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NEW OR NOTEWORTHY FERNS FROM THE DOMINICAN REPUBLIC.[1]

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In an earlier paper[2] the writer dealt briefly with an interesting collection of ferns obtained by Dr. W. L. Abbott in the northeastern part of the Dominican Republic from November, 1920, to May, 1921, describing a new species of *Anemia* and listing a number of additional species that were either little known or new to the Dominican Republic. The present notes relate chiefly to the ferns of two more recent collections, made respectively in 1922 and the early part of 1923.

The 1922 collection, covering the period from January 3 to May 30, comprises 900 numbers, about half of which are ferns and lower cryptogams. On this trip Doctor Abbott revisited the region about Samaná Bay, and explored the entire southern portion of the province of Barahona, as well as the cordillera north of San Francisco de Macoris. In the province of Barahona he visited Paradis, Trujin, Enriquillo, Los Patos, Polo, Maniel Viejo, and Cabral, the first four being small villages on or near the seacoast south of Barahona City. Polo is a small settlement west of Barahona City, situated at the edge of a long flat valley about one mile wide. Immediately east of Polo the Loma de Cielo rises to a height of 1,260 meters, its flanks covered with wet forests; four miles to the northeast the Loma la Haut rises to 1,350 meters, its forest cover somewhat depleted by recent forest fires. Particular interest attaches to the material collected in the vicinity of Lo Bracito, a small village on the southern slopes of Quita Espuela, near San Fran-

[1]Published by permission of the Secretary of the Smithsonian Institution.
[2]Proc. Biol. Soc. Washington **35**: 47–52. 1922.

cisco de Macoris. The mountains here are covered with humid thickets and forests and have the reputation of being one of the wettest parts of the Republic. This region would well repay further exploration.

Doctor Abbott's field work in the early part of 1923 (February 1 to March 13) was restricted to the region south of Samaná Bay, principally in the vicinity of Jovero, Liali, and Las Cañitas. Jovero is a small town 21 miles southeast of Samaná, near the river Lajiaguá and on the road running south of Seybo. Liali is a clearing with three or four houses, six miles south of Jovero. From this point Doctor Abbott was able to reach the summit of the Cordillera Central at an altitude of only 490 meters; the slopes are steep and for the most part still covered with virgin forest. Las Cañitas is a small settlement farther west on the south shore of Samaná Bay, near the mouth of the Catalina River and about 12 miles distant from Samaná.

Taken as a whole the collections are of great interest, indicating a rich fern flora when the Cordillera Central shall have been more completely explored. Of the species listed herewith as new to Hispaniola or the Dominican Republic solely on the basis of material collected by Doctor Abbott, some, no doubt, are represented also in the Türckheim and Fuertes collections, of which only incomplete sets have been received.

MARATTIACEAE.

Marattia alata Swartz.

Polo, altitude 900 meters or above, in a wet ravine, *Abbott* 1830.

Collected in the same province also by Fuertes (no. 1432) in 1911. The species is known otherwise from the Blue Mountains of Jamaica and from a few specimens collected in the Sierra Maestra of eastern Cuba.

SCHIZAEACEAE.

Anemia underwoodiana Maxon.

Quita Espuela, San Francisco de Macoris, at about 450 meters altitude, *Abbott* 2102.

This species, common in Jamaica and Cuba, has been known from Haiti previously but not from the Dominican Republic. The specimens are larger than is usual.

CYATHEACEAE.

Cyathea abbotti Maxon, sp. nov.

