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India, 1863

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THE FERNS

OF



SOUTHERN INDIA.

Being Descriptions of the

OF

THE MADRAS PRESIDENT

BY

R. H. BEDD

LONDON: 1881

1001
no. 1001
complete, sometimes

^y - talke
+ or quite th

Indian Botani
BoTANjr*i

GLASS N
BOOK



Synopsis

OF

THE GENERA OF FERNS OF SOUTHERN INDIA.

Classification, (after Moor)

FILICALE.— A erogenous with dorsal or marginal one-celled spore-cases.

Spore-cases furnished with a jointed ring, which is usually not complete, sometimes

mentary.

Spore-cases not valvate.

Ring: vertical, nearly complete, Spore-cases usually stalked, gibbous, bursting +

- [A] Receptacles universal, i. e., occupying almost or quite the entire disk of the both veins and parenchyma.
- [B] Receptacles Local, circumscribed, i. e., confined to determinate parts of the form.
- (1) Sorus transverse to the veins (when distinct veins are present) or near the midrib or margin.

CLA-3
BOOK

Receptacles normal, i. e., the Spore-cases attached to the surface of the frond.

— [ninaUform.

— tioear, trans?urae.

(a 3) Kocoptii less short, transverse or arcuate on the veins, sub-parallel with the midrib or margin.

— SoH non-iiidu late.

(2) Sori parallel with the venation, oblique (rarely sub-parallel) to the midrib, oblong linear or more or less circumscribed, sometimes compound.

(*) Sori indusiate, lateral or sub-lateral on the veins.

(b) Sori naked or sparsely indusiate, dorsal on the veins.

(a) Receptacles linear, variously reticulate-annular.

(b) Receptacles linear, simple or forked, (sometimes sub-parallel), oblong.

(c) Receptacles oblong, contiguous, parallel, the Spore-cases bearing a broad marginal sori (apparently indusiate.)

punctiform (rarely in § 15, sub-oblong, or broadly cordate or elongate.)

(*) naked, i. e., without true indusia; for Ute froada sometimes outwreathed with involute margins—apparently indusiate.)

indusiate, i. e., with superior indusia.

Indusium reniform or peltate, attached to the sinus or center, free at the margins, (fertile fronds sometimes invariably contracted.)

lobed, attached transversely to the vein by the base, the margins

lobed or oblong, subreniform at the base and margins, opening in front, anteriorly.

the pith inferior in position.

the involucre distinctly within the margin of the frond, forming an entire abridged cap; Son therefore within a dorsal sori.

(vertical, nearly complete, untrilobed, spore-cases crowded, sessile or sub-compressed, or sub-compressed, fistid; horizontally.

§ 8.
Cissanthaceae.
§ 9.
Pteridaceae.

§ 10.
Mniaceae.

§ 11.
Aspleneae.

§ 12.
Hemimithaceae.
§ 13.
Gymnogrammeae.

§ 14.
Platyllumae.

§ 15.
Polypodiaceae.

§ 16.
Aspidiaceae.

§ 17.
Cystopteridaceae.

§ 18.
Davalliaceae.

§ 18.
Peramecere.

Ti-ibe 2.
CYATHACEAE.

§ 19.
Cystaceae.

§ 20.
Altiaceae.

(Aquatic Annual proliferous ferns, with constricted fertile fronds)

Spore-cases wo reived, bursting; vertically at the apex, Ring rudimentary, oblique; transverse near the base.

Spore-cases without a jointed ring,

[A] Fructifications dorsal on normal fronds, (vernation circinate or incurved.)

(1) Sori-oblong distinct, longitudinally bivalved,

(a) Spore-cases free, crowded in two opposite linear series.

(1) Spore-cases concrete, in two opposite linear series.

[B] Fructifications marginal, on rachiform fronds or branches, (vernation straight.)

LYCOPODACEAE—Acrogeous plants with axillary radical or petiolate one-four or many-lobed spore-cases.

Spore-cases one-three-jointed, in the axils of the stem leaves or bracts.

—terrestrial leafy; Spore-cases one-three-jointed.

Order
MARATTIACEAE
Tribe I.
MARATTIACEAE
I.
Angiopteridaceae.

Order.
MARATTIACEAE,
Tribe I.
MARATTIACEAE
I.
Angiopteridaceae.
Marattiaceae.
Order.
OPHIOGLOSSACEAE.

Order.
LYCOPODACEAE
LYCOPODACEAE
LYCOPODACEAE

LYCOPODACEAE

NOTICE.

This work will be completed in about sixteen 111⁷; the wor*
to be piublished monthly, each number will contain 12 iytical table
South-Indian Ferns, with descriptions and localities, &c.
will also contain a Synopsis of the Tribes, and an Ana
of the Gfenera, with their synonyms.

*printed, Subscribers
to the Author, at the*

*As a limited number of Copies only will be n advance of 6 Rupees
e requested to send their names and address
ce of Conservator of Forests, and to ?
hree numbers.*

ANALYTICAL TABLE OF GENERA WITH THEIR SYNONYMS.

Order POLYPODIACEAE. Tribe POLYPOBINEAE.

§ 1. ACROSTICHEAE.

(a) *Fronds wholly fertile.*

* *Veins free, i. e., disunited at the apices of their branches,*

t *Veins simple forked or pinnate.*

1 POLYBOTRYA. *Ilumb, et Bonpl.* 1810.

Egenolfia, Schott, 1834.

Lacaussadea, Gaudichaud, 1836-37.

Ectoneura, Fée, 1844,

Granulina, Bory ; Fée, 1844.

Botryothallus, Kl. M. S. 1846,

Psomiocarpa, Presl. 1849.

Microstaphyla, Presl. 1849,

*I mern**

t f *Veins parallel forked.*

J *Fronds single.*

2 ELAPIHOGLOSSUM, *Schott*, 1834.

? Phyllitis, Necker, 1790.

Acroaticbutn FcE, 1844.

Veins transversely combined in a single series.

f *Veins united to form narrow costal Añoles.*

H STENOCHL^NA, *J. Sm.* 1841.

Cafraria, Presl. 1849.

Lomariobotrys, Foe, 1851.

* *Veins reticulated, i. e., forming a net work.*

f *Vennles arcuato-Angularly united between the pinnate veins, with excurrenti veinlet***

4 P;ECILOPTERIS, 7W. (Esch. 1827 emend) 1836.

Bolbitis, Schott, 1834.

Campium, Presl. 1836.

Cyrtogonium, J. Sm, 1841,

Heteroneuroii, Fée, 1844.

(b) *Fronds fertile on the upper JJm neu only.*

+ *Veins uniformly reticulated.*

5 ACKOSTICHUM, Z. 1737, (emend) Presl. 1836,

Chrysodiuin, F6e, 1844.

LOMABIA, Willd. 1809.

Oncles, Lin. (Pl.) 1751.

Hegania, Brown, 1810.

Lomariidum, Presl. 1849.

Polygramma, Presl. 1849.

* * * *Sori distinctly within the margin.*

7 BLECHNUM, Lin. 1751.

Orthogramma, Presl. 1849.

Spicula, Presl. 1849.

Blechnopsis, Presl. 1849.

Diaphis, Presl. 1849.

Parablechnum, Presl. (pt.) 1849.

Paralomania, Fée, 1851.

Mesothema, Presl. 1849.

Distaria, *Px* Presl. 1849.

Parablechnum, Presl. (pt.) 1849.

§ 3. PLEUROGRAMMEÆ.

(a) *Veins conspicuously anastomosing.*

Fructification borne on the contracted apices of the fronds.

8 HYMENOLEPIS, Ktze 1824.

Bolusia Mirb. (pt.) 1803.

Macroplothus, Presl. 1849.

Hyalolepis, Ktze, 1850.

* * * *Fructification occupying distinct contracted fronds.*

9 GYMNOPTERIS, Bernh. 1800, (amend.)

Leptochilus, Ktze. 1824.

Dandroglossa, Presl., 1849.

§ 4. TENITIDEÆ.

(a) *Veins uniform, reticulated, with included free veinlets in the areolæ.*

Sori linear, continuous, near the margin.

10 DRYMOGLOSSUM, Presl. 1836.

Plempsis, Don. (pt.) 1827.

Heteropteria, Fée, 1842.

Neuroclium, Fée, 1842.

Paltouium, Presl. 1849.

Lammaphyllum, Presl. 1849.

(b) *Veins straight, free, (except where combined by the marginal receptacles.)*

11 TENIOPSIS, J. Sm. 1841.

Chilogramma, Bl. (pt.) 1828.

Cuspidaria, Fée (pt.) 1851.

Tenidopteris, Hook. 1841.

Ampelopteris, Kl. 1847.

§ 5. VITTARIEÆ.

12 VITTARIA, Sw. 1793.

Runcinaria, K. Mull. 1854.

AvWaria, K. Mull. 1854.

Paronebrynaria, K. Mill 1654.

(a) Veins free (except where combined by the receptacles.)

- 13 LIJDSJEA, Dryand, MS.—*tuila*, 1733.

<i>Lindaya</i> , Klé, 1824. <i>Hymenotoma</i> , Gaud. 1826.	<i>Lindina</i> , J. Sm. 1841. <i>Lindwynium</i> , Fée, 1851.
--	---

(b) Veins reticulated, without free included veins.

- 14 SCHIZOLOMA, C. iid, MS —Hory, 1824; Gaud. 1826.

<i>Perimptia</i> , Will, Hb. 1823. <i>tytiaplebjum</i> , J. Sia. 1841.	<i>Diellia</i> , Eraokeandge, 1854.
---	-------------------------------------

5 7. ADUKTE/K.

(a) Veins free.

- 15 ADtiNTtTM, tin, 1737.

<i>Adiuitollutu</i> , Prosl. 1836. <i>Apocmia</i> , Fée, 1851.	<i>Hydroelia</i> , Fée, 1851. <i>Mesopleura</i> , Moon, MS. 1853.
---	--

5 8. CHEILA KtTHEiG.

(a) Sori marginal, terminal on the stipe.

Blasius raised or short creeping. • • Son d&period along ike r&argitu of the ttgtumU; fronds Hualty inv. l man-
betuicous or sub-coriaceous.

Judium rennialish, or by confluent sori or less elongate (often 2' or iid.)

CHEILANTHES, Sc. 1866.

- RyainiOj Hamilton MS. Don. 1825.

<i>Ouiosiolonta</i> , l.k. '(;:; n." <i>Phytasteris</i> , Presl. 1838.	<i>Myriopteris</i> , Fée, 1851. <i>Aluripteris</i> , TSB1. <i>Chloropteris</i> , Fée, 1857. <i>Synochlamys</i> , Fée, 1857.
---	--

Blasius creeping extensively; Sori usually at the axil of the wgmt*; fronds largo ktrbactows.

- 17 HYPOLEPIE, Borsk. 1806.

§ 9. PTERIDEE

(a) Veins free.

Sori especially marginal and confluent on the narrow segments.

- 18 ONYCHIUM, Klé, 1820.

<i>Cajnoplois</i> , Thunb. 1793 (reduct) Presl. 1849. <i>Leptostegia</i> , D. Don. 1823.	
---	--

* Sori linear confluent marginal.

Judium membranaceis.

- 19 PIKRIS, Lin. 1757 (nomid)

<i>Thelypteris</i> , AdfDHCMIj 1T63 <i>Cincinnati</i> , Gled. ifcaoh, 1704. <i>Ostenioj</i> Noofcev, 1700. <i>Monogonia</i> , FICHI. 1836.	<i>Ly-toneuron</i> , K. 1847. <i>Nymphipteris</i> , Webb. et. Berth. 1847. <i>Macropteria</i> , Webb. et. Berth. 1847.
---	--

(a) Veins Irte («recept where combined by the receptacles.)

13 *PSIDEA, Dryand, MS.—Smith, 1703.*

Lindsaya, Kuhn, 1824.

Hymenotoma, Gaud. 1826.

Isoloma, J. Sm. [841.

Lindsayium, Foe, 1851,

(b) Veins reticulated, without free included veinlets.

14 **si** HIZOLOMA, Gaud, MS.—Bory, 1824; Gaud. 1826.

Pericopsis, Wall, Hb. 1823,

Synap [ebiun, J. Sm. 1841.

Diellia, Bittckenridge, 1654.

§ 7. ADXANIEE.

(a) Veins free.

II) ADLANTH fit*. ITS!

Adiantellum, Presl. 1836,

Apotomia, Foe, 1851.

Sydechia, VF, 1851.

Menopleura, Moore MS. 1853.

§ 8. CHEILANTHEE.

(a) Sori marginal, terminal on the vein.

Rhizome tufted or short creeping; Sori dispersed along the margin of the eegsieatt; frond* «&»% matt •mmi-
brassaceous or sub-carinate.

16 **CHEIU** NTHES, Sw. 1806.

Gymnia, Hamilton MS. Don. 1825.

i.)lr rhizoma, Ik. "Olii n."

Physapteria, Presl. 1836.

Myrioptaria, Foe, 1851.

Al simtoptews, t";e' 1853.

Cheiloptecto Q, Foe, ISrC. 1

Synoch kunys, Fuc, 1857.

Rhizome •seeping ex> •suisly; Sort usually at the ar it of the aegmei^tB; fronds larg& fwbaseous,

17 **BYFOU** PIS, De. <A JSO(i.

§ 9. PTERIDEE.

(a) feint free.

Sori oppositely marginal and connivent on the narrow segments.

18 **ONYCHIUM**, Kl/s. :B20.

Camopharis, Tbm>b; 17:8 (reduct); Presl. 184ft

Leptostegia, D. Don. •JB5.

Sori linear continuous marginal.

1 *Judocium membranace* IJ»,

19 **PTERIS**, Lin. 1737 (emend)

Thelypteris, Ukonson, 1763.

Cincinnati, Gleditsch, 1704.

Oeti •s, Noelter, (7i)»,

Monogociflj I'JO.SI. IB'io.

i Lytoaeuron, Kl. 1847.

1 NymphopteBS, Wetb. et. Berth. 1847,

1

Macropteris, Webb. et. Berth. 1847.

j
i

28 (ALL IPTERIDIUM) J.
Digrammaria, Hook. (non. Pr.) 1840.

J Allistr. f. vnm. Pjeg]. 1836. *from the*
1 Microstegia Fowl, (pt.) 184».

§ 12. HEMIIONITIDAE

(a) *Veins uniform reticulated.*

* *Sori effusivum.*

† *Sori partially reticulated usually imbricate.*

29 ANTHROPHYUM, Ktze. 1824.

Solen 1824.

opteris, IVall, Herb.

†† *Sori uniserially reticulated, superficial.*

HEMIONITIS, Linn. 17

[50 j: 42,

^ 13. GVJtNOGBAMMI

(a) *Veins free.*

Veins oblong, simple.

31 GRAMMITIS, Sw. 1806

Chilopteris, Pre-sl. 1830.

Pterogramma, R. Br. 1828.

Lc-jogramma, J. Sm. 1841.

Trichogramma, Kae, 1851.

Trichogramma, Zeater, 1851.

J Atecosom?, Kl (pt.) 1847.

(6) *Veins with free included veins in the areolae.*

32 LOXOPHYLLUM, (Bl. 1825) Presl, 1836.

§ 14. PLATYLOMIAE

(a) *Fertile divisions plane conformable with the sterile.*

33 PLATYLOMIA, «l, Sm. 1841

Ptilota, Link, 1841.

j Oxypteris, Kutt. Sis. Hook. 1857.

§ 15. POLYPODIAE

(a) *Margins of the fronds not indurated.*

Veins free.

f *Sori globose, rarely sub-elongated, distinct.*

34 POLYPODIUM, LAn. 1737 (reduct.)

Psilopodium, Nees 1840.

Adiantum, Grand. MS. Bory. 1824, Gaud.
1826.

Margaria Borj, (pt) 1824: 1826.

Gymnocarpium, Nees. 1851.

Ctenopteris, Nees. 1851.

Gymnodium, A. Br. 1852.

Arthropteris J. Sm. 1854.

Bory, (pt.) 1824.
 aradenium, Desv. 1827.
 (opteris, Bl. 1828. Presl. 1836, Kunze,
 13. 1846.
 (erupteris, Bl.
 Phlegopteris, Presl. 1836, Fée, 1851.
 Lepicytis, J. Sm. (pt.) 1841,
 Cryptosaurus, Fée, 1843.
 Glaphyopteris, Presl. 1847.
 Mgnachosorum, Kze. 1848.
 Pseutlatbyriuni, Ifcwm. i 851.

Catanularia, Zapp. MS. Metten. 1856.
 Coleopteris, A. H. MS. Metten. 1856.
 Leptostegia, Zapp. MS. Metten, 1856.
 Thylacopteris, Kunze, MS. Metten, 1856.
 Anopodium, J. Sm. 1857.
 Catepodium, J. Sm. 1857.
cy;idium, J. Sm. **as.**
 Dryopteris, J. Sm. -Ms,
 Desmopodiin). J. Sm, MS.

Vetis consistently antitenuis.

:i5 GONIOPTERIS, Presl. 1841.

Glyphotanium J. Sm. 1854.

Veins reticulated, with free included veinlets in the areoles.

1 *Free veinlets divergent, i. e. variously directed.*

Fronds clothed usually densely beneath (with $tueltke\ haif-iCcU^{i}$.)

36 NIPHOBOLUS, Ktze. 1824.

Pyrtosia, Mirbel, 1803.

Caadollea, Mirb. (pi.) 1803.

Cyclophorus, Desv. 1811, Presl. 1849.

Scytoperis, Presl. 1836. 1840.

Craspeduria, Link. (pt.) 1841.

Galeoglossa, Presl. 1849.

Sphaerostichum, Presl. 1849.

Poivcampium, PresL 1841.

Apalophlebia, Presl. 1849.

Qyrc*oriam, Preal, i 849.

