BOTANY.—*Three new species of* Alsophila *from Colombia and British Honduras.*[1]

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The term "tree-fern," though occasionally applied to treelike members of Polypodiaceae, is tacitly restricted by botanists to the family Cyatheaceae, being in fact its vernacular equivalent. This usage, long in effect, is based on the treelike proportions of a great majority of the Cyatheaceae, which have strong upright woody trunks, commonly 5 to 10 meters high, surmounted by a crown of huge, finely dissected fronds. But just as the leaf blade ranges from quadripinnate to once-pinnate (even simply strap-shaped) in the hundreds of species constituting this group, so also there is every intermediate condition from massive towering fern-trunks to slender shorter ones, to others of moderate size that are weakly ascending or even prostrate (though bearing a crown of good-sized fronds), and still others with short decumbent rhizomes and small, simply pinnate fronds that are not larger than some of our common wood-ferns (*Dryopteris*), which in general appearance they considerably resemble.

Seven tropical American species of *Alsophila* with simply pinnate fronds and short, ascending or erect rhizome are currently recognized, all these being at hand. Three are added herewith. The assemblage is a heterogeneous one, and the species are for the most part not closely enough related to justify detailed comparison.

Alsophila haughtii Maxon, sp. nov.

Rhizoma erectum, usque ad 10 cm longum et 1.2 cm diam., deorsum copiose et crasse radicosum, apice paleaceum, paleis deltoideo-ovatis, acutiusculis, paulum supra basin affixis, 3–4 mm longis, 1.5–2 mm latis, medio brunnescentibus, striatis, lucidis, marginibus albidis. Folia 6–8, polysticha, usque ad 40 cm longa, patentia vel decurvata; stipites 10–12 cm longi, 1–2 mm diam., sordido-olivacei, inermes, inconspicue hirtelli (pilis septatis ochroleucis), paleacei, paleis numerosis, late oblongo-ovatis, acutiusculis vel obtusis, 4–6 mm longis, 2–3 mm latis, supra basin asymmetricam punctillo affixis, patentibus, sursum gradatim minoribus; laminae lineares vel lineari-oblongae, apice sensim acuminatae, basi paulum angustatae, usque ad 28 cm longae et 7 cm latae, 1-pinnatae, rhachi olivacea, hirtella, parcissime paleacea; pinnae ca. 16-jugae, patentes, anguste oblongae, pleraeque 2.5–3.5 cm longae et 10–13 mm latae, breviter petiolulatae, apice rotundatae, basi truncatae vel aequaliter subcordatae, vix auriculatae sed utrinque rotundatae, basin versus late crenatae, sursum remote et obscure vel leviter crenatae, apice ipso valde crenato-dentatae, textura membranaceo-herbaceae, supra glabrae, infra costis glabratis basin versus paleis albidis rotundatis parvis paucis primum praeditae; venae 10–12-jugae, liberae, tenues sed prominulae, 2–4-jugae basales pinnatim ramosae, venulis 3–6 parallelis, mediales pleraeque 1-furcatae, apicales simplices; sori inframediales, inter se subremoti, medio dorso venularum infimarum anteriorum posteriorumque vel (gregibus minoribus) solum anteriorum siti, parvi, receptaculo rotundo, sporangiis plerumque delapsis; paraphyses ut videtur paucae, parvae, cinereae, simplices.

Type in the U. S. National Herbarium, no. 1705805, collected on Cerro Armas, Department of Santander, Colombia, altitude 1,300 to 1,500 meters, on the face of sandstone cliffs, July 26, 1936, by Oscar Haught (no. 1957).

Except for *Alsophila kuhnii* (Hieron.) C. Chr., of Colombia, *A. haughtii* is by far the smallest member of the family Cyatheaceae known. It belongs apparently to that small group of tropical American species called *Trichopteris* by Presl, which includes *A. corcovadensis* (Raddi) C. Chr., *A. dichromatolepis* Fée, *A. elegans* Mart., *A. marginalis* Klotzsch, *A. sagittifolia* Hook., and *A. williamsii* Maxon, these agreeing essentially in type of soriation and, with the exception of *A. williamsii*, in having bipinnate blades and free veins. With *A. williamsii*,[2] which is wholly anomalous in its long-stalked simple pinnae, several-rowed sori, and large semi-octagonal costal areoles, it needs no comparison. The persistent broad, concave, pale scales of the stipe and rhizome recall those of *A. dichromatolepis*.