Trunk erect, apparently a meter high or more, about 4 cm. thick, rough above with appressed bases of old stipes, naked below, the scars suborbicular, about 12 mm. broad, obliquely depressed, distant, quincuncially

arranged in about 10 ranks. Fronds several, erect-spreading, exstipitate, oblanceolate-oblong, 90 to 110 cm. long, 28 to 32 cm. broad near the middle, abruptly short-acuminate at apex, acuminate in the basal third, subbipinnate; rachis dull brown, 5 or 6 mm. thick at the obtusely angulate base, unarmed, densely brownish-furfuraceous beneath, crispate-strigose above, deciduously paleaceous, the scales dark brown, subulate, 2 to 3 mm. long, or those along the ventral groove persistent, narrowly linear, subflexuous, 4 to 6 mm. long; pinnae about 60 pairs, sessile, mostly spreading, contiguous, the basal ones slightly deflexed, gradually reduced, the 2 or 3 lowermost pairs minute and vestigial, 4 to 8 mm. long; characteristic middle pinnae ligulate, with long-acuminate tips, 12 to 16 cm. long, 2 to 2.5 cm. broad, pinnatisect at base (the proximal basal segment sometimes free), deeply pinnatifid throughout (to about 0.5 mm. from the costa), the costa densely brown-strigose above, beneath deciduously paleaceous (the scales brown, thick, lustrous, 1.5 to 2 mm. long, narrowly linear from a thinner, slightly broader base, arcuate or subflexuous) and at first slightly puberulent; segments 28 to 34 pairs, close, slightly oblique, narrowly oblong, or sometimes narrowed and concave at base (thus subspatulate), subfalcate, acutish, coarsely crenate-serrate toward the tip, 10 to 15 mm. long, 3 to 4 mm. broad, the costule glabrous above, glabrous and persistently paleaceous beneath, the scales minute, pale brown, very strongly bullate, orbicular or ovate in outline; veins 9 to 11 pairs, mostly once-forked, strongly elevated above, glabrous on both surfaces, devoid of scales; sori 2 to 4 pairs, basal on the segments, borne near but usually not against the costule; indusia dark brown, firm, glabrous, deeply cyathiform, the capitate receptacle wholly included. Leaf tissue thick-herbaceous, dull dark green above, dull and much paler beneath, glabrous; margins faintly hyaline-cartilaginous, very narrowly revolute.

Type in the U. S. National Herbarium, nos. 1,145,242–3, representing a complete frond, and no. 1,145,846, representing the upper caudex in sections, collected on Quita Espuela, vicinity of San Francisco de Macoris, Provincia Pacificador, Dominican Republic, altitude about 900 meters, April 6, 1922, by W. L. Abbott (no. 2051). Dr. Abbott's no. 2145, collected at about 1,000 meters elevation in the same locality, is identical.

The nearest relative of *Cyathea abbotti* is *C. minor* D. C. Eaton, of eastern Cuba and the Dominican Republic, which differs notably in its much larger, strongly oblanceolate, basally attenuate, fully bipinnate blades, its more distant, fewer pinnae (30 to 45 pairs), its dense covering of long yellowish hairs and pale scales upon the under side of the costae and costules, its obtuse segments (these mostly constricted at base), its villous-hirsute veins, and its strictly basal sori, the indusia persistently villous-hirsute.

Cyathea minor D. C. Eaton.

"In sylvis Par Mingo," province of Barahona, altitude 1,400 meters, April, 1912, *Fuertes* 1547 (distributed as *C. pubescens* Mett.).

Known hitherto only from the mountains of eastern Cuba, the type being *Wright* 949. It is at once distinguished from *C. pubescens*, among numerous characters, by its villous-hirsute indusia.

Cyathea brooksii Maxon.

Quita Espuela, near San Francisco de Macoris, altitude 900 to 1,000 meters, *Abbott* 2052, 2054, 2148.

A species known previously only from the original collection in eastern Cuba (*Maxon* 4474) and well marked by its short, horizontal, mostly subterranean rhizome, its very long stipes, its slightly narrowed but not basally long-attenuate blades, its fully bipinnate condition throughout (the secondary pinnae hastulate, sessile or short-stalked), and the numerous minute, dark brown, spinescent-stellate scales of the costae and costules beneath, in all of which particulars it differs from *C. minor* D. C. Eaton, its nearest relative. The present material is larger and more completely fertile than the Cuban specimen and the pinnules (secondary pinnae) are more strongly crenate-serrate. The indusia bear a few hairs, a point overlooked in the original description.