.Niphop-sK J, Sm. 1866.

t* *Fronds naked, or bearing scattered pilate scales.*

Sori globose (rarely short oblong, or by coalescence elongated), poly-carpous; fronds articulated with the rhizome.

Fronds simple pinnatifid or pinnate, monomorphic, or the fertile somewhat narrowed.

;7 PLEOPELTIS, U. .. B. 1810 (extens.)

Margivaria, Bory, (pt.) 1824.

Atactonia, Bl. 1828.

Microsorum, Link. 1833.

Anaxetum, Sohofe, 1834;

Microgrwuniii, Pres]. 183C.

Pltufklf 'im, Presl. 1836.

; Phymatocies, Praal. 183C.

-ynari*, PresL (pt.) 1836,

Chrysopteris, Link. t [841.

Phyllitidif, J. Sm, 1843.

tepi aruz, J. Sm, 184J.

Auapcltis, J, Sm. V 46.

Microterus, •-i 1849,

Symplecium, Kze 1848.

i Phjtogenia, J. Sm. M. S. Olim,

Melanopteris, J. Sp). M, 8,

TT IT Fronds dimorphous, the Sterile dwarfed, Sessile, querciform.

(a) Fertile and Sterile Segments of the normal fronds uniform.

h and scarcely different from the

38 DRYNARIA, (Bory. 1825,) J. Sm. 1841.

§ 16. ASPIDIUM.

[A] *Indusia orbicular, peltately affixed.*

* *Veins reticulated, with free included veinlets,*

f *Veins compoundly anastomosing, with included divaricate free veinlets.*

39 ASPIDIUM, Sw. 1800, (reduct); Schott 1834.

Bathmum, Presl. 1836 : Link, 1841.

Proferea, Presl. 1849.

Podopeltis, FSe. 1851.

t f *Veins angularly anastomosing, with 1-3 excurrent veinlets in the areoles, (sometimes the upper venules only anastomosing.)*

40 CYRTOMIUM, Presl 1836.

Phanerophlebia, Presl. 1836.

Amblia, Presl. 1836.

* * *Veins free.*

41 POLYSTICHUM, Roth, 1788, (reduct), Schott 1834.

Aspidium, Sw. (pt.) 1800,

Hemigonium, J. Sm. 1841.

Sectaria, Cav. (pt.) 1802..

Cyclopeltis, J. Sm. 1846.

Hypopeltis, Rich. 1803.

Peltochlaena, Fée, 1851.

Rumohra, Raddi, 1825.

Hemicardion, Fée, 1851.

[B] *Indusium reniform, affixed at the sinus.*

* *Veins reticulated*

f *Fronds monomorphous, or conformable.*

X *Veins compoundly anastomosing, often with free included divaricate veinlets in the areoles.*

42 SAGENIA, Presl. 1863.

Polydictyum, Presl. 1849.

Lobochlaena, Fde 1851.

Microbrochis, Presl. 1849.

Phlebiogonium, Fée 1851.

Cardiochlaena, Fée 1851.

%% *Veins arcuately anastomosing, forming elongated costal areoles, the marginal ones free.*

43 PLEOCNEMIA, Presl 1836.

Haplodictyum, 1849.

* * *Veins connivently anastomosing.*

44 NEPHRODIUM, Rich. 1803 (restrict): Schott 1834.

Aspidium; Sw. (pt.) 1800,

Arsenopteris, Webb et Berth, (pt.) 1847

Cyclosorus, Link 1841.

Plectochlæna, Fée 1851.

Abacopteris, Fée 1843.

Pronephrium. Presl. 1849.

* * * *Veins free.*

Veins simple or pinnate, the lower anterior venule (sometimes more) wrightous.

- 13 1846 *Aischnoptera*, "2A, {Bory., 1824, (mvM) **Pred.** 1836.
 Aischnoptera, Adamson, 1763 : Schott, 1834, Aischnoptera, Webb et B. (pt.) 1847.
 Wia, Neckcr, 179a Gymniothalamum, Zenker: MS. Kw. 1851.
Pleuropteris **dimm**, Sw. (pt.) 1800. Hemeatheum, Nowm. 1851,
Lepidopteris **Itrodma**, Rich. (pt.) 1803, Lophodium, Newm, 1851.
Cryptopteris AjthroWiys, Wall 1823. Camptodiam, Fie 1851.
Thelypteris, Schott, 1884. Ooehlnrays, F& 1851.
ITypodumatium, Kze. **1837.** Paohydema, J. 8m, MS. (1654).
 Amauropelta, Kzc. 1840, *Pycnopteris*, MOOT©, 1854.
 Dichasiton, A. Dr. 1841,
 Lastreastrum, Presl. 1849.

t t **Feint parallel** forked, Soriferous (it or near the bate ; fronds simple, articulated.

- 46 OLEAKDEA, Cav. 1802.
 Neuronium, Don. 1625.
 Ophiopteris, Reinw, 1825.
 1 1 1 *Veim pinnately forked, soriferous at their apices ; frond't pinnate, the pinna articulated.*
 47 KEPROLEPIS, *Sekott*, 1834.
 Nepitrodium, Link. 1841,
 Lepidoneurou, F[^]e, 1851,

§ 17. CYSTOPTERIDEI E.

(a) *Sori terminal, rarely axillary in, the forks of the venulect; fronds membranaceous or herbaceous.*

- 43 ACROPHORUS, *Presl.* 1836.
 Lencistegia, *Presl.* 1830.
 Odoatoloma, J. Sin. 1842,
 (I) *Sori terminal vertical, rarely subterminal and oblique, fronds imall, coriaceous.*
 49 HUMATA, *Caw.* 1801.
 Pacbypleurk, *Presl.* 1836.
 Pteroneurum, *Fte* 1861.

118. DAVALLIEL &

(a) *Sori intramarginal; indutivM semi-orbicular, or half cup ihaped membranaetous-*

- 50 MICROLEPIA, *Presl.* 1830.
 Scyphoqlis, *Aub, du Petit, Tiiouars,* 1811. Neuropteris, *Desv,* 1827,
 Sacc&loma, *Klis.* 1820, Selenidium, *Kae.* 1837.
 Tapeinidiimi, *Presl.* 1849.

(6) *Sort marginal.*

Indusium tabulose, or cup shaped membraruxceovj.

- 51 DAVALLU, *Smith,* **1783,**
 Wibelia, *Bernh.* 1800. Pareatia, *Preal.* 1849.
 Stenolobus, *Presl.* 1836. Stenoloma, *F[^]eISol.*
 Colposoria, *Prosl.* 1836. Scyphularia, *F[^]e* 1851,
 Idontosoris, *Eresl,* 1836, *FOe* 1851.

- (a) *Sori immersed in a short marginal cyst, the indusium sub-coriaceous, continuous with mid scarcely different from the substance of the frond.*

52 PROSAPTIA, Presl. 1836.

§ 19. PERANEMEIE.

- (a) Veins free.

* *Involucres stalked.*

PERANEMA, Don. 1825.

Sphaeropteris, Wall. MS. 1828.

R.Br. 1830.

‡ Podielema, R. Br. MS. (1830.)

Nematopera, gze. 1845.

Order POLYPODIACEÆ. Tribe CYATHEINEÆ.

§ 1. CYATREM.

- (a) *Involucres complete cup shaped,*

5 3 CYATHEA, Smith, 1793.

Sphaeropteris, Bernh. 1800.

Disphenia, Presl. 1836.

Notocarpia, Presl. 1836.

Schizocaena, J. Sm. 1838.

§ 2. ALSOPHIJLE.

- (a) Veins always uni-soriferous.

5 4 ALSOPHILA, R. Br. 1810.

Trichopteris, Presl. 1822.

Chnoophora, Klfs, 1824.

Gymnosphaera, Bl. 1828.

Dicranophlebia, Mart. 1828-34,

Haplophlebia Mart. 1828-34.

‡ Hymenostegia, J. Sm. pt. 1842.

‡ Tricbostegia, J. Sm. 1842.

‡ Dichorexia, Presl. 1847.

‡ Lophosoria, Presl. 1847.

‡ Trichosorus, Liebm. 1848.

Order POLYPODIACEÆ. Tribe GLEICHENINEÆ.

- (a) *Fronds dichotomously branched, (rarely unbranched,) the branches pinnatifid.*

55 GLEICHENIA, Smith 1723.

Mertensia, Willd, 1804.

Decranopteris, Bernh. 1806.

Calymella, Presl. 1836.

‡ Sticherus, Presl. 1836.

‡ Hicriopteris, Presl. 1849.

‡ Gleicheniastrum, Presl. 1847.

Order POLYPODIACEÆ. Tribe TRICHOMANINEÆ.

- (a) *Involucres urn-shaped or tubular.*

Veins free.

t *Receptacles exerted, bearing sessile lenticular spore-cases at their base; fronds pellucid.*

X *Fronds ?iomorphous* >

56 TRICHOMANES, Lin. 1742.

Achomanes, Necker, 1790.

Didymoglossum, Dev. 1827.

Lecanium, Presl. 1843.

Cardiomanes, Presl. 1843.

‡ Microgonium, Presl. 1843.

‡ Abiodictyum, Presl. 1843.

‡ Homoeotes, Presl. 1847,

‡ Macroglena, Presl. 1847.

Cephalomanes, Presl. 1843.	Taschneria, Presl, 1849.
Ragatelus, Presl. 1843.	Leucomanes, Presl. 1849.
Pachychaetum, Presl. 1843.	Pleuromanes, Presl. 1849.
Cbilodium, Presl. 1843.	Pseudachomanes, Presl. 1849.
Crepidium, Presl. 1843.	Crepidomanes, Presl. 1849.
Meringium, Presl. 1843.	Odontomanes, Presl. 1849.
Neurophyllum, Presl. 1813.	Amphipterum, Presl. 1849.
Hemiphlebium, Presl. 1843.	Bergera, Schaffu. MS. F ^o c 1857.

(6) *Involucres two-valved.*

57 HYMENOPHYLLUM, Sm. 17§3.	
Ptychomanes, Hedw. 1789.	Craspedophyllum, Presl. 1843.
Hymenoglossum, Presl. 1843.	Ptychophyllum, Presl. 1843.
Leptocionium, Presl. 1843.	Sphaerocionium, Presl. 1843.
Sphaerodium, Presl. 1843.	Mecodium, Presl. 1849.
Myrmecostylum, Presl. 1843.	Dermatophlebium, Presl. 1849.
Cycloglossum, Presl. 1843.	

Order POLYPODIACEAE. Tribe SCHIZIENEAE.

§ 1. LYGODIENE.

(a) *Veins free.*

58 LYGODIUM, Sw. 1800.	
Gisopteris, Bernh. 1800.	Ugena, Cav. 1801.
Odontopteris, Bernh. 1800.	Cteisium, Bich. Mich. 1803.
Ramondia, Mirbel, 1801.	Vallifilix, Aub. du Petit. Thouars, 1811.
Hydroglossum, Willd (pt.)? 1802.	Arthiolygodes, Presl. 1845.

§ 2. SCHIZIENE/E.

(a) *Fructifications seated on special contracted converging pinnate appendages.*

53. SCHIZIA Sw. 1793.	
Ripidium Bernh. 1800.	Belvisia, Mirb. (pt.) 1803.
Lophidium Rich. 1792.	Actinostachys Wall. 1828.

(b) *Fructification paniculate on distinct fronds or lateral branches.*

* Veins free.	
60 ANEMIA, Sw. 1806.	
Ornithopteris, Bernh. 1806.	Coptophyllum, Gardn. 1842.
Anemirhiza, J. Sm. 1855.	Spathepteris, Presl. 1845.

Order POLYPOD. Tribe CERATOPTERIDINEAE.

61 CERATOPTERIS, Bromp. 1821.	
Belvisia, Mirb. (pt.) 1803.	Teleozoma, R. Br. 1823.
Chladostachys, Wallich. MS. Hb. 1823.	Ellobocarpus, Klfs. 1824.
Cryptogenis, Richard. MS. Brongn. 1823.	Parkeria, Hook. 1825.
	Furcaria, Desv. 1827.

Order POLYPODIACEAE. Tribe OSMUNDINEAE.(a) *Fructifications paniculate, or contracted rachiform fronds or segments.*

62 (SMUSDA. *Lin.* 1737.

Struthiopteris, Bernh. 1800.

Pteridium, Pml. 183G,

Athyrium, Gay. 1602.

Osmunda, Presl. (1845) 1H47.

Reidii, Mirb. (pt.) 1803.

Order • MARATTIACE/E. *Tribe* MA&ATTINI^E.

§ 1. ANGIOPTEEIDEJE.

63 ANCHOPTEKia *Hofm.* 1733.

Cleome, Cav. 1802.

[*Ptilodoclea*, Presl 1843.

§ 2. MABATHEJE.

(a) *Sori setate on the vein**.

Sori involucre, L., *Seated in an involucre*.

64 MARATTIA, *Snt.* 1793.

Celastrum Thouia. 1756.

Discopteris, Pl. S. 1S-W.

Myriophyllum, Comm. Jias. ITS!).

Order OPBIOGLOSSACE&.

(a) *Fructifications paniculate, on a contracted rachiform branch*.

65 BOTRYCHIUM, S., 1800

Botrychium, Bernh. 1800.

Botrychium, Eich. 1803,

(b) *F. distichum*, *Spicula*, the *Spore-bearing* *rod* *with* *two* *rows* *of* *spores*, *forming* *the* *fruit*.

66 BILMINTHOSTADHYS. *Klf.* 1824.

Botrychium, Presl 1825.

Ophioglossum, Desv.

(a) *Fructifications Spiculate*, (As *Spore-bearing* *rod* *with* *two* *rows* *of* *spores*).

67 OPHIOGLOSSUM, *Lin.* 1737.

Ophioglossum, (Bl. 3S28): *Etidl.* 1S3G.

Ophioglossum, Presl t. 45.

Ophioglossum, Presl. 1845.

Ophioglossum, Karst. *J.S.*, KL. 1817.

Order LYCOPODIACEJE

§ 1. LYCOPODIE ;

(a) *Fructifications consisting of Antheridia only*,

Spore-cases one-celled,

68 LYCOPODIUM, *Lin.* 1737,

Lycopodium, Bill. 1741.

Lycopodium, Pal de B. 1805.

Huperia, Bernh. 1800.

Huperia, Mart. 1829.

Lepidodictyon, Pal. de B. 1805.

Lepidodictyon, Presl. 1847.

Spore-bearing rod with two rows of spores.

69 PBILQTUM, *Sic.* 1809.

Berula, Willd. 1805. *Gymnomorphium*, Jf S. Spring 1805.

Hoffmannia, Willd.

Trochium, Taronia, 1811.

Bucium, Gommaraon, MS. Spring 1846.

Trochium, P. de Beam. MS. Desv. 1827.

(b) *Fructifications (spring) with Antheridia, and Oophoridia*.

70 SELAGINELLA, Z. #. 1805, *Selaginella* 1838.

Selaginella, Adans. 1763.

Gymnomorphium, Pal de B. 1805).

Acrostichum, Necker. 1790.

Didymia, P&L de B, 1803.

Diplazium, Pal. de B. 1805.

Stachygynandrium, P. B, 1805.

CHARACTERS OF GENERA AND SPECIES.

TRIBE I. (§7) ADIANTEAE.

ADIANTUM, *LiiciKtük Gm. Pl.* 782

(*Adiantellni, P'fui; Apotomia, FU; Synechia, Fie; Mesgpleuria, Moore, MSJ*)

Sori indusiate, fransverss marginal, reniform oblong or linear, continuous or interrupted; the *recepUwhb* seated on the under Mirface of the indusiwu, and proceeding from the apices of two or more converging venules, Indusinm {inverted membranaceous marginal lobe) venolose, siwrangiferous beneath on the vcuules; the receptacles therefore resupinate. *Ydns* rlabeliately forked or forked from »-medial costa, the furcations repented, *venuh** parallel, free, continued in the fertile parts into the indttsium.

Fronds coriiceons or herbaceous, simple, pimiately or pedately divided, or supradecomound; pimias often articulated, usually dimidiate with the cosui. wanting. Stipes and tadis ebencous. Khizome tufted or short creeping—(Moore.)

• 1 *A diant atit limulatu m* •: Burm.)— Frond oblong pinnate, pinnae alternate rather long-petiolate membran(w:eo«« oblong—in oat e dimidiate bebff, upper mar^n lobad, trifucate -^ iitt uaa«, uppermost pinna cwieate, Moi linear approximate, and often confluent, stipes iud rachis ebencous glabrous, the latter often extended beyond the pimwe and proliferous.—*Hook. Sp. FU.* ii. 11, *Burm. FL Ind.* p. 236. *Pttm lunata Reh Obs.* LI, p. ? < *AdianUm arcuatum ?w. S.,».* *FU.* p.1% *A. lunatum. cav, Prxj.* 1801, n, 676. *ffletde Jfalab.* xii. p. 72. t. 10.

Very common throughout the Presidency, low mountainous tracts on the Ettsteyn side, and from the sea level up to about 4,000 feet on the Western side.