[1] Published by permission of the Secretary of the Smithsonian Institution. Received November 7, 1943.

[2] Contr. U. S. Nat. Herb. 24: 46. *pl. 17.* 1922.

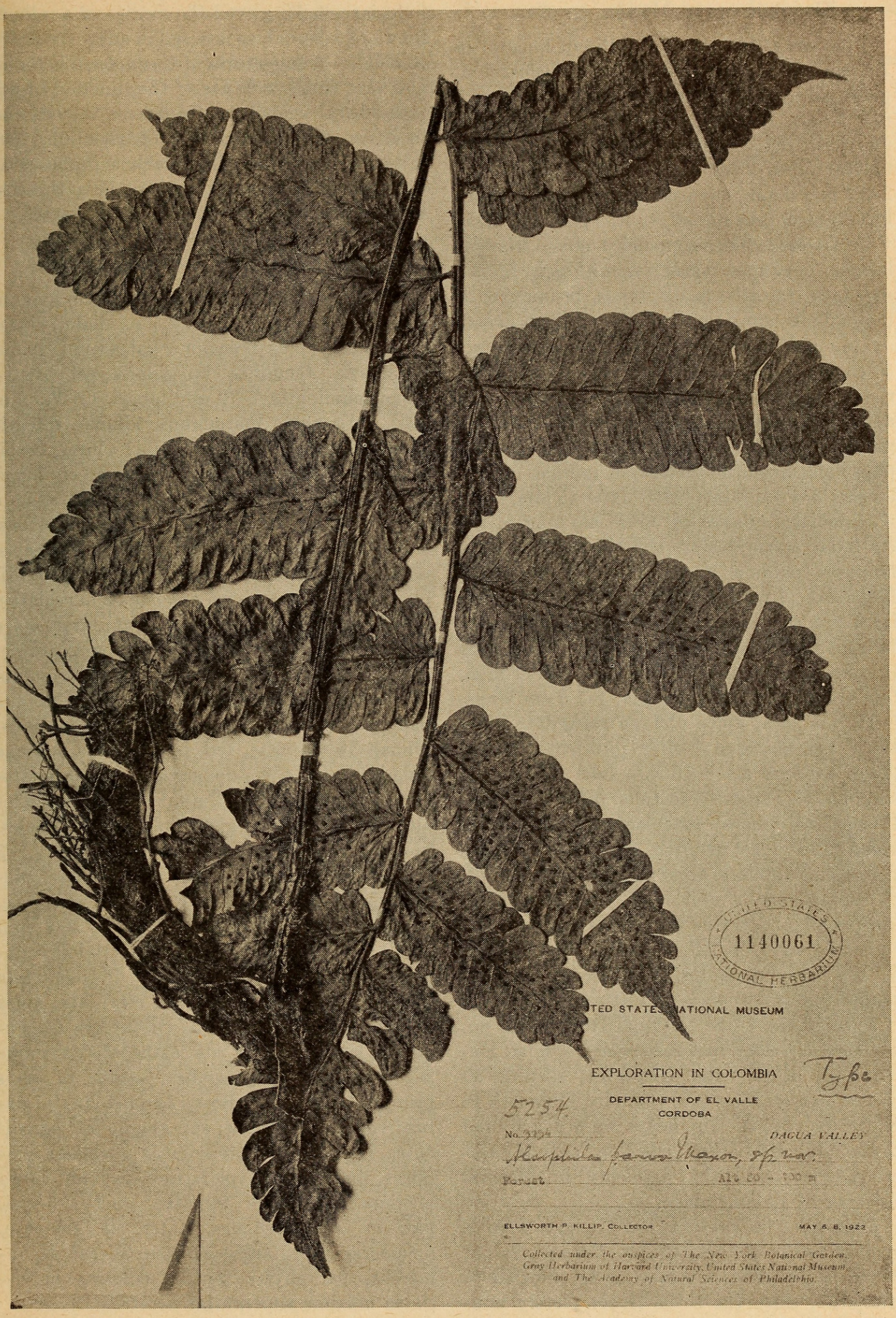

Fig. 1.—*Alsophila parva* Maxon. One-half natural size.

Alsophila parva Maxon, sp. nov.