Cyathea hieronymi Brause.

Near Paradis, altitude about 600 meters, *Abbott* 1666. Lo Bracito, San Francisco de Macoris, altitude 400 meters, *Abbott* 2031.

This is the Hispaniola analogue of *C. tussacii* Mett., of Jamaica. Other specimens are: Dominican Republic, *Türckheim* 2992 (type), *Eggers* 1854; Haiti, *Nash & Taylor* 1743, *Buch* 1135, 1551.

Cyathea crassa Maxon, Contr. U. S. Nat. Herb. **13: 40**. 1909.

Cyathea domingensis Brause in Urban, Symb. Antill. **7**: 153. 1912.

Liali, altitude about 300 meters, *Abbott* 2662.

Known only from the Dominican Republic. Other specimens are: *Eggers* 2735c (type), 2735; *Fuertes* 741 (distributed as *C. elegans* Hew., a Jamaican species); *Türckheim* 2716 (distributed as *C. serra* Willd.); *Türckheim* 2715 (type collection of *C. domingensis*).

Cyathea tenera (J. Sm.) Griseb.

Near Paradis, altitude about 600 meters, *Abbott* 1664.

This species, common in the Lesser Antilles and Trinidad, is new to Hispaniola.

Hemitelia wilsoni Hook.

Near Liali, altitude 300 meters, *Abbott* 2660.

A remarkable species known hitherto only from Porto Rico and from Jamaica, the type locality.[1]

Alsophila microdonta Desv.

Las Cañitas, at sea level, February, 1923, *Abbott* 2683.

A noteworthy extension of range for this species, which was known from the West Indies previously only upon two collections from Cuba (*Ekman* 14679; *Britton, Wilson & Selby* 14329). It is common in the lowlands of continental tropical America, extending from Veracruz to Brazil and eastern Peru.

[1]Contr. U. S. Nat. Herb. **17**: 416. *pl. 18*. 1914.

POLYPODIACEAE.

Elaphoglossum herminieri (Bory & Fée) Urban.

Near San Francisco de Macoris, at 300 to 450 meters elevation, *Abbott* 2021, 2099.

A widely distributed West Indian species previously reported from the Dominican Republic upon a single specimen (*Abbott* 434).

Elaphoglossum muscosum (Swartz) Moore.

Steep rocky slopes of Loma de Cielo, above Polo, at 1,000 to 1,250 meters elevation, *Abbott* 1820, 1846.

Described originally from Jamaica and since erroneously reported from a wide area in tropical America. Aside from a single Haitian collection (*Leonard* 3913) and the specimens above cited it is known to the writer only from the Blue Mountains of Jamaica.

Elaphoglossum siliquoides (Jenman) C. Chr.

Quita Espuela, San Francisco de Macoris, at about 900 meters elevation, *Abbott* 2056.

Described originally from Jamaica and heretofore known only from that island, Cuba (*Shafer* 4459), and Alta Verapaz (*Pittier* 172; *Maxon & Hay* 3109). The specimen is thoroughly characteristic.

Vittaria remota Fée.

Quita Espuela, near San Francisco de Macoris, at 900 to 1,000 meters elevation, *Abbott* 2081, 2128.

Hitherto known definitely in the West Indies from Jamaica and Porto Rico, but reported also from Dominica and St. Vincent. On the continent it ranges from Costa Rica to Venezuela.

Eschatogramme furcata (L.) Trev.

Near Paradis, at 450 meters elevation, *Abbott* 1631. Near Polo, at 600 to 900 meters elevation, *Abbott* 1841, 1884.

Widespread in continental America but very rare in the West Indies. Besides those above listed, specimens are at hand from eastern Cuba (*Maxon* 4444) and from Haiti (Marmelade, altitude 680 meters, *Nash & Taylor* 1356).