PLATE NO. I

2 *Adiantum caudatum* (L.)— Fronds liaew oblong elongat-(I, attenuated, often Noting-at the apex and there bare of pinnae, p r u k , u s i j , u e s i l l e , a t e r n a t e , r a t h e r t h i c k l u e m b t a n a c a Q i s , d i m i d i a t o o b l o n g , t h e u p p e r b a s e t r u n c a t e d a n d p a v a l l e l w i t h t h e n w b i s , t h e u p p e r m a r g i n m o r e o r l e w d e e p l y b e d , t h e l u b e s o f t e n b i f i d s o i f e r o u s v i O o u a i n e v e r y p a r t , w i t h r u f o u s h a i r s o r m o r e o r l e s s g l a b r o u s , v e i n s g e n e r a l l y p r o a n i n e n t , i a v o l u c r a a n e a r l y o r b i c u l a r o r a u b q u a d r a t e , h a i r y o r g l a b r o u s , s t i p e s g e n e r a l l y s h o r t / s t o u t , a n d a s w e l l u s t h e r M h j g m o r e o r l e s s e l o t] b l i w i J , f o l t o u s c l i a t f y b a i r a . — *Hook. Sp. Fil.* ii. 18. *Linn. Mant.* p. 308. *A. incimm Font. Egypt. Arab.* p. 187. *A. w. HiUm Wall. Cat. n. ••* *A. idaffali/trum Wall. Cat. ».* 76, *A. Mmilum Hor, It. I* p. 188. *A. capifla GorgonifWelti. in Hook. Nye. • Ffora* p. 192.

o | M of the commonest ferns in the Presidency, I, shpilaar localities with the i*8t

PIATE X... II,

3. *Jia niJi • m (g w j j - ' n m d n a r r o w , f l a b e l l i f o r m , b i p a r t i t o - p e d a t e l y d i v i d e i I t r i p i n n a t e , w 6 o n d « y r i n n r e 1 i n e a r - l a n c e o l a t e a c i m i n a t e f a l c a t e , p j n n u l e s c h a r t a c e o u s r i g u l t U i * . d i m i d i a t e o b l o n g o - c u n e a t e , o l i v e b r o w n w h e n d r y g l a u c o u s b e n e a t h s t r i a t e d m b e s c e i r t i - h i r e u t e e s p e c i a l l y b e n e a t h (o f t e n g l a b r o u s) s u b s p i m i l o s o s e r r a t e , s u p e r i o r b i s e t r u n c a t e , a p e x o b t u s e , s o r i c o p i o u s , s m a l l o n t h e u p p e r m a r g i n a n d r e a c h i n g t o t h e a p e x (o n a l m o s t e v e r y p i n n u l e) 7 - 1 1 O Q e a c h p i n n u l e , i n t h e s i n n s o f t h e s e r r a ^ r e s , i n v o l a c r e s o r b i c u l a r , t o w t a t e , h i s p i d o r g l a b r o u s c m v e x , s t i p e s t r i q u e t o e v w , e b e u t e o u B s c a b r o u s , r a c h i a e b e u e o u s h i s p i d o r p n b ^ c e n t i - s c a t r o u a H o o t . % F i l*

ii. 31. *Sis. Syn. Fil.* p. 124 and 221. *A. pubescens* Schler. *Fil.* 105 7-116. *A. pubescens* Fries. *Presl.* p. 97, n. 488 (not Linn.)
Serenoa, *Sis. Syn. Fil.* n. 123. *A. plicatus* Kunt. *En. Fil.* p. 201. *A. molle* Wall. *Cat.* n. 72. *A. Asplenifolium* Wall. *Cat.* n. 21
(not Linn.)

Pain • Hills, Anamallays and Nilgiris, up to about 3,000 feet—rather rare.

PLATE No. III.

1. *A. Cephalos Veitii* (L.)—Frond ovate tri-pinnate, pinnules delicate membranaceous glabrous, obliquely broad cuneate
(sometimes approaching to rhomboid) tapering into a rather long slender petiolule, the superior margin irregularly crenate lobate
lobes very obtuse or truncate-sordid (aterii) one subincise dentate) sori as broad as the lobe, oblong or sub-oviform, stipes and slender
rachis everywhere sordid, (lossy and quite glabrous. *Hook. Sp. Fil.* ii. 30. *Linn. Sp. Pl.* p. 558: *A. Hirsutum*, *Kützsch. A.*
dependens, *Chapman's Mat.* (ex Tomy.)

Nilgiris, rare—Columbator plain, (banks of a river.)

PLATE No. IV.

5. *A. fil. hispidum* (L.)—Frond ovate triquadri-pinnate, pinnules sub-or quite membranaceous, sordid sul-
cular suddenly and obliquely cuneate at the base into a rather or very slender petiolule, superior margin more or less lobed, lobes
shallow emarginate in sinus or notch of the lobe serriferous, sori rather large 2-6 on a pinnule, involucre oblong-lunulate, stipes and
rachis everywhere sordid shining and glabrous. *Hook. Sp. Fil.* ii. 37. *Linn. Sp. Pl.* p. 1560. *A. thalictroides* Willd. *A.*
pellucidum Mart. *et Galst. Fil.* n. 21. *A. ffclodea* Zaker.

Nilgiris—Fair lawns near Ootacannie. Doda-betta, (TeeUirattai) Palnis, by no means a common fern.

PLATE No. V.

TRIBE (, TRICHOMANIN) E.

W *Involucres sordid or tubular.*

TRICHOMANES, A'winnes, *Gen. pl.* ed. ii. 947.

(*Achomana*, *Necker*, *DidpaoyUi\$um*, *Dawson*, *Lecanoma*, *Presl.*; *Cardiomanes*, *Presl.*; *Cephalomanes*, *Presl.*; *En-
rattus*, *Presl.*; *PushythwiUM*, *Prat.*; *CIUla ium*, *Presl.*; *Crepidum*, *Presl.*; *Meringium*, *Presl.*; *Hemiphlebium*, *Presl.*; *Micro-
rogonium*; *Presl.*; *AhrodUt'jam*; *P,-?A* ; *A'europhyUum* *Prat.*, *Magrogna* ; *Pratl.*; *Tachyret* ; *Pratl.*, *I'ucumanes* •J,-,••'. *f'ra-
rmanes*, *I'* ; *Panofachomanes*, *Presl.*; *Amp'ipia-um*, *Pratl.*; *Crepidomanes*, *Presl.*; *Odontomanes*, *Presl.*; *Homocetes*, *Presl.*;

Sori involucre rented in *extroese-ioarguml* (rarely recurved) ey^ts, sunk in or to the margins of the fronds ; *theyeitu*
continued into *lilifonii* everted sometimes capitate *receptacle**, which are free within the cysts, and bear sessile lenticular spore cases at
their base. *Involucres* funnel-pitcher-shaped or shortly bell shaped, truncate and entire at the mouth or two lipped ; *stipes* simple
forked or pinnate from a central costa or ninijile TOsta-like in the ultimate segments, or *fls* Bellatwlichotomoi *free* some times
ejectant in the marginal (•eth.

Fronds simply pinnate or decomposed, pellucid membranaceous, rarely orriaceo*—Rhia)ie creeping (sometnefl Rliform) or
coepitico—Delicate semi-transparent Ferns. (*Mwe.*)

• • *Trichomanes Nilgherrense* (Beddome) —Guides crue)ing more or less to Hientose, fronds glabrous : very small stipitate entire
ovate to ellipti' lanceolate or linear thin membranaceous, margins often furnished with p»tate scales—stywa 3 to 6 li; as long ; glabrous or
i'lmontoaa, involucre terminal 3-2 sunk in the frond, mouth obseui-Jy 2 lipped, receptacle more ar lesa easarted

A very en all the *—In i'ouit* peltate lam scales with their tufted appendage are found on both sterile
and fertile fronds and are ill roard the margin of some fronds, whilst others are quite destitute of them. I at first thought them to be
some parasite, but something similar is found on *T. membranaceum* (Linn) » West Indian spe-^a ; they are *Wjll* *repressum* ; ^d it the
sangu^leq %m*e. Abui *stant* about Wnlaghat on the Western slopes of the Nilgiris. I have not found it elsewhere

PLATE No. V.

2. *Trichomanes filiforme* (Bory.) Caudex creeping clothed with dense black down, fronds rather small of *Mfple* orate-I«M: fl *orate*
bipinnatifid, the *3%*ments linear rather acute entire compactly *cdlidar*, involucre solitary supra axillary cylindrical tapering at the base
wholly *mtik* or winged at the sides, the mouth with 2 large narrow- ovate or subtriangular *icu'te* tips : nearly as long as the tube, stipes

... winged above—*Hook. Sp. Fil.* i. 124. *Dory.* II D. *Dory's Voy. Bot.* i. p. 284. *Trichbila* statum, *N. «.* *Ilytiophyllum*
ula *Hook. Sp. Fil.* V, 528. *Didymoglossum* & *icipien* B 0

Common on Uees on the higher parts of the Nilgiris, Anamallays and Pulnu

PLATE No- VH

3. erect, fronds (ovate to acuminate) harsh rigid dark green almost black when dry, bipinnate,
pinnule lanceolate or linear lanceolate innate or bifid-pinnatifid, more or less deeply, the ultimate segments
simple or bifid, rachis terete. *Hook. Sp. Fil.* i. 133. *Trich. pyramidal** *Wall. Cat. n.* L6S. *Trich. Achilkeifolium Willd*
Sp. Pi. V. P. iii. *Trich. obscurum Bl. Fil. Jar.* i. 22?

in very moist dark localities on the Nilgiris and Anamallaya, 3000 to 4000 feet elevation—abundant about Walaghat
(down the Sagarah ghat.)

PLATE No; VIII.

(b) *Tiwolucet* two valued.

rivjiuxoranyi. *Smith Mem. Acad. Turin* V. 418.

chomanna, Holobry; Hy-mengkwstin, Prea; Leptocymn, P>ed.; Sphaerodium, Presl.; Myrmecostylis, Presl. Cyclo-
*A., *Am, Prtel; Cw spodiophyllum, Presl.; Ptychophylloides, PmT.; Sphaerodromus, iVaJl; Mecodum, Pml.; Dermatoplebinm, Presl.)*

Son involucre i. c. seated with an extrinsic margin oblong or sub orbicular, two valved involucre; the veins continued into
the receptacle, enclosed cylindrical or globose at the apex and bears sessile or sessile lenticular or turbinate spore cases.

Folia dichotoma i. c. branched, simple and costate like in the ultimate segments, or simple parallel from a central costa in
the middle.

Fronde simple or decomposedly divided, pellucid membranaceous. *Kliozome* creeping, usually filiform. Well distinguished
as the last genus in the involucre consisting of 2 valves instead of being blended into one cup (Moore.)

ii j 109. *Wall. Cut. n.* 171. *Hymenophyllum densum. Wall. Cut. n.* 170.
erect, fronds oblong, elongate, acuminate, pinnate, pinnule rather distant, imbricate decurrent, especially on the upper
side of the pinnae solitary or 2-3. *Missle* or tenuating short segments, ovate 2valved almost to the base, com-
pressed, the valves serrate or nearly entire, rachis, stipes and rachis ino or less crinite with long scattered rufous hairs. *Hook.*
Sp. ii j 109. *Wall. Cut. n.* 171. *Hymenophyllum densum. Wall. Cut. n.* 170.

Common on trees and rocks on the higher ranges of the Nilgiris, Anamallays and Palni.

PLATE No. IX.

*I have another species of Hymenophyllum (H. badium?) and another two (H. ... u (T. Scindianwa f) which
I shall have figured in my work.*

TRIBE. I. (§ 17) CYSTOPTERIDJE.

Aconitum, *Presl. Tent. i. tml* 03.

Leucostegia, *W. ; Odontoloma, J. Sm., 1 Monachosonmi, Kunu.*

Sori indusiate, globose, superficial or immersed; the receptacles terminal (or rarely axillary in the fork of the veins,) usually
on the back of the pinnae or base, rarely two or three becoming confluent. *Vonua* pinnate furcate from a costa or more rarely,
repeatedly dichotomous, rarely simple.

Fronde membranaceous-herbaceous or sub coriaceous, pinnate or rarely frequently decomposed, the divisions numerous or dimi-
diate—*Rhizome* creeping. (This group is separated from *Davalliaceae* by living its rhizome fixed only by its base) [if free.]

Acaulis *harm ptticker* (Moore) *Caudei* creeping, stout clothed with compact imbricated very broad and obtuse scales, fronds rather
small (1—2 feet), ovate acuminate membranaceous flaccid generally pale green 3—4 pinnate, rachis winged, primary pinnule oblong ovate
or linear, secondary ones ovate obtuse, pinnules lanceolate or deeply pinnatifid with linear or lanceolate segments entire
or with an entire margin, involucre on the middle of the segment below the base of the rachis and at the axis of a pair of pinnae, reni-
large stipes a little scaly below and rising from a very scaly gemma, all the scales or lobes obtuse, *tlbok. fy. Fil.* i. 157. *Dai*

4
charophyllu, W<ilt. (••). K, 259 Davallia l. 'ui'Ua Wall. M. i". *Ltucosieffialigulata*, J. *Davallia pulchra*, l;<« *Cytto'pttrit* >-n»;
Bene. Jacq.

Neddiwatteni, on the Nilgiris. Common in the Teak forests of the Anaimalais growing on *tree* Wynad, Oimbaton Hills

PLATE No. X.

2. *Azophytum immersum* (Moore)—Growth creeping downy and fibrous, with slender roots (not scaly), frond stipitate, ovate in circumscription, membranaceous opaque, tripinnate, pinnate pinnatifid ovate-Janceoliite segments subovate or obovate obliquely cuneate at the base, paler and slightly concave on the upper side, sori close to the margin, involucre large, reniform close pressed, slightly convex. // *ool. Sp. Fil.* v, 156. *Ltucostegia immersa* Pr, Tent, Ftr. *Davallia immersa* Woll-Cat' n, 250. *Cyrtopteron dimidiata* Tuck. *Jacq. Voy.* 177. *Humboldt immersum* Mett-en,

Anaimalais—Wynad, 3000 to 4000 feet elevation, rather rare,

PLATE No. XI.

HUMATA, *Cavanilles* /reeled '272.

(Pachypleurk, Pral.; Pteroneuron, Fil.)

Sori indusiate rotundate; the receptacles terminal and vertical or rarely subtinnal and oblique and like venule*. *Indumia suborbicula* reniform or transversely oblong reniform, plane, broadly reflexed at the posterior margin. Veins stout, often thickened upward*, the forked or pinnate, from a central costa, *venule* free.

Fronds small rigid, coriaceous, simple lobed pinnatifid or pedately pinnatifid or subternate; sori usually vertical, rarely *terminal* and oblique or abulateral to the veins. Rhizome creeping hirsutely, scaly or tufted

1, *Humata pedata* (L. Sm.)—Caudex creeping paleaceous, fronds stipitate *very* coriaceous small deltoideo-cordate somewhat 5 angled *tripartite-pinnatifid*, the segments patent but inclined upwards, oblong, obtuse, fertile ones crenato-dentate the *two* lower *primary divisions* obliquely ovate, acuminate, involucre small, semi-orbicular or nearly orbicular, alternating with the teeth of the *serrature* placed close to the margin and pointing to it; stipes elongated chaffy below, *Hook, Sp. Fil.* i, 154. *Davallia cordifolia* Humboldt. *Dalmanella pedata* Sw, *D. whimbricata* Blume.

The western slopes of the Nilgiris—rare,

PLATE No. XII,

TRIBE I. (§ 18) DAVALLIE.-E.

MICROTEPIA, *Pi-esl. Tent. Pterkl.* 124,

(Saccotora, -JKaul/m; Seyphofilbc, Tfomart; Neuropteris, Desvaux; Salenidiira, Kanzt; Tapejaidium/Prat; Davalu®, Sp. «.)

Sori indusiate, rotundate or transverse[^] oblong, intr&maiginal • sub-marginal; *lie receptacle** terminal or axillary on the veins
veulea. *Induktum* semi-ortikmlar, attached by the base and sides, thus half-cap-shaped; the anterior margin free, truncate or rounded.
ins simple *or* pinnate from a central costa; *veules* direct free,

¹ von ds herbaceous or sub-coriaceous, pinnate, bi-pinnate or decomposed, the margin sometimes attenuated, sub-membranaceous
indistinctly crenated, simulating accessory indusia. Rhizome creeping or tufted—a genus of Urge growing herbaceous ferns distin-
Tisicfl from *DamlH't* by the short half-cup-shaped fructifications and intra-marginal sori, (*Mom's*).

1. *MLcroUpia platyphylla* (Moore)—Caudex creeping tliiek, Fronda ample tall tripinnate (primary and secondary pinnules much
okted), every where glabrous coriaceo-membranaceous*, pinnee large spreading ovato-lanceolate much and narrow-acuminate deeply
pinnatifid, often pinnated at the base, segments patent lanceolate (often very broadj acuminate lobato-dentate rachis and costa flesose,
na pinnated, sori solitary generally in the axils of the teeth near the margin, involucres small half-cap-shaped. (*Booker Sp. Fil.* i, 173);
Davallin tonclitidea, *Ibfcft Cat. n.* 240); (Dav«llia platyphylla, *Xfon Prod. &ep. p.* 10).

Up. sarius the Coonor Ghat,—An<Km.allays,—Pulnie&y—hw common,

PLATE No. XIII.

2. *Mierotepia jiinnata* [•]. -Sin.—Caudex creeping scaly, Fronds lanceolate pinnate glabrous, pinnw remote shortly petiolate sub-
coriaceous opaque linear-lanceolate gradually acuminate, obliquely euneate at the base, the upper one sessile and decurrent, sori a little
tani)N"l) i;ffi i>ther, but forming a continued series one at the base of each tooth or serration, Teins sank obsolete (inconspicuous),
na AW forked, the upper veinlet bearing the sori, involucres small half-cup-shaped. i. stipes and subtrigonal rachis glossy, (*Hook. Sp.*
Fil. i, 17 i); (Davallia pinnata, *Sat. Syn. Fil. p.* 131); (Davallia flagellifera, *Wall. Cat. n.* 543.); (Saccoloma pinnata, *Pf.*)

Ani., iii., r.f. UH-s— •••••

PLATE No. XIV.