Rhizoma suberectum, ca. 15 cm longum et 1.5 cm diam., crasse radicosum, paleaceum, paleis adpresso-imbricatis, subdeltoideis, ca. 5 mm longis, 1.5–2 mm latis, longe acuminatis, aterrimis, crassis, opacis, subintegris. Folia ut videtur pauca, 70 cm longa; stipites 20 cm longi, 2–3.5 mm diam., olivaceo-brunnescentes, supra hirtelli et obtuse sulcati, subtus glabrati, basin versus decidue paleacei, paleis anguste triangularibus, longe acuminatis, 5–9 mm longis, 1.5–2.5 mm latis, falcatis, haud crassis, brunnescentibus, minute eroso-denticulatis; laminae exacte ovatae, apice abrupte acutae, basi angustatae, 50 cm longae, 25 cm latae, pinnato-pinnatifidae, rhachi epaleacea, glabrescente; pinnae infra apicem lobatum 7-jugae, alternae, remotae, patentes, oblongae, infra ad insertionem aerophoro maculaeformi instructae, infimae 7–8 cm longae, 3–4 cm latae, petiolulatae (5 mm); pinnae mediales subsessiles, 13–14 cm longae, 4–5 cm latae, apice abrupte acuminatae, basi subtruncata paulum angustatae, membranaceo-herbaceae, pinnatifidae, costa supra substrigosa, infra cum costulis et venis atque parenchymate pilis glanduliformibus unicellularibus hinc inde primum praedita; segmenta 10- vel 11-juga, late oblonga, paulum obliqua, 1–1.5 cm longa, 8–12 mm lata, apice oblique rotundata, contigua vel pleraque leviter imbricata, costae latere utroque ala 8–10 mm lata confluentia, sinubus vix apertis, costulis infra ad insertionem aerophoro maculaeformi instructis; venae 8–10-jugae, remotae, prominulae, basales pleraeque simplices, arcuatae, ad sinum egredientes, apicales simplices, alterae plerumque infra medium furcatae vel steriles bis (raro ter) furcatae; sori 3–4-jugi, mediales, magni, inter se 3–4 mm distantes, receptaculo globoso, paraphysibus perpaucis minutissimis instructo.

Type in the U. S. National Herbarium, no. 1140061, collected in forest near Córdoba, Department of El Valle, Colombia, altitude 80 to 100 meters, May 6–8, 1922, by Ellsworth P. Killip (no. 5254). Duplicates were distributed to the Gray Herbarium, the New York Botanical Garden, and the Academy of Natural Sciences of Philadelphia.

Although the present plant suggests in a general way the subgenus *Cnemidaria* of *Hemitelia*, it must nevertheless be referred to *Alsophila*, since the sorus is completely non-indusiate, lacking even the vestige of a minute inferior scale such as is noted in a few species of *Alsophila*. A suggestion of *Cnemidaria* is found also in a single instance of the junction of opposed basal veins by a transverse veinlet, and in other minor anomalies of venation. The presence of suborbicular black aerophores at the base of the costae and especially the costules throughout is a conspicuous character.

Alsophila ursina Maxon, sp. nov.

Rhizoma erectum, fortasse 10–15 cm longum (pars praestans 6 cm), ca. 2.5 cm diam., crasse radicosum, apice praecipue paleaceum, paleis numerosis, tenuibus, lanceolatis vel ovatis, longe acuminatis, 7–10 mm longis, 1.5–2.5 mm latis, brunneis, marginibus albidis integris abrupte scariosis exceptis. Folia pluria, cespitosa, ca. 1.25 m longa; stipites ca. 15 cm longi, 7–10 mm diam., brunnei, valde sulcati, ubique dense paleacei, paleis 1–1.5 cm longis, e basi lanceolata longissime attenuatis, brunneis, plerisque deflexis, numerosissimis et persistentibus; laminae lineares vel anguste oblanceolatae, ca. 110 cm longae, medio ca. 25 cm latae, apice acuminatae, basin versus gradatim angustatae, pinnato-pinnatifidae, rhachi stipiti simili, solum laminae apicem versus interrupte alata, ubique paleacea, paleis sursum gradatim minoribus; pinnae 35–40-jugae, fere horizontales, infimae oblongae, ca. 4 cm longae, apice rotundato-obtusae, petiolulatae (3 mm); pinnae mediales alternae, non contiguae, pleraeque sessiles, lineares, 11–13 cm longae, basi et medio 2.5–3 cm latae, apice acutae vel acutiusculae, pinnatifidae, herbaceae; costae supra substrigosae, subtus minute fibrillosae et paleis 2–4 mm longis lineari-attenuatis divaricatis rigidis brunneis intructae; segmenta ca. 16-juga, late oblonga, 8–10 mm longa, 5–6 mm. lata, apice oblique rotundata, falcata, subintegra vel undulata, late conjuncta, ala costae latere utroque 2–3 mm lata, supra glabra, subtus in venis primum minute fibrillosa, parenchymate glabro; venae ca. 8-jugae, sub angulo 45° egredientes, prominulae, acroscopicae pleraeque simplices, basiscopicae pleraeque paulum supra medium acutissime furcatae; sori 4–6-jugi, paulum supramediales, inter se remotae, mediocres, receptaculo globoso; sporangia numerosa, paraphyses teneras cinereas brevissimas maxime superantia.

