lax, filiform scales evident at first along the middle; sori polycarpous, marginal, seated upon the slightly thickened ends of the oblique, once forked, pinnately arranged veins, adjacent, slightly protected by the narrowly revolute margin, the extreme border undulate-repand, slightly altered, delicately herbaceous, yellowish; sporangia confluent at maturity, glabrous; spores triplanate, coarsely tuberculate.

Type in the U. S. National Herbarium, no. 50959, collected at Baños, in the Andes of Peru, by the Wilkes Exploring Expedition; listed by Brackenridge¹ as *Notholaena sinuata* Kaulf. Agreeing with the type specimen are plants collected in the high mountains above Lima, Peru, March, 1892, by W. E. Safford (no. 999). Although these, being larger and more complete, have afforded the principal data for the above description, the Wilkes Expedition plant of Brackenridge is for other reasons selected as the nomenclatorial type.

Brackenridge's identifications of the Wilkes Expedition ferns, though made under great difficulty, were in the main correct. The present instance is a marked exception, the plant bearing no close resemblance or relationship whatever to *N. sinuata* (Swartz) Kaulf. Baker,² recognizing Brackenridge's error, assigned to his plant the new name *Notholaena Brackenridgei*, but apparently never published a description, merely listing it as a synonym under *Notholaena doradilla* Colla, a Chilean species with which presumably he considered it identical. *Notholaena doradilla* is, however, as may be at once noted from the illustration,³ exactly the plant described from Chile by Kunze⁴ as *N. mollis*. The Peruvian plant of Brackenridge never having been described under a valid name, the above description is offered, with the assignment of Brackenridge's specimen as the actual type because of its historical association.

Notholaena Brackenridgei might with equal propriety be placed in *Cheilanthes*, because of its slightly thickened fertile vein-ends and rudimentary indusia. It is one of a number of similarly intermediate species and suggests the necessity of a modern revision of this difficult and puzzling group.

¹ In Wilkes, U. S. Explor. Exped. 16: 19. 1854.

² Loc. cit.

³ Mem. Acad. Torino 39: 46. pl. 73. 1836.

⁴ Linnaea 9: 54. 1834; Farrnrk. 1: 115. pl. 53, f. 2. 1843.

NOTHOLAENA AREQUIPENSIS Maxon, sp. nov.

Plants small, 6 to 10 cm. high, erect, closely tufted. Rhizomes erect or ascending, simple or branched, 1 to 2 cm. high, 1 cm. or less in diameter, coarsely radicose beneath, paleaceous above, the scales appressed, partly concealed by the persistent imbricate bases of old stipes, yellowish brown to bright castaneous in mass, linear, 3 to 5 mm. long, 0.2 to 0.4 mm. broad at the base, long-attenuate (the cells oblong to linear, thin-walled), distantly denticulate, the teeth minute, low, acutish, slightly antrorse. Fronds numerous, 5 to 8 cm. long, long-stipitate, slightly arcuate; stipes very slender, 2.5 to 5 cm. long, 0.3 to 0.5 mm. in diameter, subappressed-paleaceous, brownish beneath; lamina deltoid-oblong, 2 to 4 cm. long, 1.3 to 2.5 cm. broad, obtuse or acutish, bipinnate; pinnæ about 4 pairs, subopposite, petiolate, the basal pair the largest, distant, rounded-deltoid, 10 to 16 mm. long, 7 to 10 mm. broad, with 2 or 3 pairs of segments below the trilobate or tripartite obtuse apex, the basal segments sessile, triangular, pinnately parted or lobed, the others simpler, subsessile; second pair of pinnæ similar, slightly narrower; lower surface of the lamina (including the slender rachis) densely paleaceous, the scales large, widely imbricate, appressed, ovate-oblong, long-acuminate, light reddish brown in their lower part (the cells large, elongate-polygonal, with colored sclerotic partition walls), elsewhere pale yellowish or whitish (the sclerotic partition walls lighter, strongly sinuate), the margins deeply erose-denticulate; upper surfaces very scantily covered with the recurved attenuate apices of some of the dorsal scales, bearing also a few pale, lax, tortuous, flattish, linear scales, these mostly deciduous; sori polycarpous, exactly marginal, terminal upon the short branches of the alternate once forked veins, approximate, subcontinuous at maturity, scarcely at all concealed by the slightly revolute unaltered margin; sporangia glabrous; spores triplanate, faintly tuberculate.

Type in the U. S. National Herbarium, no. 761435, collected near Tingo, vicinity of Arequipa, Peru, altitude about 2,300 meters, August 5, 1914, by Dr. and Mrs. J. N. Rose (no. 18797).

This species, which is known to the writer also from specimens collected at Arequipa, August 8, 1901, by R. S. Williams (no. 2638), appears to be most nearly related to the plant passing as *Notholaena scariosa*. From this it differs very obviously, however, in its lesser size, the greater delicacy of all its parts, its relatively broader, almost deltoid lamina, and its absolutely unaltered margins, and in having its upper surface only laxly and very sparingly paleaceous instead

of evenly covered with stiffish, persistent, piliform, spreading scales. In general form it suggests somewhat a greatly reduced miniature of the plant here described as *N. Brackenridgei*, but it has no very near alliance with that species, being widely different in minute characters as well as in size and gross structure.