3. *Microlepia polypodioida* (PresL)—Cwidex croojing, frond large ovate or deltoid acuminate tripinnate flaccid more or less hairy
or downy, especially on the stipes and costae beneath, primary pinnw and hvwr secondary (the distant and acuminate) pinnulea oblong or
obovate-oblong, obtuse deeply pinnatifid, the lobes ovate or obovate, entire or irregularly pinnatifid or lobate or pinnatifid, suboblique
very obtuse, with a rather large (when perfect), usually solitary on the entire lobes, several on the pinnatifid lobes and in the sinues within
the margin, sometimes on a small tertiary, more numerous on the superior margin, involucres small half-cup-shaped glabrous or hispid, ra-
chia downy or hispid on the underside (*Haokr Sp. Fil.* i, 181); (*bicksonia polypodioides*, *Sw. Si/a. Fil. p.* 137); (*Dorollia polypodioida*
(*Bon. Prod. Ft. tsep. p.* [0]); (*Davullia flaccida*, *Br.*); (*Davallia virens*, *Wall. Cat.* 264.); (*Davallia Roxburghii*, *Wall. Cat. i.* 3218); (*Dav.*
imberuk, *Wall. Cat.* 264—5); (*Davallia pyramidifera*, *Wall. Cat.* 261); (*Dav.* pilosula, *Wait Cat.* 263); (*Dav.* rhomboida, *Wall. Cat.* 267).

A'rri) variable species.

Xilguru, 'miiir'utt—*DavitShola*, and in *rtbri*)itt an *Bodabttt*—*Coonor*, ravines *MI theGhat*—*Anamdtlayt*—*Puinia*—*Travaneor* (*Illitt*, &<:

PLATE No. ST. Fig. A II a frond of a very jointed slate.

DAVALLIA, *Smith Mem. Acad. Turin*, V. 414.

(*WibetU. Ifj*); >/i--inU; *Steiwlbna*, *Pretl*; *Odontosoria*, *Preil. Fee*; *Colpowria*, *Pred. in part*; *ParestJa*, *Pml.*; *Scyphi*!Linn,
Fta; •*Stenolonia*, *Fta*.)

Sori indusiate roundish oblong or elongate-oblong, marginal or submarginal; the *receptacles* terminal. *Indusium* membrana-
ceous, cup-shaped or tubulose, affixed at the sides and base, thus forming a vertical oblong semi-cylindrical tubulose cyat or cup, which is
truncate and open at top, i. e., towards the margin. *Veins* forked or pinnate from a costa; *amulet* free.

Trends herbaceous or coriaceous, pinnate or pinnately decomposed—Rhizome creeping (*Moore*.)

Fronds simple and cartaceous, \bullet rww elongate ami gras?-like. Rhkoine short creeping or t-uffittA (M>

1. *Pteris elongata* (Sw.)—Caudex creeping, ami with the base of the stipes clothed with Jotigish black bails, froida simple, graaa-like, 8 to 80 in. long, 1! lines broad glabrous, with along aeumi nation and gradually attenuated into the.stipe¹.

A mountain hills, on trunks of trees in the Teak fyrmts, from 2,000 to ^000 feet elevation—Wi/guis slopes below Neddiwatlan and
 >>>>—a common >< n)

PLATE No. XXI,

TRIBE I. (§ 14) PLATYLOMEJE,

PtATTLOitA, *J. Sm. Hook Jouru. Bot. iv. W.*

(Pellsea, *Link.*; PI eridis *Up, Aiiefoi'-u*.)

Sari spuriously indusiate, marginal, oblong; the *receptacles* oblong at the apices of the veins, contiguous, the spore cases kiteraf influent and forming a broadish margmal band, /Wiw'iw; (spurious) formed of a narrow continuous attenuated indexed portion of margin. *Vein** simple or Forked, from a central c... ^parallel, free -triferous jfeg a portion of their length at the nj

... Fro ni Is piannte or M-pinnario, coriaceous or snb'-eoriaceans, often glancescent^ the pin me some thaw articulated. Stipes often ous. Ehizwneshdrjt deemnbentorcri (Moore.)

I, * *I'h.it'* /... m, *vir. ft. scionum* (T. Sm.)—Cattdex creeping, fronds 1 iilear, obi>ij « pinnate, pinnse (16— 30/on very short .files, upper ones senile, oblong laii' obulate, g... ncrally sabfalcate, truncate er obliquely cordate, acute or ofc-i im;ronate, glabrous ri e except on the costs, setose beneath, stipes and rachis setose with copions spreading ferruginous hairs, w... *taiiam*, involute when

og, at length obsolete—(IVIIMI falesta, *Fee, Hook. A'p. Fd. ii. 135*) j (Pteris felcata, *Br. Prod.*); (Ailosorus falcatas, *JCVww*); (Pt-eris 7V pt raj-, iii. 209); (Pteris Bltemifolto, *Wall Cat. n. 2182.*)

100 to 4.000 te?t—I'uhii;! If tilt—Xilyiris—Droog hill, a>... on the Coy

Chat—Lumpen's Peak near Chim' atore.

PLATE No. XXiI.

TRIBE I. (§ 6) LINDS/EE^E.

LiKDaEA, *Dryander Trans. Lin. Soc. Lond. iii. 40.*

flsoli *ana, J. Snith*; Lrndsaynium, *F\$.e.*; LJndsaya, *Kmdfu&s.*)

• or oblong, continuous or interrupted; the *receptacle* sub-marginal. *Indudum* membranaceus, equalling 'ho firond, opening on the exterior side. Veins ecostete and Babelately forked, or Forked from a central d at their apices by the receptacle, otherwise free; sometimes thickened at their apices.

• subcpjiaeous, simple pinnate or bi-tri-pinnate; the pinnae (or pinnules) sonic... dimidiate lie upper margin or on both margins. Iihizomu creeping (*Moore.*)

Sw. Syn. Fil p. 113)—Caurlex creeping, fronds pinnate, long lanceolate, pinnae sub-mejnbranaceons, boi... upper base truncate rather acute, slightly arcuate at the upper margins, the apex usually directed upwards, ' bes bearing the obldtfg sori, stipes and rachis generally pale brown, the Eemi... Lilly htsiek... m Cultratum, *Wild.*)

ot, ^ .aon on- ill banks of streams—common... ly tracks on the western side of our l'.*

PLATE No. XXiir.

2. *Lindsom tenera* (Drj-ander in *Lin. Trans. iii. p. 42.*) CandeX creeping scaly, stipites tufted, fronds deltoid-ovate, 3—4 pinnate, pinnules all petiolate, euneata or obliquely cmiente, eosta obsolete, membraneeoua, variously cut and lobed, the lobes soriferous at the apices (*Hook. S. p. Fil. i, 211*); (*Lindsia interrupt*, *Wall Cat. n. 2105*)^ (*Vittario iwtrrupta, A'arS. Crypt, pi lrd, p. 4&*;

Tru. imcore bilk—a rare fens.

PLATE No. XXTV.

TKIBE J. (§ 6) LINDSÆEÆ.—(Continued.)

(6) Veins reticulated without free included veinlets.

ScHiaoLOMA, *Qaudiehamd Procyneuts* 1-Vy. 6"8.(Peiricopsis JFGSW, / Synapliebiura *J. Smith* • (Synphebinm Fffe) Didlia *Bmckenridgt.*)

i Son indusiate, linear or oblong, continuous or interrupted; *RtctptacUi* sub-marginal, *huluniwm*, membrauaccous equalling ox titan the margin of the fro ml, opening mi tin: exterior side. *Vein** ecostate, or forked from a central cosjta ; *VaiuUs* anastomosing jated oblique areoles, without free included vuiulets, the marginal ones combined by the transverse receptacles.

ristar

Fronds herbaceous, simple lobed or pinnate, or sometimes bi-pmnate; piling or pinnules equal sided or dimidiate, fertile on i margin only or on both margins. Rhizome ereei>mg.—*This gemis differ* frovi Lindtcea in its reticulated venation*, (Moore.)

1 • & *hizoloma endjnliuni* *J. Sin.* Caudex vevy short creeping, stipes and rachis glabrous, stipe as long or longer than the ad frond ; pinna) 3-13 linear-ensifovm or lanceolate erectj-patent, sub-inembranaceous, sori continuous round the whole margin t at the apex and base, Sferile apes serrated—*LimUcea tnsifoUa*, *Sw. Syn. Fil. p. 118.* (. 137,—*Liadscea lanaolata*, *Labitt, pi* i *Joll. 98*—*L. memAranacea Kume*:—*L. att^nuata. Wall*—*L. lougipinna, Walt.*

Foot of the Sisparah and Carcoor ghats in Malabar.

PLATE No. XXV.

2, *Schizoloma heterojiht/Kiaii* *J. Sm. in Hook. Journ. Bot. III. 414.* Fronds lanceolate or deltoid, pinnate with the pinnules pnnatifid or bi-pinnate, pinnas or pinnules lanceolate or rhomboid-euneate, or nearly orbicular, petiolate or sessile sub-coriaceous mam-bran accous opaque son continuous {*Hook Sfi. Fit 1, 226*) *Lindtoza heterophylla, Dryarukr, Linn, Tram. v. iii. p. 41* • *Zitukcoa Variabi* i *Tooi. d Am, Bot of Beech, voy.*

Boiampatty valley (Coiinbatore hills)—Canara.

PLATE No. XXVI.

Z. Schholoma recurwatum (Moore) Caudox creeping stipes and radiis' pinkish colored longer than the frond tetragonous fronds / simply pinnate or with i'3 pinnate branches, pi«nas ohlongo-iancoolate recurved, pinnules oblong very obtuse sub-falcate the lower Vnargiu formed by the costs ; son along the upper margin interrupted—*Zindtcea recurvctta. Wall.*—*Lindscea nitens Blume. Lindwea, Ser-* iis. *Wall.*

Eolampatty valley Coimbatore hills—rare. Ttie-phik colored stipes and rachis give thia fern a very pretty appearance. // ant knotturt urMker I should not have referred this/sr» to t/te S: obtumum (*Symphebiium obtusum* of *J. Sm.*) rather than to *S. recitrvatwn.*)

PLATE No. XXVII.

TRIBE I. (§ 2) LOMARIEiE.

LOMAKIA, *Wiildenow Mag. Nat Ber. 1809, 160.*(Stegania, *Brown* ; Lomaridium, *Presl*, • Polygramma, *Presl*. ; Paralomaria, *Fee* ;)

Sari indusiate, linear, continuous, on a broadish linear *receptacle*, occupying nearly the whole under surface of the contract-ed fertile fronda. *Indwdum* attached at the margin, linear, continuous, scarios, opening along the inward side. *Veins* (sterile) simple or forked from a central costa, the *vevdu* direct free ; or (fertile) obsolete.

Fronds simple pinnatifid pinnate or bi-pinnatifld; the fertile contracted. Fihizome short thick erect or decumbent, *areiy creeping or arborescent—(Moore.)

1. *Lomaria thngata* *Ijliime. En. Fit. Jav, 11. p. 201.* Grades ahort subrqient, frond long stipitate waiiaceons gj*brous, often reddish colored when young, 1-2 feet and more long OTato-lanoaolate pinnatiid (young sterile fronda often undivided lanceolate) segments few or many, of the sterile frond oblong-lanceolate acuminate sub-fakate patent, more or less approximate entire, except sometimes at the • point, -which is often slightly serrated, lowest segments often reduced to mere lobes. *Veins* simple forked, not reaching the margin but each furcation terminating in a large dot within the margin, fertile segments linear contracted, indusium fugacious *llwk, Sp. Fit. Ill, 3.* *Lomaria punctata. Bl.*

The normal form has all the Moments of the fertile fronds contracted and fructified, some fronds however have only some upper or some of the lower segments fructified and the rest are sterile and leafy, and in some fronds portions of each segment fructified and portions sterile, this latter is represented in the Plate XXVIII. A.

Very abundant in most of the sholas on the hills of the Koondali mountains, and in the shola behind the Avalanche bungalow on the Nilgiri—Sisparah ghat all the ravines above 4,000 feet elevation.—Anamallay mountains.

PLATE No. XXVIII AND XXVIII A.

ELECITNUM, *Annus Gen. Pl. ed. 5.* 1039.

(*Orthogramma Preil.*; *Spicanta Presl.*; *Blechnopsis Fred.*; *Diaphnia Pred.*; *Mesothema Presl.*; *Distaxia Fred.*;))

Sori indusiate linear, continuous or rarely interrupted on a transverse *receptacle* approximate to the costa; central or sub-marginal by the contraction of the fronds. *Inductum* linear opening along the inward side. *Veins* (sterile) simple or forked along the central costa; veins direct few thickened at the apex; in the fertile fronds combined near the base or within the margin by the *receptacle*.

Fronds simple pinnatifid or pinnate; the fertile sometimes more or less contracted. Rhizome short, erect, or producing a creeping stolon (Moore). *This genus is very intelligibly distinct from Linnaria in those tropics where the inductum is costal and only South Indian species, but where by the contraction of the frond the inductum becomes marginal it is hardly distinguishable from Linnaria.*

1. *Blechnum orientale* Linn. Caudex erect stout at the extremity and as well as the short stipites clothed with long fulvous subulate-setaceous glossy scales, fronds 1-8 feet long ovato-lanceolate acuminate firm coriaceous pinnated, pinnae numerous approximate horizontal straight or decurved 6 inches to a foot long 3-4 lines broad linear-lanceolate gradually acuminate sessile entire, the base bluntly and obliquely euneate or truncated, several of the inferior pairs are suddenly abbreviated or abortive and flammiform, those at the extremity are decurrent and coadunate at the base, terminal one more or less elongated, veins simple rarely forked very close parallel horizontal, sori continuous close to the costa, involucre in age firm rigid and almost black. *Hook, Sp. FU, iii, 52—Blechnopsis latifolia; Presl.;—Blechnum salicifolium. Kaulf.;—Elech. pyrophyllum, Blum. En. FU, Jav. p. 160,*

Common on the Nilgiris—Coonoor ghat—Sisparah ghat—Anamallays—Pokeys and Coimbatore hills. Beypore and Calicut (Malabar plain),

PLATE No. XXIX.

TRIBE I. (§ 9) PTERIDACEAE.

(a) *Yeiniifree.*

CONCIUM, *Kaulfuss Burl. Jahrb. Pkarra. 45.*

(*Leptostegia D. Don.*; *Pteridis sp. auctorum*; *Allosori sp. Fred.*;))

Sori indusiate, linear (or oblong) transverse marginal or sub-marginal; the *receptacles* continuous. *Inductum* linear (or oblong) membranaceous usually opposite, and while young connivent over the narrow ultimate segments. *Veins* (sterile) simple and costiform in the ultimate segments; or (fertile) pinnate from a central costa, the few branches united near the margin by the transverse *receptacle*.

Fronds bi-pinnately or decomposidly pinnatisect sometimes sub-membranaceous, usually with small narrow segments. Hhismal creeping—(Moore.)

1. *Onychium, auratum*, Kaulf. Rhizome of densely tufted fibres, stipites caespitose, a span to a foot and more long, hispid with a few narrow scales only at the base, and as well as the rachis everywhere pale brown or straw colored, glabrous and glossy, frond a span to a foot and a half long ovato-lanceolate acuminate sub-membranaceous but firm and glossy very compound four or more times pinnatisect (primary and secondary divisions pinnated) segments all narrow linear subcuneate short (in the sterile portions) ultimate ones acute entire or incise-dentate, segments all pointing upwards 1 nerved, fertile segments elongated siliquiform especially the terminal ones and mucronate, sori linear-elongated occupying the whole back of the fertile segments, involucre golden colored meeting at their edges—*UwA-it Sp. FU. ii. 121;—Lomaria aurea. Wall. Cat. n. 38;—L. caruifolia. Wall. Cat. n. 39; L. decomposita Don, Prod. Fl. Nep. i. 14;—Pteris chrysocarpa. Hook et Grev. h. FU. t. 107;—Pteris siliculosa. D-xv, —Alisosorus auratum3. Preil.*

Pauighaut mountains—rare,

PLATE No. XXX,

>: *L. J. h. l. m Adansan*; Oetats *JSfa&tr*; Ciucialis *Gleditseh*; iTonogonk *Pml.*; Eupteris *Agardh*; Oraithopteris *Agardh*; stipit^{18-^1*}/ *Lytoneuron kloUeb*; *Pycnoduria Pml.*; *Lonchitideum Fit*; *Pellceze sp. Hooker*;

: *Dai* ^{^o}TM Judllsiste> marginal, linear, continuous or interrupted; the receptacles h'hear transverse, uniting the apices of the veins, a of the same form membranaceous Veins simple or forked from a central costa," Venules free.

Fronds varying from pedate to decompose, ofteu very large herbaceous or coriaceous, Ehizome short erect or creeping somr much elongated (Moore.)

1. *Plait quadrimirita* *Ketz. obs. VI, p. 38.* Caudex short erect, fronds gkbroua or with a few hairs very variable as to ovato or cordato-orate acuminate coriaeco-membraliaceous, pinnate pinnae 4 to many, generally opposite, more or less pinnatifid 4-ally deeply, segments oblong obtuse entire or serrated, pinnaj sometimes pinnatifid to the apex, sometimes ending in a long tail like •: sermtded term illation, lowest pair of pintwa (or rarely 2 lowest pair) bi-partite (or rarely bearing several pinna on the lower side) ree, forked, basal ones terminating at or above the sinus indusium occupying nearly the whole length of th'e margin of the segments__ elongated smooth or scabrous.—Pteris ccmuralis. *Hook. Gin. Fil. t. D4*;—Pteris biairita var, *Sin. \$ytt. Fil. p. 98*; *Pt. Bory in Bel, potf, p. 43.*

Var. B. Argmtea fronds white mottled.

Var. y. ruhro-nerva, Stipes glabrous or scabrous and together with the rachis and veins deep" carmine colored costa above covered with pinkish hairs, tndosrain only occupying a small portion of t3ie margin of the segments. *Pteris rubro-nerva of hot ftous.es in .i,J pt-e-jr uulis Wjdikh ? (This is perhaps a distinct species from, Pteris quadriaurita.)*

The normal form is very common every where in the Western side of the Presidency from the sea level to the highest elevations

Var. B. argentea—is much nurer (and is never met with in the plains) Nilgiris, Nediwattan, Avalanche, Sisparah ghat.