Type in U. S. National Herbarium, nos 1791403–404, collected on Antelope Ridge, Stann Creek Valley, British Honduras, February 5, 1940, by Percy H. Gentle (no. 3197). It consists of a nearly complete frond (lacking only the extreme tip), attached to the apical portion of the caudex. Additional material of this collection is in the Herbarium of the University of Michigan and the National Herbarium.

Alsophila ursina is notable for the very dense persistent covering of long, spreading or retrorse, bright brown scales of its stipe and rachis. These give it a remarkable shaggy appearance, which has suggested the specific name.

ZOOLOGY.—*Rhizocephalan parasites of hermit crabs from the Northwest Pacific.*[1]

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Only two rhizocephalan parasites of hermit crabs have previously been reported from the Northwest Pacific: *Peltogasterella socialis* Krüger from Puget Sound (Potts, 1915) and *Peltogaster* sp. from Nanaimo, British Columbia (Boschma, 1931). The material discussed in the present paper includes five genera and eight species, of which one genus and four species are new. This is not surprising in view of the limited attention the Rhizocephala have received in North America and the absence of any studies on these animals from Alaskan waters, where many specimens of the present collection were gathered years ago by the United States Fish Commission steamer *Albatross*.

A small but interesting lot of Rhizocephala from Puget Sound received from Dr. Roland Walker of Troy, N. Y., in 1940 provided the nucleus for the present study. This collection was especially noteworthy because on one species of crab, *Orthopagurus schmitti* (Stevens), there were three different rhizocephalans, two of which were new species. A personal search by the author of the general collection of Paguridae in the United States National Museum brought to light many additional parasitized hermit crabs, hitherto unstudied, and a few others were obtained from the Museum of History, Science and Art, Los Angeles, Calif.

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[1] Received December 20, 1943.

Family PELTOGASTERIDAE Lilljeborg

Genus **Peltogaster** Rathke

Peltogaster paguri Rathke

Material examined.—Coal Harbor, Unga Island, Alaska Peninsula, 8–9 fathoms, 1872, six specimens on six *Pagurus capillatus* (Benedict), W. H. Dall coll. U.S.N.M. 80471.

Unalaska, Aleutian Islands, tidal zone, July 10, 1937, two specimens on one *Pagurus hirsutiusculus* (Dana), V. B. Scheffer coll. U.S.N.M. 145827.

There is only one previous record of *Peltogaster paguri* from the Pacific Ocean, that of Krüger (1912), who mentioned this parasite as occurring on *Pagurus gracilipes* (Stimpson) from Japan. One specimen from each of the above hosts has been sectioned, and they exhibit no peculiarities when compared with specimens from the North Atlantic. This species probably parasitizes a number of other hermit crabs in the Alaska region. A peltogaster on *Pagurus trigonocheirus* (Stimpson) (U.S.N.M. 80472) and another on *Pagurus cornutus* (Benedict) (U.S.N.M. 80481), both from the Bering Sea, appear to be this species, but these specimens are too poorly preserved to permit certain identification and were not sectioned.

For anatomical details and literature on *Peltogaster paguri* see Boschma (1928, 1933); for life history and host-parasite relationship see Reinhard (1942, 1942a, 1942b).

Peltogaster boschmae, n. sp.

Fig. 3

Cotypes.—San Juan Archipelago, Wash., north shore of Stuart Island, 45 fathoms; off