Adiantum wilsoni Hook.

Las Cañitas, near sea level, in damp ravines and on moist slopes of heavy forest, *Abbott* 2698, 2699, 2708, 2715.

Described from Jamaica and known in the West Indies also from Porto Rico (*Hioram* 199). New to Hispaniola. On the continent it extends from Guatemala to Panama.

Polypodium cultratum Willd.

Quita Espuela, vicinity of San Francisco de Macoris, at about 600 meters elevation, *Abbott* 2095.

Not previously recorded from Hispaniola, so far as noted.

Polypodium suspensum L.

Quita Espuela, vicinity of San Francisco de Macoris, altitude about 900 meters, *Abbott* 2074.

Long ago ascribed to Hispaniola by Fée. The specimens are smaller than is usual.

Polypodium taenifolium Jenman.

Quita Espuela, vicinity of San Francisco de Macoris, altitude about 1,000 meters, *Abbott* 2114b, 2146.

New to Hispaniola. A rare species, widely distributed in the West Indies; formerly known as *P. sintenisii* Hieron.[1]

Polypodium trifurcatum L.

Quita Espuela, near San Francisco de Macoris, at 600 to 1,050 meters elevation, *Abbott* 2038, 2045, 2071, 2082.

A rather uncommon species, widely distributed through the West Indies but apparently not heretofore recorded from Hispaniola. The type is from Martinique.

Polypodium leucosticton Kunze.

Loma de Cielo, Polo, at 1,000 to 1,200 meters elevation, *Abbott* 1797, 1807, 1811.

This species, which has recently been collected also in Haiti (*Leonard* 4789), is known otherwise from Guatemala, Costa Rica, and northern South America.

Polypodium astrolepis Liebm.

Vicinity of Paradis, at about 450 meters elevation, *Abbott* 1647.

A common Middle American plant, apparently not previously listed from Hispaniola. It has usually been known as *Polypodium elongatum* (Swartz) Mett., an invalid name. The species of this difficult group have recently been treated by Weatherby.[2]

Polypodium decumanum Willd.

Dense forest on bank of Río Lajiaguá, Liali, at about 100 meters elevation, *Abbott* 2582.

This species, described originally from Brazil, extends thence northward to Mexico. It is common in Trinidad, but apparently has not heretofore been known from the West Indies proper. Collected also in the vicinity of Santo Domingo City by Rose, Fitch and Russell (no. 4114) in 1913.

Polypodium latum (Moore) Sod.

Paradis, at about 450 meters altitude, *Abbott* 1620.

There is apparently no published record of the occurrence of this species in Hispaniola. It is widely spread in tropical and subtropical America, and occurs in Florida.

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[1]Contr. U. S. Nat. Herb. **17**: 555. *pl. 38*. 1916.

[2]Contr. Gray Herb. n. s. **65**: 1–14. 1922.

Polypodium vexatum D. C. Eaton.

Loma de Cielo, Polo, altitude about 1,200 meters, *Abbott* 1959.

Though common in Haiti (*Leonard* 3736, 3762, 3950, 4031, 4459, 4554, 4616) this species seems never to have been listed from either that country or the Dominican Republic. It is abundant in eastern Cuba and is listed by Urban from Porto Rico (*Sintenis* 6743).

Asplenium laetum Swartz.

Polo, at 600 meters elevation, *Abbott* 1777. Liali, at about 400 meters elevation, *Abbott* 2627.

Widely distributed in the West Indies, but apparently not before definitely known from Hispaniola.

Asplenium monteverdense Hook.

Loma de Cielo, near Polo, at 750 to 1,200 meters altitude, *Abbott* 1880, 1954. Quita Espuela, near San Francisco de Macoris, altitude 450 meters, *Abbott* 2110.

Apparently not hitherto reported from Hispaniola. There are at hand, however, many specimens collected in Haiti by E. C. Leonard in 1920.