Var. y. rubro-nerva—rare—Anamallays. Mr. Ouchterlony's ghat below Kediwattan or the Nilgiris.

PLATE No. XXXI. (Normal form.)

2. *Pteru •prfhmns.* *Agardb.*; Fronds racmbrar JOUS furnished above with a few subulate scales on the rachis of the pinnte md with hairs on the rachia of the segments, teroately divi , lateral divisions multiphmate, pinnte short petiolate or suWssile lanceolate acuminate deeply pinnatifid to the apex or with the ape 'ng caudate, segments obJong obtuse subtruncate, serrated at the sterile por- : at their apices, sori lateral on the segments never extenaing to the apex or base, veins rather remote all forked—basal ones arising on the axil of the costula and extending to the margin much above the sinus, stipes and raettis pale brown. *Ag. sp. Qeru Pt. p. 43 / mask. Sp. fil- > 191; pte1, is ia*««ttedia. Bl. En. Fil. Jav. p. 211 ?*

Anamalkys 8500 to 4000. Coimbatore hills—Carcoor ghat—by no means commoa

PLATE No. XXXII.

3. *Pteris Imgifolia* Linn., *Sp. Pl. y??-!!*

Caïides short stout knotty, fronds I-2 feet long lanceolate acuated bulow ,-pinnuce, piumuts. ^n u, i_m, m/proxunate linear-lanceolate elongated, gradually acuminate, terminal one sometimes the largest and petiolate, the base truncate or cordate aurienlate, or even hastate, lower pinnules gradually smaller—Stipes more or less chaffy. *Hook Sp. Fil. ii. 157*; *Pt. costata, Bory in Belong Voy. pt vittata Willd.*;—*Pt. obliqua, Forsk.*;—*Vt. lanceolate, Detf.*;—*Pt. ensifolia, SIB.*;—*Pt. Alpinii, Veto.*;—*Pt. semihirts, Ik.*;—*Pt. acaminatiasima, lit.*;—*Pt. amplexens, Wall.*;—*Pi diversifolia, Sur*—*Pt. trapezoides, Burm, /*—*Pt. microdonta, Gaud.*—*Pt. tenuifolia, Brock.*

Banks of a river close to Coimbatore.

PLATE XXXIII,

4. *Pteris semipinnata* Linn; *Sp. Pl. p. 1534.* 1-3 feet high, caudex stout creeping villosa-squamose fibrous rooted, ooids broad-hinceolate acuminate sub-membranaceous pellucid pinnate, superior pinn« approximate linear-oblong sessile at the baso Inate snd deurrenti-confliient, lateral ones distant sub-petiolate semi-ovate superior margin entire, inferior eub-pectinato-pinnatifid

[lowest pair sometimes bi-partite) the extremity long-ecudato, the segments oblong, aU-spinu'oro-eemted in the stei linear and entire, except at the sterile apex, ic the fertile ones, veins simple an J forked, involucre sub-intr&marginal membrtmai continued round the apex, stipes rather stout eastaneous or purple-ebeneous very glossy. *HvA: Sp. Fit. ii. 169* ;—Ft, flabella —Ft. dimidiate. *SI. Fil. Jav. p. 210. (not WilldJ.*

Travacore hills—Tjranquebar—rare.

PLATE No. XXXIV.

" 5. *PUm crenala*, Sw. *Syn. Fit. p. 96.*—1£ to 2 feet and more high, caudex creeping scaly with long gbulnte rigid curved fronda 6-8 inches to a foot and more long ovate or (fertile) lanceolate sub-membranaeous firm bi-pinnate, terminal pinna much e3o. of ten exceedingly long and caudate generally auricukte on each side at the base; sterile pinnules oblong or obovate obtuse lulf an inch coaraely serrate sessile very often confluent and more or less deurreut sharply serrated, veinlets simple or forked thickened at the . fertile pinnules linear more or leaa elongate often much acuminate, serrated at the sterile apex, indusium intramarginal occupying i! the whole length of the pinnules: atipitos slender smooth, stramineous short, in the sterile fronds much elongated. *Hook Sp. Ml. ii. 103* ensifonnia—*Walk Cat. n. 2181*; and Ft. multidentata, n. 2681 ;—Pfc. caudata *lowdro Cochin, p. 835*—Pt, heterodacty];i, R< iaa.

Cochin—Malabar Coast. Tranquebar.

PLATE No. XXXV. {a fertile frond. A. the upper portion of ft sterile one).

C, *Pttris Boivvni*, Moore, Cespitoeae, a span to 2 feet high caudex nodoe with copious woo3y fibres froiids-subtriangukr-ovat< bi-tripinnate glabrous, pinwe generally piunate below and entire towards the aper, pinnules sessile or short petiolate elliptical or ovate wit' an unequal cordate base, very coriaceous opaque; fertile ones entire except at the crenated sterile apex, sterile ones erenated. Veins internal quite obsolete forked and free—induaium sub-intramarginal mombranaceous continuous round the margin except at the very apex and base — Htipea Bubflexnose stout and as well aa the rachises jet black and furnished with tawny down—PeU&a Boivini. *Jlooh.3p.FU.n-147.*

*
Anamalky3, dry rocky places 4000 feet elevation. Jtilgiris—abundant on the Sisparah ghat, dry places 3000 to 3000 feet ekvation. (*This firm hat not been before reiortkd frm ike East Indies*),

PLATE Ko. XXXVI.

PTERIS. (Continued.)

7. *Pteris caudatifolia* (Andersson) Mett. glabrous, root caespitose, fronds cordiformly pinnate and pedately subcoriaceous, ovate-lanceolate, lobes broadly ovate-lanceolate or usually bipinnate, terminal segments ovate-lanceolate entire, and as well as the saccate, stipitate, and as well as the main rachis are ebeneous. *Hook Sp. Fil.* ii. 132.—*Reiddi. Fil. Bras. U. n.* 110.—*Filices peruvianae* (Lamour.) Mett. *Fil.* p. 130.—*Iti-is Pahlinan, Pred. Taut. Pter.* p. 145.—*Pteris paxillata* (Cat in Linnaea) (not Linn)—*Pteris paxillata* Desv.—*Pteris Myrtoreusis* (Lamour.) Mett. in Wall. *Cat. n.* 87.—*Pteris Cuncolor* Langsd. et. Fisch.

Very common on the western side of the presidency up to an elevation of 5000 feet.

PLATE No. XXXVII.

8. *Pteris fieri* pellucida* (Pros.) Mett. 1 to 3 feet high—Caudex, short, thick scarcely creeping, frond, a foot and more long, sometimes simple, broad-lanceolate, generally bipinnate or pinnate, ovate in circumscription, coriaceous-membranaceous, bright green, lucid, pinnae 1 or more, generally broad (1 to 1/2 inch) 6-10 inches long, entire or subwavy at the very acuminate apex, the margin often ledges or the upper ones sometimes decurrent generally all entire or toward pair bipartite, veins simple or forked, close, abundant, involucre quite marginal, narrow, stipes very variable in length, stramineous or tawny, smooth or subglabrous. *ffoohtr. Sj.* 1841. *Jl. 1G1.—Presl. Reliq. H.-enk.* p. 55.—*Pteris wvota?* Wall. *Cat. n.* 96 [Kot Thanh.]—*Pteris tritipata* Wall. MS.—*Pteris tritipata* Mett. MS.

in Atitlan forests 2000 to 4000 feet elevation.

(Perhaps a variety of *Pteris Cretica*.)

PLATE No. XXXVIII.

9. *Pteris Cretica* (Linn) a foot and a half high, caudex short, thick, subrepent, frond often a foot long broad-ovate more or less bipinnate, firm, membranaceous, bright, green, glossy, pinnae 3 or 11 on each side, rather remote, a finger's length to a span long, sterile ones lanceolate, fertile ones linear-lanceolate, acuminate sometimes very much so, sessile or the upper ones more or less decurrent, pair and often 2 or 3 or more pairs above them bi-tri- (or more) partite, or pinnate, the segments mostly on the lower half, sterile ones strongly spinulose-serrated, (rarely obtusely serrated or subentire) veins simple or forked, close, almost horizontal, involucre quite marginal, narrow, stipes generally longer than the frond, and the rachis stramineous or pale brown smooth or minutely rough on the surface. *Hook. Sp. Fil.* ii. 159.—*Linn. Sp. Pl.* p. 130.—*Pteris seriiserrata* Fock.—*Pteris laticaudata* Wall. *Cat.* 05.—*Pteris heterophylla* (Poir.) Fock.—*Pteris heterophylla* (Poir.) Fock. *Sfn. Fil.* p. M.—*Pteris pentaphylla* Willd.—*Pteris nervosa*, Timih.—*Pteris vutata* Boryin Selany. *Vnj. -Pt. midHaurUa. Ag.* p. 10% (taller firm and more numerous pinnae)—*Pteris triphylla* Mart. *el. Gal.* p. 51.

Very common on the high mountains of the Ananwhytys, Puniis and Nilgiris.

PLATE No. XXXIX.

10. *Pteris fooktriana* (Agardh) Mett. Up to 3 feet high, stipe nearly 2 feet smooth, hirsute. Frond bipinnate, broad-ovate to subtriangular in circumscription, Jinn, carinate-membranaceous, pinnae alternate, 5—8 on each side, upper ones sessile and simple, lower ones bipinnate, sterile portion serrate, fertile portion generally fructified, newly the apex, but in some specimens only the lower portion is fructified and contracted,

Slalabar a: Cochis—rare.

(I do not know whether I am correct in referring it to the form of *Pteris Cretica*. It is scarcely a form of *Pteris Cretica*, but a specimen of the same species, but much larger than the one here figured, from Mr. Tliwaites from Ceylon, marked C. P. 1829.)

PLATE No. XL.

11. *Pteris Olaria* (Beddome) Ciudux short, erect, frond oblong, coriaceous-membranaceous, below glabrous, above furnished with a few hairs on the costa, bipinnate, pinnae 5—8 pair, the upper pair generally undivided, the others irregularly bipartite about the centre, the apex produced into a bug tail like an antio, undivided at its base, but there furnished with a long tail-like segment which is lobed: the upper pinnae and gradually larger in size, and pinnatifid in the lowest pair, at the apex of the pinnae; and pinnae serrated.

Slalabar a: below Puntaloor Wyjiad (Malabar).

PLATE No. XLI.

TKIBE I. g.3) PLEUROGRAMME

HTMEKEOLEPIS *Kaulf. Enum Fil.* 146.(Uge
tnthrci
Macropkthua, *J'resl.*)

frw near rtongate or linear oblong, on the contracted apex of the fronds; the *receptacles* contiguous to and coales-
'<br bittines rared while young by the revolute margin; *veins* indistinctly pinnate from a central costa or nearly
T "le, dly anastomosin Sj forming crowded irregular arcuolus, from which proceed variably directed, included free *veins* *Utt.*

♀' parjue. linear lanceolate. apex fertile contracted or curved—Ehizorae creeping (Moore),

-pi/.

ijg's *spicata* (Presl.) Rhizome creeping frond? simple opaque linear lanceolate, the apex contracted and soriferous
curved veins obscure,

PLATE: No. XLVT.

GYMNOFFEMS *Journal of Bot.* 1800 II 121.us, *Kaulfustj Deodroglossa, Pival.*)

•erficml, *nan* indocieate, linear continuous, at length effuse; the *receptacles* contiguous to the costa of the contracted fronds,
early the lobes under surface, sometimes double on each side the costa. *Veins* pinnate from a central costa, the *veins*
irregular, forming irregular areoles, from which proceed free divaricate *veins*, those of the fertile fronds much less

^ds, simple, pinatifid, or pinnate, dimorphous; the fertile much contracted. Rhizome short creeping (Moore),

Gymnopteris quercifolia (Eernh.) caudex creeping, fronds ternate, sterile ones membranaceous, subciliate, the lateral ones
obovate, sessile, unequal sided, the middle one much larger, petiolate, oblongo-ovate sinuately lobed, fertile fronds on a
stipe which is squamose below, pinna; small narrow linear—*Berth., Pretl., Tent, Pier.*; p. 2H—*Acrblichum quercifolium*
G p. 39—*Osmunda trifida Jacq—Coll.* 3 p. 381—*Liquor Mlm quercifolia* *JFile mem mr la Fam dm Fougires* p. 88.

namallay.—Travancore hills, rare.

PLATE tfo. XLVII,

Gymnopteris *Pi.* (Moore) caudex creeping, fronds on long stipes, dark green glabrous shining subcoriaceous-membranaceous
trilobed, fertile ones much contracted, sori contiguous to the costa forming a broad line of each side of it or often from the
contraction of the *veins* occupying the whole under surface. *Leptochilus lanceolatus* F&

Veij common in all alpine and subalpine forests on the western side of the presidency, growing on rocks and trunks of trees

PLATE No. XLVIII.

(BE I.' (§13)* GYMNOGRAMME/E.

a. Veins free.

mtis, Swartz, *Sckrad. Jmirn.* 1800. II. 8, 17.

>, Jt2bw<; L

, obl^ue ; the *rexp^toeU** medial or sub-terminal. Fe - ^ple or forked from a **centra**!

le, or very ;
p i ritle sp' , * * herbaceous or sub-coriaceous **fta rachia** sometime* proliferous, Khizome **sh,**

apt**" Is tiru

1) **eu**dex short, stout, erect, stit., tufted copioo.ly .caly **below**, clothed with soft white hairs **above**,

or .e **J i** ee^e a span to 3 M in 1^ n ^ b — u s pina.

7' p d l i ^ from a central vein simple or fo

up. ^ n ^ ^ 'er venik, and the oeatre of the pppcr ones, spore cases l,ury.

C^ t a c a m n d 6n fe SHgrU -Pulnay hill, t the .am, d

PLATE No. KUX.

g re;J(s U ni/om reUwtaUd mthfrtt included winUti.

LOXOGIUMMA, jSIw/ie, ^fo',w, / << w 7:i.

sontra I

ikrta J () b b n g or linear, **oblique**, & e **elongate** << q * w i << medial at **into**

dformj li(0)h/c'entral **tota**, the ^ w t o forming unequal oblique hexagonal elongated

ri^u.or sub-coriaceous. **Khi.ome'** creeping-The mu a» often indUtinct, being immersed in the suU

^ a fPrcl)- **Bbizome** creeping furnished with nuruerou, scale. ^ n, l **wiry** hairy **roota-fronds corkce**

WOM* (1 r^M ^ ^ ^ ^ ftpeX ^ gr;vtoUy attenuated at the b»« into the **stipe**, mar.; ; a more or

J cosL. 311 situated on the **uppec half** of the frond^free ludnded **veMeta** .numerous. (?ra<-

oillnc higher <jge. of the NflgW. and other mounts on the w.tern ,ide of the **P.sidency**, on rocks and

t the

PLATE No. L.

'creeping, scaly furnished with wiry **hairy** roots—fronds sub-coriaceous 4 to 7 **muated** at the base; aori oblong, slightly **oblique** or nearly parallel with the

...oued to nearly the **base** of the frond - C — ^ * - * * .

!(liwa)ttan on tre.-much r_Me_r than the last specie.

PLATE No. LI

TRIBE I (§ 12) HEMIONITIDE^E.

Yeir><-uniform ritical^r^u d-

AimtoyHYUM, *Kazdfuzs. Emnn., Ft.,* 197.

i non-indusiate, usually immersed, sometimes superficial, narrow-linear, occupying the <infs torn gsoj • sine which form th<
rooles, mostly united ; the *reoceteds* therefore partially, though generally reticulated. Veins anitorially reticulated •••
tate, forming sub-hexag aal awob<.

BE ;' (§13)* GYMNOGRAMME/E.

ample sub. spreading l. linear upper margins <_imi:ii it lit... ptogrammt, J. &»<&; Trich... watyaraMs... ^/elliptic, oblique ; ... ti... medial or sub-termiML. V ins simple or forked from a ceatral

pinnate, herbaceous or sub-wriacwus, th.; cwhi... » proliferous, filiizome short, erect, wm

L) caudei short, stout, erect, stipitea tufted copiously scaly below, dothed with soft white hairs above, ... membraaaceous pinnate, with the pjna« pinnatifid i way down ... quite bliwk when ... spore caai

PLATE No. XLIX.

/:. i'lhut uniform reticil... with free included veinlets.

LOXOGIUMMA, Muine, Flora, Java 7S.

a, oblong or linear, oblique, the elongate receptacles medial at intervals between the eosta and margin. Vein* j central costa, the venvls forming unequal obliqu hex/oiial elongated areoles, with (rarely without) iacl

... Uliwome creeping—The vtins ate often indistinct, being immarsixl in the sub- ... the. mulormly Kitioulated venation distaBgwahes thb \p\vn from SeUigaea, in whicjl the veins ate pimutte

... Etonda (soriu e ... about I inch broaii, acuminate at the apes ami gradually attenuated at the bswe into the stape, margins ... of the frond—free included vemlets numerous; Gram- -SeUigtiea iitvltuta. Kume.

ant on the higher ranges of the Nilgim and othior mountaina on the western side of the Presidency, OLI rocks and

PLATE No. L.

Wigrammt lanc«nt<da (Fml.) Rhizome creeping, a tidy furnistud with wiry hairy wots —fronds sub-coriaceous i to T ... an inch broad, acuminate at the apex, attenuated at the base; son oblong, slightly oblique or newly parallel with thia ... frond—Oramm... Siv.

is—Noddiwattan on trets—much rarer than thi last species.

PLATE No. LI.

TRIBE I (§ 12) HEMIONITIDE/E.

Veins «uyorm reticulatal.

ANTROPHTTJM, Kaulfam. Enum.', FLL, 197.

£ iwn-indnsiatc, usudtly immersed, sometimes supsrficml, narrow-linear, < copying the anastomosed veins whiich form thw ... Veins uniformly reticulated Ei ... Itate, forming sub -hexagonal areoles.

at the fertile apex, usually coriaceous. Rhizome creeping. (Moore.)