NEPHROLEPIS EXALTATA (Swartz) Schott

PERU: Cultivated at Miraflores; said to have come from eastern Peru (18670).

One of the forms included in this species as currently understood.

PELLAEA TERNIFOLIA (Cav.) Link

PERU: Vicinity of Oroya, alt. 3,700 meters (18703).

TRISMERIA TRIFOLIATA (L.) Diels

PERU: Near Santa Clara, alt. 400 meters (18736).

ASPLENIUM FRAGILE Presl

PERU: Vicinity of Oroya, alt. 3,700 meters (18702).

BOLIVIA: Vicinity of Comanche, alt. 3,800 meters (18878).

ASPLENIUM IMBRICATUM Hook. & Grev.

PERU: Vicinity of Oroya, alt. 3,700 meters (18706).

DRYOPTERIS ROSEI Maxon, sp. nov.

Rhizome erect or ascending, | ligneous, closely paleaceous at the included apex, the scales large, flattish, yellowish brown, ovate or deltoid-ovate, acuminate, entire, glabrous. Fronds ascending, few, about 65 cm. long, narrow, arranged in a peripheral crown; stipes about 10 cm. long, angulate in drying, dull olivaceous, minutely puberulous with short, simple, mainly retrorse hairs; lamina linear-oblong, about 55 cm. long, 10 to 12 cm. broad above the middle, long-acuminate at the apex, very gradually long-attenuate in the basal part, bipinnatifid, the pale brownish to olivaceous rachis slender (1 to 2 mm. in diameter), minutely puberulous like the stipe; pinnae about 35 pairs, subopposite, the lowermost 12 or 13 pairs gradually shorter, the basal 3 or 4 pairs 2 to 3 cm. apart, vestigial, 1 to 3 mm. long; larger pinnae (medial and supramedial) 1.5 to 2 cm. apart, symmetrical, narrowly linear-oblong, 5 to 6 cm. long, 9 to 12 mm. broad, sessile, slightly falcate toward the acuminate apex,

pinnatifid to within 1.5 or 2 mm. of the costa, the costa yellowish, elevated on both surfaces, sulcate above; upper leaf surface sparingly but persistently hispidulous throughout, the hairs short, antrorse, whitish, extending to and along the margins; lower leaf surface sparingly puberulous throughout, the hairs whitish, unequal, mostly patent; segments about 15 pairs below the serrate (finally subentire) apex, those of the lower two-thirds of the pinna subequal, spreading, oblong, about 4 mm. broad at the base, obtuse (more or less acutish in drying), slightly concave, the margin entire, revolute, ciliate; veins simple, 6 or 7 pairs, oblique at an angle of less than 45° , extending to the margin, slightly elevated on both surfaces, whitish; sori small, 3 to 7 pairs, medial in attachment, appearing slightly nearer the margin than the midrib; sporangia setose (setæ 0.13 to 0.19 mm. long, hyaline, acicular), the annulus 14-celled; spores diplanate, nearly smooth; indusium small, soon shrivelling, copiously whitish-ciliate. Leaf tissue firmly herbaceous, yellowish green beneath, not glandular.

Type in the U. S. National Herbarium, no. 761336, collected in the vicinity of Matucana, Peru, altitude 2,375 meters, July 9, 1914, by Dr. and Mrs. J. N. Rose (no. 18667).

Dryopteris Rosei, which is known only from the type collection, is a member of the subgenus *Lastrea* as redefined by Christensen¹ and, according to his treatment,² need be contrasted only with the rare *D. leucothrix* C. Chr.,³ of Bolivia, the type specimen of which fortunately is available for comparison. From this *D. Rosei* differs very obviously in most characters, particularly in its shorter stipes, its shorter and narrower lamina, its shorter and much broader pinnæ (these not narrowly linear), its closer and much larger segments and more numerous veins, its shorter-ciliate indusia, its setose sporangia, and in its less pronounced hairy covering, *D. leucothrix* being densely pubescent beneath, the hairs longer and very numerous. The sporangia of *D. leucothrix* are devoid of setæ.

EQUISETACEAE

EQUISETUM BOGOTENSE H.B.K.

PERU: Vicinity of Matucana, alt. 2,375 meters (18646).

CHILE: Vicinity of La Serena (19285).

¹ Biologiske Arbejder, tilegnede Eug. Warming, pp. 73-85. 1911.

² Dansk. Vid. Selsk. VII. Naturvid. Abh. 10²: 53-282. 1913.

³ Smithsonian Misc. Coll. 52: 377. 1909.

EQUISETUM PYRAMIDALE Goldm.

PERU: Vicinity of Lima, alt. 140 meters (18762).

SELAGINELLACEAE

SELAGINELLA PERUVIANA (Milde) Hieron.

PERU: Vicinity of Matucana, alt. 2,375 meters (19466). Near Oroya, alt. 3,700 meters (19468).

BOLIVIA: Vicinity of La Paz, alt. 3,600 meters (18845).