Asplenium pseudoerectum Hieron.

Loma de Cielo and elsewhere, vicinity of Polo, at 900 to 1,200 meters elevation, *Abbott* 1828, 1963a, 1966.

A critical species, widely distributed in the West Indies, but not previously reported from Hispaniola. Several specimens are at hand also from Haiti (*Leonard* 4020, 4526, 4706, 4720, 4727).

Asplenium sintenisii Hieron.

Loma la Haut, Polo, at about 1,050 meters elevation, *Abbott* 1866.

Described from Porto Rico and Haiti, an additional Haitian specimen being *Leonard* 3872, from Mission. It occurs also in Jamaica (*Hart* 250, 489; *Maxon & Killip* 798), and may be expected in Cuba.

Blechnum blechnoides (Lag.) C. Chr.

Liali, altitude 100 to 500 meters, *Abbott* 2636.

Although previously ascribed to Hispaniola, no other specimens from this island have been seen by the writer.

Hemidictyum marginatum (L.) Presl.

Vicinity of Las Cañitas, near sea level, *Abbott* 2695, 2696.

A very common tropical American species, apparently not previously reported from Hispaniola.

Dryopteris angustifolia (Willd.) Urban.

Dense woods along the Río Lajiaguá, near Liali, altitude about 100 meters, *Abbott* 2579.

So far as noted, this common species of tropical America has not hitherto been reported from Hispaniola.

Dryopteris pyramidata (Fée) Maxon.

Vicinity of Samaná, along a stream, near sea level, *Abbott* 1504. Lo Bracito, near San Francisco de Macoris, at about 300 meters elevation, *Abbott* 2022.

A not uncommon species from the Guianas northward through the Lesser Antilles. There is a single other record from the Dominican Republic (*Wright, Parry & Brummel* 12).

Fadyenia hookeri (Sweet) Maxon.

Quita Espuela, near San Francisco de Macoris, at about 300 meters altitude, *Abbott* 2089.

Well known from Cuba, Jamaica, and Porto Rico, but apparently new to Hispaniola.

Polystichum polystichiforme (Fée) Maxon.

Loma de Cielo, near Polo, at about 1,200 meters altitude, *Abbott* 1967, 1968, 1977.

Known from the mountains of Jamaica, Cuba, and Porto Rico, and upon two recent collections in Haiti (*Leonard* 4443, 4718).

LYCOPODIACEAE.

Lycopodium brauseanum Herter.

Quita Espuela, near San Francisco de Macoris, altitude 1,000 meters or above, *Abbott* 2123.

This species was described originally from Margarita Island, Venezuela, on material collected by J. R. Johnston (no. 156, in part). The present specimen has precisely the aspect of the Margarita plant, but is larger and has most of the leaves acutish. It may represent a distinct new species, but is more likely an ordinarily luxuriant state of *L. brauseanum.* The original specimen appears depauperate.

HYMENOPHYLLACEAE.

Hymenophyllum delicatissimum Fée.

Quita Espuela, near San Francisco de Macoris, at 900 to 1,000 meters elevation, *Abbott* 2057, 2120, 2177.

This species, which has been most injudiciously reduced to *H. lineare* Swartz, was founded on Brazilian material collected by Glaziou (no. 3591), a portion of which is at hand. From that species it is at once distinguished by its twice-stellate hairs, as also by its simpler blades. Additional specimens examined are: British Guiana, *im Thurn* 200; Trinidad, *Britton, Hazen & Mendelson* 1374; Grenada, *Sherring;* Guadeloupe, *Duss* 4268.

Hymenophyllum lanatum Fée.

Quita Espuela, near San Francisco de Macoris, at about 900 meters elevation, *Abbott* 2076.

Originally described from Guadeloupe. Known otherwise heretofore only from the Sierra Maestra of eastern Cuba and the Blue Mountain region of Jamaica, where it is abundant.