Rhizomes creeping, covered with close pressed peltate scales, sterile fronds glabrous fleshy. One inch long by about the same breadth—fertile fronds linear attenuated at the base 3 to 4 inches long (Ugena, Cav[^] (coll. 11110, U3) —Pr&l; Tmt.; JHer. 227, t. 1 §. fy. 5-6—D. rotundifolium et D. spatulifolium—UthrogodeFⁿ. Sp. Pl. 1523—Notaochlsen* piloselloides. Kavlf. BL Fl. Jan. 67—Pteria piloselloid-a. «.—Tjciitif) piloselloides, II. Br.

ribriate d' *^a "uirta" uin—on trees.

le, or \v
I I rtile

PLATE No. LV.

TRIBE I. (§ 10) MENISCIE^E.

anastomosing transversely between- the pinnate paralld veins.

MENISCUM, Schreber. Lin. Gen. Pl. Ed. 8, 11. 757.

long, curved, often becoming confluent; the receptacles seated on the transverse parallel-curved veins pinnate from a central vein; veins angularly or arcuately anastomosing between the angles.

of the pinnate. Rhizome creeping (only differs from Goniopteris in Polypodies m

caudex creeping, furnished with scales—stipe 10 to 16 inches long,—fronds pinnate, fertile mostly an odd one, oblong-lanceolate, pinnate repand, cuneate and unequal at the base, slightly hairy.

lifonn,

Coimbatore hills.

PLATE No. LVI.

TRIBE 5s. GYATHEINEiE.

| i OYATHEE.

GYATHEA, Smii&j Mem. Acad. Twin. v. 416.

Diaphenia, Prtil., "Soc*frpia, Presl., BchizocJena, J. Smith.)

the receptacles confluent at the forking of a vein, or medial; Inxiluct. membrane globose and covering the sorus opening in a circumscissile manner near the apex, the cup remaining entire; or sori opening vertically in 4—6 nearly equal spreading divisions. Fein* (in the ultimate division forked or pinnate, from a central vein, free,

Boea, simple, pinnate, or dewmpoaid. Trunk or caudex arborescent—(Moore.)

caudex (Wo) pinnate, the rachis much and strongly aculeated, fronds bi-pinnate, flaccid and membranaceous, acuminate, pinnatifid, segments oblong acute, serrulate, glabrous with a few minute dotted glands on the barren frond) sori close to the base, copious, involucre globose membranaceous breaking down into a jagged irregular cup—Hook. Sp. Fl. 1. 25—Wall. •: Herb. 1823 C*af. ». ITS.

Coimbatore hills—Mr. Moore gives the Nigiria as a locality, but I have never yet met with it on those hills.

PLATE No. LYII.

§ 2. ALSOPHILE/1-:.

ALSOPHILA, R. Thvm, Prod, Fl. Holl 158'

Triopteris, Prtil.; Triopteris, Prtil.; Cbnoophora, A'an ?/««; Gymsosphowa, JSiuwe: Tichonotegia, J. Smith (in part); Dichorexia, Prest; Lophosoria, Prat.; Tricliosorta, Atti««; Polypodi, Sp. aitefoi «w i

1. *Alsophila latebrosa* (Wall.) Stipes and main rachis muricated with short late, pinnules narrow-lanceolate, acuminate, pinnatifid, almost to the rachis, segments narrow rachis and costa with small bullate scales, and one generally at the base of the sorus, veins occupying nearly the whole segment—*Hook. Sp. Fil.* i, 37. *Polypodium, latebrosi* copic

Nilgiris—Pulnies—Anamallays—Coorg—Shevaroyes.

This is the common tree fern.

PLATE No. LVIII

2. *Alsophila crinita* (Hooker.) Stipes and main flexuose rachis pale colored, round very short blunt black spines, fronds bi-pinnate, coriaceous, rachis everywhere hairy above, beneath scales, some short and minute, the majority very long slender appressed resembling coarse shag gradually tapering into a very slender point deeply pinnatifid almost to the rachis, segments narrow margin (when dry) strongly recurved, pale beneath where the costa and even the veins are often the whole length and breadth of the segments, and in a measure covered by the crinite scales—*H Nilgiris*—a ravine on the road from Ootacamund to the Davis Shola—Sisparah ghat, com

PLATE No. LIX.

3. *Alsophila glabra* (Hook.) unarmed, fronds bi-pinnate, pinnae ovato-lanceolate, nearly sc down to the rachis segments, ovate, slightly falcate, serrated, tufts of hairs in the axils of the pinn and scaly,—sori situated on the middle of each veinlet, therefore in a double line on each segment—*glabra, Blume*—*Alsophila gigantea Hook. Sp. Fil.* 1. 53. *Gymnosphaera gigantea. J. Sm. Gen. l* p. 63. *A. umbrosa, Wall. Cat.* p. 64. *Polypodium altissimum. Wall. Hb.* *Polypodium gigantet* *sexpedale. Buchan, M.S. Hb. Mus. Brit.* *P. umbrosum. Wall. Cat.* 336. *Dichorexia gigantea.* Wynad—Anamallays—Coorg—up to 4,000 feet elevation. I have never found this species of the other two *Alsophilas.*

PLATE No. IX.

feri.
e pinnu
airy
Botr,

PLATE 5. SCKIZM&M

{§ 1} LYGODIE^E.

LYGODIUM, Swartz, Sfhhrad, Journ. 1800, II. 7. 106.

(Ugena, Cavanillet; Hydroglossum, WMdenaw in part; Otsopthtis, BmJutrdi; Odontopteris, liernhardi; Cteisium, Mx juthrolygodes, Fred j Ramondia, Mirbel; VfhifiKx, Thonart; Gphioglossi, Sp.; Auetorum).

Mhogr

?ructifieatimiB forming compressed distichous spikelets, csertcd on the marginal teeth, ^ore-cases included beneath <wa< ^bricated, persistent, scariose, bractiform indusia, soUtary on the anterior side of thia venules, attached sideways, oval, ^ u ' a- Venle, or very shortly pedicellate, having a many-rayed apical ring. Vetm forked, often repeatedly, from a central coata • •***» y. i rtile spikelets pinnate, the minletl aporAngiferoua on the anterior side.

Is branched, the racliia scandent ; the branches usually conjugate, variously digitato—or palmato-partite " pinnatifid, or j ifc sometimes articulated and deciduous,—Ehizoine CBespitoe or creeping,—Scandent ferns (Moore).

radium Scandem (Sw.) Stems rather slender, climbing to a considerable extent, tfabraw, or eli? My ^ " T * * pair of ^ pair piml;ltC] pintlule3 g.iO from ovate-cordate to oblong-lanceolate or hastate, | to 1| inc^ ^ o»en shortly lobed niAte on 3 slight thickening of the apex of the petiole, son short, protruding from the nuwgr^ seS^TMenta usually shorter fee barren ones. (Bentham), Lygodium SalicifoUum, .Pws;.,—Lygodium microplylluip * , pro d If 16? n

vtsry abundant.

PLATE No. LSI

1. Ieodiam dichotomum (Sw.) Stems climbing and as well as the fronds, perfect^l glabrous, pair of fronds stipitate, dichoto- a foot long, 1/2 to 1 inch broad when barren— contra *c< 2-4 divided to near the base, segments linear fronva few inches to abo' osta and vile. Son projecting from the margin—Ugena dkhotoma, Cav.

PLATE No. LXII.

Hum flexuosum (Sw.) Stems climbing, fronds glabro.n^ slightly hairy, pair of fronds stipitate-piniate with the pic- jr variously lobed or sub-palmate, terminal segme;; lanceolate, all serrulate, s-rt protmding from ^ m argi^ in most sub-alpine jungles on the western f our Presidency—Malabar plains—Cuddapah and North Arcot

No. LXIII

Sori mvr . . . (Sw.) stems r- « Sknder, glabr0US " pube3ceut. famd" P»»^te with the pinna again pimute ct> f erj10 oues much contracted, son occupying tl u whole of the under surface or lacoona, cap shapes. , ^ # the cup buisti e margin.—/?'<i.; Tent r4 ppl. 100.

PLATE No. LXIV.

{§ 2} SCHIZÆEÆ.

ructifications paniculate on special contracted pinnceform appendage*.

rj SCHIZJEEJE, iSm^i, Jfcm. -d^od. Turin, v. 419.

Shev kLophidium, Ritfuird.—Actinostachye, Wallich.— EelvisiaB, Sp. MirM.—Acrostichi, Sp. Auctorum.

sterilo frandi djej the spore-casea borne on the inner face of contracted fertile crests or appendages, which are digiteto- *.. -* incurved, and more or less connivent.—Spore-ease* bluntly ovate, having a many-rayed apical ring ; nam,illay§=## ?\AVu^ the CO3ta of tjg lijga. segments, or pinnae of the appendages. 7dm reduced to a •iules excirrent in the apical teeth.

Fronds simple bearing (when fertile) a pectinate or digitate crest of crowd, ^ ^ , supiliate pianjB . or fldbellate, c
tomously multi-partite, bearing tua fertile crests on **the** apex of the segments.—Rhizoj|e cfe3pi|> Jy creeping—(Moore).

1. *Skizcsa dichotoma*. (Sm.) Fronds fiabellate, dichotomously nralti-parfciteiv_{rt} • „ » ... „ „
meuts, segments linear, about a line broad and several inches long costate, more or L_{mhm}tely tabermkte-crests pectinato-pmnaU
••—«l and connivent, spure-cases biserial arranged in a series on each side of the COB—, ophidium dichotomum, Richard.—
Palghat Hills,

PLATE STo. LXV.

(b) *Fructifications paniculate on distinct fronds or ial_{mi} branches.*

* *Veins free.*

ASVMIX, Swartz, Synops, Fil. 155.

Auctorum ;—Mohris Sp', *Bernhardi*;—CoptoflyUmn, *Gardner*;—Spathepteris, *Jhrei*. ; Anetnirhiw, /l. *Smith* ; OBm»nd» Sp
l. *Smith*;) (Ornithopter)

Fructifications panit

branches or fronds erect, contra- ^ ^ m the lower (pair of) branches of a three-branched frond, or on distinct fertile fronds • **the** I_{artile}
having a many-rayed **apical** ring, S^Jj_{raii:lli}f«rm, decompound, the segments unilaterally Bporangiferons. *Spore-eates* oval or 9ub-jtlo^osc
or forked, often repeatedly, from an e ^lc> &•&*! on the ultimata segments. *Veins* fiabellately dichotomous, sometimes **dbud'ately** «o :
Fronds pinnate or bi-tri-pinni/ _{ti} o*ent or indistinct coata ; or simple in the narrow ultimate setr_{impT,ts} . ^
i,ments ; tfen^c, ftw.

always ternately branched, the two lateral b^ ; dimorphous, the fertile and sterile distinct ; or monomorphous, the **fertile** tii¹ -
dimidiate. Rhizome short, erect* or slowly or ./Ms distinct, erect, stipitate, fertile, the terminal one spreading sterile.—Pjmi-L **aomel**
respectively resemble the foliage and inflorescence **Npitoady** creepmg—A genus recognized by the distinct branches of *iu f_v i*]
^j"4a plisenogamoua plant—(Moore).

1. *A nemia Wightiana* (Gard.) Stipes racli
fronds raonomorphous, teniately divided, the two lateral u^{6j} and fronds densely tomentose with long yellowish brown or golden hairv Kcatw,
vari>ny iobkj or pinnatifid -haa, fertile, **tlie** terminal one spreading sterile, u: •-
pinnate, with the pitmulei

Sisparah ghat—dry pkees 3,000 to 4,500 feet elevatiS. Anamallays—dry rocky places—on the hills over Colengodc at 4,000
feet elevation.

PLATE Nt,

Order OPHIOGLOSi

(a) *F7-uc(ifications on a branch* C.E.E.

BOTRYCHIUM, Swartz. Schrad. Journ, ISO. icle.

(Ossmunda *Bernhardi* ;—Eotrypus, *Michai* 8,110.

*Fructification** paniculate, formed of numerous secund spikelets, On a distinct br.mc
free bi-serial, globose, fleahy-coriaceoua, bursting vertically in two equal hemispbe:ical
dichotomo-furcate, from a centr;il costa ; venules free.

Fronds herbaceous or sub-carnose, pinnatifid or ternately decompound ; **thfc** tile and
abort, erect, 8eshy. (Moore).

1. *Botrychium virginicum var lanwjinisunt* (Moore.) fronds sub-carno'^^ »>i-pinnate wtl
and decompound, the fertile branch from the centre of the **frond**, main and partial .nisea mor' or S?
Wall. Cat. 48.

On *mvii nu* >untainous tracts on the western side of the President: *

Botrychium sub-carinosum (Vell.) Fronds sub-carinate, bi-pinnate, pinnules variously lobed and prominent, more or less sharply serrate, the fertile branch from below the sterile portion of the frond; main and partial petioles slightly bumpy (or glabrous) Botrychium daucifolium. // «E. e fire*, Icon. At. t. 161 (not in Wall. Gat.)—Botrychium speciosum, Wall. lib.—Osmunda lavigera, Wall. lib.

Nilgiri—Anamallays—Bolainpatty valley—3,000 feet elevation.

PLATE No. LXVII.

(6) *Frustrifera Spicata, the spore-cases in glomerate tufts.*

HELMISTHOSTACHYS, Kaulfus. Enum. Fti. 28 t. I.

(Sotryopteris, Prati;—OpMak, Detvaw;—Ictricu^ Sp. J! «ctor«w j—Ophioglossii Sp. /twf;—Osmunds, Sp. Auct,—)

Frustrifications consist of glomerate, verticillate, pedicellate tufts of spore-cases, the whorls terminated by a crest-like appendage and arranged in distichous spiked panicles on a distinct branch of the frond. Spore-cases, fleshy-coriaceous, globose, sessile, bursting on the outer side, from the base upwards, in two equal or sub-equal hemispherical valves. Veins forked from a central costa; nerves parallel, free.

Fronds herbaceous or coriaceous, trifoliately digitate-pedate, the fertile and sterile branches distinct. Rhizome stout, horizontal with coarse roots. (Moore.)

1. *Helminthostachys Zeyheri* (Hook). Rhizome stout, tuberous, with coarse roots. Fronds glabrous, shining trifoliately digitate-pinnate, each of the pinnae with 2-3 lanceolate entire or crenate segments—fertile branch proceeding from the base of the sterile frond erect. Helminthostachys dukda *Raulfus*;—Ophioglossum laciniatum, *Ritmpk*;—Osinunda Ceylanica, *Linn.*;—Botrychium Ceylanicum, *Sv*—

Anamallays,—moist bamboo clumps in the Teak forests, 2,000 to 3,000 feet elevation—Malabar plains—foot of the Carcoor pass very abundant,

PLATE No. LXIX.

(c) *the fructification Spicifer, the spore-cases in a single marginal series*.*

OPHIOGLOSSUM, *Linnaeus, Gen. Pl. 779.*

(*Ophioderma* Endlicher;—*CleioGLOSSA, Presl.*;—*Rhizoglossum, Presl.*;—*Cassiopteris, Kanlen, MS. (Klotzsch).*)

Fructifications on a distichous spike, terminating a distinct branch of the frond, or on distinct fronds. Spore-cases sessile, along each margin of the confluent spike, with which they are connate, horizontally globose, bursting in two equal hemispherical valves. Veins uniformly reticulated in roundish or elongate areoles, sometimes from an indistinct costa, occasionally obscure; the ultimate areolae with or without included free veins.

Fronds sub-carnose two-or-intimately-branched, the sterile branch simple dichotomously-parted or palmately-lobate, the fertile simple; sometimes the fronds simple, the fertile and sterile distinct and dissimilar. Rhizome fleshy, sub-globose or short cylindrical-ovate.

1. *Ophioglossum reticulatum*, (Linn.) Rhizome tuberous cylindrical, stipitate long, bearing a single ovate, acute or obtuse sterile frond and the lengthened fertile spike (erect frond)—fronds 1 to 2 inches long by 1 inch broad,—stipe 3 inches long.

Anamallays—Teak forest—Nilgiris.

PLATE No. LXX.

2. *Ophioglossum palmifolium* (Linn.) Rhizome small, tuberous, stipe bearing a single lanceolate acute frond and the thickened fertile spike.—Sterile frond without evident costa. Petiole 1/2 to 1 inch long by 2 to 5 lines broad.

Anamallays—in wet grassy places—2,500 feet elevation.

PLATE No. LXXI.

3. *Ophioglossum brevipes*. (Beddome) Rhizome a large round bulb with numerous fibrous roots—stipe very short, bearing a single lanceolate sterile frond close to the base and an elongated fertile spike. Sterile fronds about 2 inches long by 1/2 inch broad.

Anamallays—in swampy places—2,500 feet elevation.

PLATE No. LXXII.

*

TRIBE 1. (§19) PERANEME.E.

PERANEMA, *Don. Prod. Fl. JS^Tep. 12.*(Shgeropteris, *Wallich* ;—*R. Brown* (non *Bernkardi*); *Podeilema*, *R. Broion, MS*; *Nematoptera*, *Kunze* ;—)

Sori involucrate, globose ; the *receptacles* globose, stipitate, medial on the lower anterior venules. *Involucre* coriaceous, stalked, globose, entire, at length bursting vertically into two irregular valves. *Veins* forked or pinnate, from a central costa ; *venules* free, thickened at the apex.

Fronds tri-pinnate, herbaceous, the stipes and rachis densely clothed with spreading scales.—Rhizome large globose—(Moore).

1. *Peranema cyatheoides* (Don.) Fronds 2-3 feet long tri-pinnate ; the base of the stipes densely clothed with long brown membranaceous acuminate scales ; the main and partial rachis with fewer scattered smaller ones. Pinnules oval, oblong, sessile, decurrent, so that the partial rachis is winged, obtuse, glabrous, turning brownish black in drying, nerves indistinct; rarely more than one sorus on each pinnule, stalk of the involucre often longer than the involucre itself—*Hooker, Sp. Fil. 1. 58.* *Sphseropteris barbata JVall in Herb. 1823, Cat n. 183; PL Asiat. liar p. 42 t 18,*

Western ghats—rare.

PLATE No. LXXIII.

TRIBE 4. GLEICHENINE^E.

GLEICHENIA, *Smith, Mem. Acad. Turin. F. 419.*(Mertensia, *Willdenow*;—*Dicranopteris, Bernhardi*.)—*Calymella, Presl.*—*Sticherus, Presl.*;—*Hicriopteris, Presl.* ;—*Gleich-jeniastrum, Presl* ;—*Platyzomatis Sp. Desvaux*;—)

Sori non-indusiate, round, superficial, or immersed, consisting of few (usually 2-4 sometimes 5-6 or even 8-12) spore-cases, which are sessile, deciduous, globoso-pyriform, sometimes concealed by the revolute margins; the *receptacles* terminal or medial or axillary on the venules. *Veins* simple or forked, from a central costa ; *venules* free, the lower anterior one usually soriferous.

Fronds rigid, rarely simply innatifid, usually once or oftener dichotomously branched, the ultimate branches pinnatifid or pinnate ; the segments small, ovate, or orbicular, and sometimes remarkably revolute, or larger plane linear or oblong.—Rhizome creeping (Moore.)

1. *Gleichenia dichotoma*. (Willd.) Stipes rounded, ultimate branches with a pair of pinnae, and a pair also at the base of the di-trichotomy, pinnae lanceolate, acuminate, pinnatifid, segments linear, obtuse, or emarginate, glaucous beneath, glabrous or nearly so, lower external ones generally the largest, often again pinnatifid, capsules 8-12.—*Hooker, Sp. Fil. 1. p. 12.*—*Mertensia dichotoma Willd.*—*Mertensia discolor, Schrad.*—*M. Sieberi, Presl.*—*Polypodium dichotomum, Thunb. Jap. t. 37.*—*Gleichenia, lanigera, Dou.*—*Sticherus, laniger, Presl.*—*Gleichenia Hermannii, Br. Prod. p. 161*—*Mertensia, Hookeri, J. Smith.*—*M. flexnosa, Mart. Crypt Brazil, p. 108., M. Pusilla, Mart, I. c.p. 111.* *Gleichenia rigida, J. Smith.*

A very common fern from the sea level on the western coast to the tops of the highest mountains,—ravines on the North Arcot hills.

PLATE No. LXXIV.

TRIBE 6. CERATOPTEMDINE^E.

CERATOPTERIS, *Brougniart, Bull. Soc. Phil. 1821, 184.*(Teleozoma, *R. Brown*;—*Cryptoyenis, Richard, MS*; *Chladostachys, Wallich. M.S.*—*Ellobocarpus, Kaulfuss* ;—*Parkeria, Hooker* ;—*Belvisia, Mirbel in part*;—*Furcaria, Desvaux* ;—*Pteridis, Sp. Auctorum* ;—*Acrostichi, Sp. Auct.*)

Sori indusiate, continuous, occupying the longitudinal veins, *spore-cases* few, loosely disposed, globose, furnished with a very broad incomplete ring, of which from one-third to three-fourths or more is wanting, (sometimes almost obsolete consisting of 3-4 striae). *Indusium* universal, formed of the membranaceous revolute margins of the narrow siliquiform segments. Veins of the sterile fronds uniformly reticulated in oblique oblong hexagonal areoles; of the fertile few, longitudinal, distantly anastomosing.

Fronds herbaceo-membranaceous, annual proliferous bi-tri-quadri-pinnatifid dimorphous ; segments of the fertile ones UnWr. revolute siliquiform. Rhizome short, erect. Aquatic ferns. (Moore).

Ceralopteris thalictroides (Brougn). Fronds bi-pinnate, the fertile ones erect, 6 inches to 1 foot high, with linear acute segment* \ to 1 inch long ; the margins revolute and covering the fructification their whole length. Barren fronds shorter and more spreading, the segments cuneate with 2-3 oblong or lanceolate lobes, of a soft half-succulent texture, *Bentham, Hongkong flora, p. 443*—*Parkeria peridioides, Hook. Exot. FL L 147 and 231* ;—

Common in swampy places, in the plains and sub-alpine jungles*

PLATE No. LXXV.

TEIBE 7. OSMUNDINEE.

OSMUNDA, *Linnwus, Gen. Plant, 778.*

(*Aphyllocarpa, Cavanilles*;—*Struthiopteris, Bernhardt*;—*Pienasium, VresL* ; *Osmundastrum, Vrest.* ; *Riedlea, Mirbel in part*)

Fructifications paniculate, terminal or lateral on contracted rachiform portions of fronds, or occupying distinct contracted fronds. *Spore-cases* crowded on the margins or over the surface of the segments, obovate-globose, pedicillate or sessile, having an incomplete or rudimentary gibbous ring, (represented by a few parallel striae) near the apex and bursting vertically in two equal hemisnlori^O vnlv*
Veins forked from a central costa ; *venules* free.

Fronds coriaceous or herbaceous, pinnate or bi-pinnate, the pinnae or segments often articulate ; fertile segments contracted usually rachiform, simple or compound, terminal, medial or basal on the fronds, or sometimes occupying distinct contracted fronds. Rhizome caudiciform or tufted. (Moore).

1. *Osmunda regalis* (Linn.) Fronds twice pinnate, 1 to several feet high, quite glabrous ; barren segments oblong-lanceolate 1 to 2 inches long, serrulate, or nearly entire, very oblique at the base. Fertile segments linear J to 1 inch long, forming a terminal panicle above the barren branches. *Be nth am Hongkong, fl. p. 440.*—*O. Japonica, Thumb. FL Jap. 330.* .

Most abundant on the banks of rivers and streams on the Nilgiris and other high mountains on the western side of the presidency. (Called "The Royal Fern.")

PLATE No. LXXVI.

2. *Osmunda Javanica* (Blume) Fronds 1 to 2 feet high or more, glabrous, simply pinnate. Barren segments linear or linear-lanceolate 3 to 6 inches long, entire or more or less deeply serrate. Fertile pinnae occupying the centre, or rarely the base or summit of the frond, each pinna pinnatifid or almost pinnate, with numerous globular or oblong segments or clusters of spore cases) *Bentham Hongkong, FL p. 441.* *O. Vachellii. Hook. Ic. P. t 15.*

Western ghat forests.

PLATE No. LXXVII.

Order MARATTIACEJE.

TRIBE MAKATTINEJE

(§ 1.) ANGIOPTERIDEE.

ANGIOPTERIS, *Hoffman Comm, Gött. XII. 29, l. 2*

(*Clementea Cavanilles*.)—*Peilodochea, Presl.*;—*Polypodii, Sp. Auctorum*).

Sori dorsal, involucrate, sessile, linear-oblong or oval-elliptic, consisting of two opposite contiguous series of 5-12 free apov* sea ; which are obovate retuse, sometimes marginate, affixed by the base, and bursting on the inner face by an obovate or elliptic vertUN. cleft. *Receptacles* linear elevated. Involucres linear scarious, fimbriate persistent *Veins* simple or forked from a central costa ; *venule* parallel, free, dorsally soriferous near the margin.

Fronds ample pinnate, or bi-pinnate, pinnules articulate. Spore-cases at first laterally connected, at length free. Rhizome fleshy, sub-globose, often becoming erect in age (Moore).

1. *Angiopteris evecta* (Hoffm.) Stem forming an erect thick trunk, sometimes attaining 2 or 3 feet or more in height, fronds generally bi-pinnate (but the young sterile ones are often, and the fertile ones are sometimes, simply pinnate) very broad spreading up to 12 or 15 feet long, glabrous, shining green, segments linear-oblong 3 to 8 inches long, abruptly acuminate, crenate-serrate or rarely entire. Stipes more or less downy. Veins simple, forked, nearly parallel. Sori usually consisting of 8 to 12 spore-cases.—*Angiopteris crassipes*. *Wall. Cat.* 187.

[*Mr. Moore enumerates numerous Indian species, but they all I believe belong to one and the same plant,*]

Very common in most sub-alpine jungles on the western side of the presidency, up to 4,000 or 5,000 feet.

PLATE No. LXXVIII.

(§ 2.) MARRATTIEJE.

MARATTIEA, *Smith. Plant Icon. Ined. t—46—48.*

(*Myriotheca, Commerson* ;—*Celanthera, Thonin* ;—*Discostegia Presl.* ;—*J*

Sori dorsal, involucrate, sessile, oblong, horny, opaque, longitudinally divided into two opposite series of 3-11 conate spore-cases ; the valves convex outside, plane within, the spore-cases of each valve bursting on their inner face by a vertical cleft or slit, *receptacles* linear or globose, medial. *Involucres* linear-elliptic, oval or orbicular, scariose, fimbriate, persistent. Veins simple or forked from a central costa ; venules parallel, free dorsally soriferous near or at the margins.

Fronds ample bi-tri-pinnate ; pinnules articulate. Rhizome large, globose or caudiciform, consisting of the thick squamae—form bases of the fronds. (Moore.)

The Marattiae are distinguished from the Angiopteridece by having the spore-cases consolidated into bi-valved sori, along which they form two opposite lines ; while in the latter, the spore-cases, which are also placed in two opposite lines, are distinct and separable.

1. *Marattia fraxinea*. (Smith.) Rhizome large globose, Fronds bi-pinnate, (pinnules rarely again pinnate,) pinnules lanceolate, serrated, with a long terminal acumination, partial rachis often winged towards the apex.

Sisparah ghat—Bolamputti valley (Coimbatore hills.)

PLATE No. LXXIX.

TRIBE 1. (§ 16.) ASPIDIEÆ.

1. *Indusium reniform, affixed at the sinus.*

* *Veins reticulated.*

SAGENIA, *Presl. Tent Pterid.* 86.

(*Polydictyum, Presl.* ;—*Microbrochis, Presl.* ;—*Cardiochlaena, Fée.* ;—*Lobochlaena, Fée.* ;—*Phlebiogonium, Fée.* ;—*Aspidii, Sp. Auctorum* ;—*Nephrodii, Sp. Auct.* ;—*Polypodii, Sp. Auct.* ;—*B\$thmii, Sp. Auct.*)

Sori indusiate, rotundate, superficial or immersed; the *receptacles* terminal on free veinlets, or medial or coinital on anastomosed veinlets. *Indusium* cordato-reniform affixed at the deep sinus. Veins pinnate from a central costa, prominent, *venules* arcuately and compoundly anastomosing in about two or three series of irregular unequal variously-shaped areoles, from the sides of which are often produced free included divaricate (sometimes fertile) *veinlets*.

Fronds simply or often pedately pinnate or bi-tri-pinnate, herbaceous, usually ample. Rhizome short, erect or decumbent or somewhat creeping. (Moore),

1. *Sagenia gigantea* (Blume.) Caudex stout ascending. Stipites 1-2 feet long, brown as well as the rachises generally glossy, fronds ample 1-2 or more feet long, sub-membranaceous, dark greenish-brown when dry, pinnate with 4-5 pair of pinnae below, bi-pinnate, numerous 4-5 pairs 6-12 inches and more long, broad-lanceolate, deeply pinnatifid, the uppermost ones gradually smaller and

Fronde herbaceo-membranaceae, annual proliferous bi-tri-quadr-pinnatifid dimorphous; segments of the fertile ... linear, revolute siliquiform. Rhizome short, erect. Aquatic fern. (Moore).

Ceratopteris thalictroides (Broun). Fronds bi-pinnate, the fertile ones erect, 6 inches to 1 foot high, with linear acute segments 3/4 to 1 inch long; the margins revolute and segments cuneate with 2-3 oblong or lanceolate ... Barren frond

^ r ^ r r 1 - ? - - - vrr;r;; ^ r:

Common in swampy places, for the ptona and mb-alpine jungles.

PLATE No. LXXV.

TBIBE 7. OSMUNDINEÆ.

OSMUNDA, IATWKBUB, Gen, Plant, 778.

(Aphyllocarpa, Cavanilles;—Struthiopteris)

Fructifications paniculate, terminal or lateral on contracted rachiform portions of fronds, or occupying distinct contracted fronds ... Spore-cases crowded on the margins or over the surface of the segments ... rudimentary gibbous ring, (represented by ... Veins forked from a central costa; venul

Fronde coriaceous or herbaceous, pinnate or bi-pinnate, the pinnae or segments often ... usually rachiform, simple or compound, terminal, medial or basal on the fronds, or sometimes ... Rhizome caudiciform or tufted. (Moore).

1. *Osmunda regalis* (Linn.) Fronds twice pinnate, 1 to several feet high, quite ... 1 to 2 inches long, serrulate, or nearly entire, very oblique at the base. Fertile segments ... wide above the barren branches. *Bentham Hongkong, fl. p. 440.*—*O. Japonica, Thumb. Fl. Jap. 330.*

Most abundant on the banks of rivers and streams on the Nilgiris and other high mountains on the ... (Called "The Royal Fern.")

PLATE No. LXXVI.

2. *Osmunda Javanica* (Blume) Fronds 1 to 2 feet high ... lanceolate 3 to 6 inches long, entire or more or less deeply serrate. Fertile pinnae occupying the centre, or rarely the base or summit of the frond, each pinna pinnatifid or almost pinnate with numerous globular or oblong segments (or clusters of spore cases) ... *Hongkong Vachellii. Hook. f. 7, 15.*

Western ghat forest,

PLATE No. LXXV&

Order MARATTIACEÆ.

TBIBE MARATTINEÆ

<< 10 ANGIOPTERIDEÆ

ANGIOPTERIDEÆ

(Clas)

Sori

cases; which ... a obovate retuso, sometimes ... Receptacul parallel, free, de

Jf * ^ < % tic, w

spore vertical central costa; venules

Fronds ample pinnate, or bi-pinnate, pinnules articulate. Spore-cases at first laterally connected, at length free. Rhizome fleshy, sub-globose, often becoming erect in age (Moore).

1. *Angiopteris evecta* (Hoffm.) Stem forming an erect thick trunk, sometimes attaining 2 or 3 feet or more in height, fronds generally bi-pinnate (but the young sterile ones are often, and the fertile ones are sometimes, simply pinnate) very broad spreading up to 12 or 15 feet long, glabrous, shining green, segments linear-oblong 3 to 8 inches long, abruptly acuminate, crenate-serrate or rarely entire. Stipes more or less downy. Veins simple, forked, nearly parallel. Sori usually consisting of 8 to 12 spore-cases.—*Angiopteris crassipes*. Wall. Cat. 187.

[Mr. Moore enumerates numerous Indian species, but they all I believe belong to one and the same plant.]

Very common in most sub-alpine jungles on the western side of the presidency, up to 4,000 or 5,000 feet.

PLATE No. LXXVIII.

(§ 2.) MARRATTIEA

MARRATTIEA, *Smith. Plant Icon. Ined. t—4-6—48.*

(*Myriotheca*, *Commerson*;—*Celanthera*, *Thouin*;—*Discostegia* *Presl.*;—*J*

Sori dorsal, involucrate, sessile, oblong, horny, opaque, longitudinally divided into two opposite series of 3-11 conate spore-cases; the valves convex outside, plane within, the spore-cases of each valve bursting on their inner face by a vertical cleft or slit, *receptacles* linear or globose, medial. *Involucres* linear-elliptic, oval or orbicular, scariose, fimbriate, persistent. Veins simple or forked from a central costa; venules parallel, free dorsally soriferous near or at the margins.

Fronds ample bi-tri-pinnate; pinnules articulate. Rhizome large, globose or caudiciform, consisting of the thick squamæ—form bases of the fronds. (Moore.)

The *Marattia* are distinguished from the *Angiopteridece* by having the spore-cases consolidated into bi-valved sori, along which they form two opposite lines; while in the latter, the spore-cases, which are also placed in two opposite lines, are distinct and separable.

1. *Marattia fraxinea*. (Smith.) Rhizome large globose, Fronds bi-pinnate, (pinnules rarely again pinnate,) pinnules lanceolate* serrated, with a long terminal acumination, partial rachis often winged towards the apex.

Sisparah ghat—Bolampatty valley (Coimbatore hills.)

PLATE No. LXXIX.

TRIBE 1. (§ 16.) ASPIDIÉE.

1. *Indusium reni/orm, affixed at the sinus.*

* *Veins reticulated.*

SAGENIA, *Presl Tent Pterid. 86.*

(*Polydictyum*, *Presl*;—*Microbrochis*, *Presl.*;—*Cardiochlsena*, *Fée*;—*Lobochlaeia*, *Fée*;—*Phlebiogoniuni*, *Fée*;—*Aspidii*, *Sp. Auetorum*;—*Nephrodii*, *Sp. Auct.*;—*Polypodii* *Sp. Auct.*;—*Bathmii*, *Sp. Auct.*)

Sori indusiate, rotundate, superficial or immersed; the *receptacles* terminal on free veinlets, or medial or compital on anastomosed veinlets. *Indusium* cordato-reniform affixed at the deep sinus. Veins pinnate from a central costa, prominent, *venules* arcuately and compoundly anastomosing in about two or three series of irregular unequal variously-shaped areoles, from the sides of which are often produced free included divaricate (sometimes fertile) *veinlets*.

Fronds simply or often pedately pinnate or bi-tri-pinnate, herbaceous, usually ample. Rhizome short, erect or decumbent or somewhat creeping. (Moore.)

1. *Sagenia gigantea* (Blume.) Caudex stout ascending. Stipites 1-2 feet long, brown as well as the rachises generally glossy, fronds ample 1-2 or more feet long, sub-membranaceous, dark greenish-brown when dry, pinnate with 4-5 pair of pinnae below, bi-pinnate, pinnae numerous 4-5 pairs 6-12 inches and more long, broad-lanceolate, deeply pinnatifid, the uppermost ones gradually smaller and

Fronde herbaceo-membranaceae, annual proliferous bi-tri-^ri-pmviafAA 4morpYious ; segmn,nte ol the fertile t nes linear. revolute albiquiform. KWae e W, erect. Aquatic fern* (Moore).

Cratopitrit thalictroides (ffcmgn). Fronci, bi-piimato, the fertile UM erect, 6 inches to If, sot high, with linea: acute segments 1/11h long ; the m<rgm3 revolute and covering the fructification their >ho*' longtli. Barren fam.ls (Wter a, id more gspreading, the ta> canttto with U abtong or h M r t i lob^, of > soft half-succulent texture. £«/*««, 7/^^A^j, > r(J. ,, ^^^—Parkeria abides, Hook. Exoi. m. t. 147 and 231 —

Common in swampy plac ea, in the phun, and sub-alpine jungles.

PLATE Xo. LXXV.

TRIBE 7- OSMUNDINE.i:

OSMUNDA, *Linnaeae*, Gen. Plant, 778.

(*Aphyllocarpa*, *Cavanilles* ;—*Struthiopteris*, *Bernhardi* ;—*Pinnasium*, *Presl* ; *Osmundastrum*, *Presl* ; *Riedles*, *Xirba in* , etc.)

Fructification culate, terminal or lateral on contracted. *Spore-cases* crowded on ^ margins or over the surface of the segments, o rudimentary gibbous ring, (represented by a few parallel striae) having an incomplete or *Veins* forked from a central costa ; *venules* free. two equal hemispherical valves.

Fronde coriaceous or herbaceous, pinnate or U-pinnate, the pinna* or segment, often articulate ; fertile segments wata acted usually rachiform, simple or compound, terminal, medial or basal on tfe femds, or sometimes oecapTiag dfctia ; conti. Kited (hmd^ Rhizome caudiciform or tufted. (Moore).

1. *Osmunda regalis* (Linn.) Fronde twice pinnate, 1 to several feet high, quite glabrous ; barren segments oblong-lanceolate 1 to 2 inches long, serrulate, or nearly entire, very obliqua at the base. Fertile segments linear 1/2 to 1 inch long, forming a terminal panicle above the barren branches. *Bentham Hongkong, fl. p. 440.*—*O. Japonica*, *Thumb. Fl. Jap. 330.*

Most abundant on the banks of rivers and streams on the Nilgiris and other high mountains on the western side of the presi-dency. (Called "The Royal Fern.")

PLATE No. LXXXVI.

2. *Osmunda Javanica* (Blume) Fronde 1 to 2 feet high or more, glabrous, simply pinnate. barren segments linear or linear-lanceolate 3 to 6 inches long, entire or more or less deeply serrata. Fertile pinnae occupying the centre, or rarely the base or summit of the frond, each pinna pinnatifid or almost pinnate, with numerous globuli or oblong segments (sters of spore cases) *Bentham Hongkong, Fl. p. 441.* *O. Vachelii*, *Hook. Ic. P. t. 15.*

Westeni ghat forests.

PLATE No. LXXXVII.

Order MAItATTIACE.K

TRIBE MAKATHNEJB

({ L) ANQIOPTKKIDEÆ

ANGIOPTERIS, *Hoffman* *Iconum*, foft XII. 29, «. S,

(*Clementea* *Otwanilloa* ;—*Ptilodoches*, *Vreal. i-rFotyp«* *Il*, *Sp. A* uotomm).

Sori dorsal, involucmte, sessile, linear-oblong or oval-elliptic, counting of two opposite coatiguoW scриа of <i V" spore cases ; which are obovatt retuse, sometimes marginata, s r i a b y h e l case, an i h urating on } i i anee face by an obovate or ell pe cleft. *Receptacles* linear elevated. *Involucres* linear scarious fimbriate persistent. *Veins* simple or forked from a central costa ; *venu* t p«ralld, £rre, aoraaUy BOfUowua .war tt» margin.

Sir

Fronds ample pinnate, or bi-pinnate, pinnules articulate. Spore-cases at first laterally connected, at length free. Rhizome fleshy, sub-globose, often becoming erect in age (Moore).

1. *Angiopteris evecta* (Hoffm.) Stem forming an erect thick trunk, sometimes attaining 2 or 3 feet or more in height, fronds generally bi-pinnate (but^x the young sterile ones are often, and the fertile ones are sometimes, simply pinnate) very broad spreading up to 12 or 15 feet long, glabrous, shining green, segments linear-oblong 3 to 8 inches long, abruptly acuminate, crenate-serrate or rarely entire. Stipes more or less downy. Veins simple, forked, nearly parallel. Sori usually consisting of 8 to 12 spore-cases.—*Angiopteris crassipes*. Wall. Cat, 187.

[Mr. Moore enumerates numerous Indian species; but they all I believe belong to one and the same plant.]

Very common in most sub-alpine jungles on the western side of the presidency, up to 4,000 or 5,000 feet.

PLATE No. LXXVIII.

(§ 2.) MARRATTIEA

MAKATTIEA, *Smith. Plant Icon. Ined. t—46—48.*

(*Myriotheca*, *Commerson*;—*Celanthera*, *Thoxiin*;—*Discostegia Presl.*;—*J*

Sori dorsal, involucrate, sessile, oblong, horny, opaque, longitudinally divided into two opposite series of 3-11 conate spore-cases; the valves convex outside, plane within, the spore-cases of each valve bursting on their inner face by a vertical cleft or slit, *receptacles* linear or globose, medial. *Involucres* linear-elliptic, oval or orbicular, scariose, fimbriate, persistent. Veins simple or forked from a central costa; venules parallel, free dorsally soriferous near or at the margins.

Fronds ample bi-tri-pinnate; pinnules articulate. Rhizome large, globose or caudiciform, consisting of the thick squamae form bases of the fronds. (Moore.)

The Marattiae are distinguished from the Angiopterideae by having the spore-cases consolidated into bi-valved sort; along which they form two opposite lines; while in the latter, the spore-cases, which are also placed in two opposite lines, are distinct and separable.

1. *Marattia fraxinea*. (Smith.) Rhizome large globose, Fronds bi-pinnate, (pinnules rarely again pinnate,) pinnules lanceolate, serrated, with a long terminal acumination, partial rachis often winged towards the apex.

Sisparah ghat—Bolamputty valley (Coimbatore hills.)

PLATE No. LXXIX.

TRIBE 1. (§ 16.) ASPIDIEAE.

1. *Indusium reniform*, affixed at the sinus.

* *Veins reticulated.*

SAGENIA, *Presl. Tent Pterid. 86.*

(*Polydictyum*, *Presl.*;—*Microbrochis*, *Presl.*;—*Cardiochlaena*, *Fée*;—*Lobochlaena*, *Fée*;—*Phlebiogoniimi*, *Fée*;—*Aspidii*, *ttp. Auctorum*;—*Nephrodii*, *Sp. Auct.* y—*Polypodii* *Sp. Auct.*;—*Bathmii*, *Sp. Auct.*)

Sori indusiate, rotundate, superficial or immersed; the *receptacles* terminal on free veinlets, or medial or compital on anastomosed veinlets. *Indusium* cordato-reniform affixed at the deep sinus. Veins pinnate from a central costa, prominent, *venules* arcuately and compoundly anastomosing in about two or three series of irregular unequal variously-shaped areoles, from the sides of which are often produced free included divaricate (sometimes fertile) *veinlets*.

Fronds simply or often pedately pinnate or bi-tri-pinnate, herbaceous, usually ample. Rhizome short, erect or decumbent or somewhat creeping. (Moore.)

1. *Sagenia gigantea* (Blume.) Caudex stout ascending. Stipes 1-2 feet long, brown as well as the rachises generally glossy, fronds ample 1-2 or more feet long, sub-membranaceous, dark greenish-brown when dry, pinnate with 4-5 pair of pinnae below, bi-pinnate, pinnae numerous 4-5 pairs 6-12 inches and more long, broad-lanceolate, deeply pinnatifid, the uppermost ones gradually smaller and

confluent into a pinnatifid apex, superior pinna generally having the basal segment decurrent upon the rachis, lowest pair of pinna* (and base of the next pair) often very long a foot or more, and again more or less pinnated, segments more or less acute or acuminate, serrato-dentate or lobato-pinnatifid, veinlets forming oblong areoles near the costa and costales then variously anastomosing in the pinna* and partially in the segments, the veinlets in the segments nearly all free, flexuose, more or less divaricating and once or twice forked, areoles including free simple or forked fertile veinlets (rarely any sterile veinlets) and generally with a terminal sorus, within the segments, the lowest veinlet on the superior side bears a terminal sorus, sori sub-marginal, involucre reniform. *Hook. Sp. Fil. iv. 5*—*Aspidium giganteum*, *Blume, En. Fil. Jav. p. 159*—*Polydictyum*, *Presl*,—*Aspidium intermedium*. *J. Smith in Book-Journ. of Bot. iii. 410* ;—

Anamallays—Malabar.

PLATE No. LXXX.

2. *Sagenia coadunata* (Moore.) Caudex stout ascending* clothed at the apex with black subulate falcate scales, stipites more or less tufted from 1-2 inches to a foot and half long, stramineous or castaneous or ebeneous, scaly, scales lanceolato-subulate, spreading deciduous, fronds 4-6 inches to 2-3 feet long, oblong or ovate, membranaceous, pinnate, (young plants three-foliate,) or below bi-pinnate, the apex variously pinnatifid, pinnae generally opposite oblong sub-sessile obtuse or acuminate variously lobed and pinnatifid, often unequally, lowest pair petiolate, semi-ovate, with the lower segments very long and pinnatifid—primary veins nearly straight, the rest variously anastomosing inappreciable, sori in two series one on each side the costal vein of each segment compital (on the net work of the veins) or terminating a veinlet within a large costal areole, involucre reniform. *Aspidium cicutarium*. *Hook. Sp. Fil. iv. 48 in p. 37*—*Aspidium coadunatum*, *Wall. Cat. n. 337*.

Very abundant in most sub-alpine jungles on the western side of the presidency.

PLATE No. LXXXI.

3. *Sagenia pteropus* (Moore.) Caudex stout erect, stipites tufted short, stout partially scaly at the base, fronds 2-3 feet or more long, firm, membranaceous, sub-coriaceous, broad-oblong, deeply pinnatifid with 3-4 or 6 pair of long (6 inches to 1 foot, 1 inch or more broad,) oblong or oblong-lanceolate, more or less acuminate segments, lowest pair bi-tri-partite at the inferior margin, terminal often trifid, the margin entire or more or less sinuate or pinnatifido-lobate, primary veins distinct, parallel, flexuose, secondary ones transverse with these forming arched areoles which are occupied by anastomosing veins, including copious free veinlets and two sori on short free veinlets, these sori form two lines or series between the primary veins, involucre on a large oblong receptacle rotundato-cordate persistent—*Hook. Sp. Fil. iv. 47*—*Aspidium pteropus*, *Kunze, Bot. Zeit. p. 462*;—*Aspidium decurrens*. *J. Smith, Journ. Botany, iii. p. 410*. *Asp. platynotus*, *Kunze*;—*Cordia chlcena alata*, *Fee, Gen. Fil. p. 315*—*Asp. macrophyllum*, *BL En. Fil. Jav. p. 144* (exd. syn.)

Bolampatty valley (Coimbatore hills.)

PLATE No. LXXXII.

PLEOCNEMIA, *Presl Tent Pter. 183*.

(*Haplodictyum*, *Presl*;—*Polypodii*, *Sp. And.*;—*Aspidii* *Sp. Auct.*;—*Nephrodii*, *Sp. Auct.*;—*Cyclodii* *Sp. (Moore)*)

Sori indusiate, globose; the *receptacles* medial on the free or anastomosed venules. *Indusium* reniform, affixed at the sides. Veins (of segments, i.e., venules) simple or forked from a costal form mid-vein, the lower opposite ones arcuately anastomosing, forming elongated, angulate, costal areoles; the upper free; the intermediate usually forming one series of unequal hexagonal areoles next to costal form vein; margin veinlets free.

Fronds herbaceous, ample, bi-pinnato-pinnatifid, the lower pinnae bi-partite, or small and pinnatifid. Rhizome short, creeping or sub-arborescent.—(Moore.)

Pleocnemia aristata. (Hooker) Caudex creeping, stipites close-placed a span to a foot long, fronds of the same length as the stipites (fertile ones, often longer than the sterile) ovate sub-membranaceous pinnate, pinnae 7-13 spreading all petiolate 3-6 inches long 1 to 1 1/2 inches broad oblongo-lanceolate falcate, finely acuminate, lobato-pinnatifid obliquely cuneate at the base rarely with 2 or 3 obovate auricles or distinct pinnules, their lobes triangular-ovate acute and as well as the apices of the pinnae sub-aristato-serrate, primary veins (or costules of the lobes) pinnated with obliquely patent veinlets of which 1-3 pairs of the lower ones unite and form a very acute angle, sori dorsal on free or united veinlets, involucre subreniform, or oblong or lunate (as in *Athyrium*) sometimes ciliate *Hook. Sp.*

Fil. iv, 62. *Nephrodium aristatum* Hook. ;—*Goniopteris aristata*, Fee ;—*Anisocampium Cuningianum*, Pr. *Epimel Bot p.* 58—*Cyclodium Cumingianum*. Moore;—*Aspidium Otaria*, Kunze, *Herb. Metten. Aspid. p.* 34.

A fern of doubtful genus, the involucre are more like those of Athyrium, in the Aspleniece, than of the Aspidiece.

Anamallays—abundant in the Teak forests 2,000 to 4,000 feet elevation. Yeddicarrah and the plains of Malabar, about the foot of the Carcoor pass.

PLATE No. LXXXIII.

Veins connivently anastomosing.

NEPRODIUM, *Richard, Mich. Fl. Bor. Amer. II—266 (reduct)*

(*Aspidium*, *Sioartz in part; A uctorum*;—*Cyclosorus*, *Link* ;—*Abacopteris*, *Fee* ;—*Plectochlaena*, *Fee* ;—*Pronephrium Fresh* ;—*Arsenopteris*, *Webb, et Berthelot in part*;—*Polypodii Sp. Auctorum* ;—*Lastrea Sp. Auct.* ;—*Cyclodii, Sp. Auct.* ;—)

Sori indusiate, globose ; the receptacles medial on the venifles. *Indusium* reniform, affixed at the sinus— *Veins* (of pinnae) pinnate from a central costa, prominent; *venules* simple, the lower pair or more, sometimes all, angularly connivent—*anastomosing*, producing from the angle an excurrent veinlet, which (in deeply pinnatifid pinnae) is free or (in less divided pinnae) joins the next anastomosed angle.

Fronds simple, pinnatifid, pinnate or pinnato-pinnatifid, herbaceous or sub-coriaceous. Spore-cases sometimes echinate Rhizome short, erectish, or slowly creeping—(Moore).

1. *Nephrodium molle*. (Desvaux.) Caudex stout, horizontal, short, densely rooting, stipites a span to a foot and more long, fronds rather soft-membranaceous 1-2 feet long, more or less pubescent; oblong-lanceolate, abrupt at the base (or sometimes much attenuated there with distant dwarfed pinna?) pinnated, pinnatifid at the apex, pinnae numerous, horizontal, sessile, oblong, and generally broadest at the base, or lanceolate, more or less acuminate 3-5 inches long, pinnatifid more or less deeply, the segments semi-ovate, obtuse or oblong a little falcate, lowest pair of veinlets, uniting and sending out a veinlet which is prolonged to the sinus of the segments the rest free, simple rarely forked, sori in two rows situated near the middle of the free veinlets or at the junction of the two basal ones involucre reniform more or less villous—*Hooker, Sp. Fit. iv. 67.*—*Aspidium appendiculatum*, *Wall, in part. Asp. parasiticum Wall. Cat n. 2239*; *Polypodium nemorale, Wall. Cat. n. 1317*;—*Polyp. mollusculum, Wall. Cat. 332*—*Asp. Canescens, Wall. Cat. 354*;—*Asp. nymphale, Forst. prod. p. 81* ;—*Nephrodium Helsinbergii, Pr.*—*Polypodium diversifrons, Kl, and Kimze—K[^]. patens, Link.*

One of the commonest ferns in Tndia.

PLATE No. LXXXIV.

NEPHRODIUM (*Continued*).

2. *Nephrodium exteiusum* (Blume) Stipes 1-1 ½ foot long slightly scaly at the base—fronds 1½ to 3 feet or more long 1-1 ½, broad oblongo-lanceolate, acuminate sub-membranaceous, copiously pinnate, pinnatifid at the apex, pinnae numerous approximate, sub-horizontal 8-12 inches long, in the broadest part ½ of an inch broad, from a broad sessile base linear oblong, finely acuminate, glabrous, pinnatifid, about half way down to the rachis, the acumen entire, segments narrow, ovate or oblong, or oblong linear sub-falcate, entire, sub-acute; lowest pairs of veinlets angularly uniting, the rest free, sori copious but solitary on the veinlets between the costule and the margin strictly confined to the segments, or extending to the lowest veinlets, so that the disk is soriferous, involucre, small reniform glabrous. *Hook. Sp. Fil.* iv. 72—*Aspidium multijugum*. *Wall. Cat. No.* 348;—*Nephrodium caudiculatum*. *Sieb. Syn. Fil.* n. 47.

Nilgiris—Anamallays and other mountainous tracts.

PLATE No. LXXXV.

3. *Nephrodium abruptum* (Presl.) Caudex stout, stipes very stout, 2 feet and more long, fronds ample 2-3 feet long, 1 to 1½ feet broad, firm coriaceous-chartaceous, glabrous, pinnate, pinnae large 6 inches to 1 foot long, ½ to ¾ inches broad, sub-sessile from a truncated or short cuneate broad base, oblong, finely acuminate, shortly lobato-pinnatifid at the margin, lobes rounded obtuse and sub-erose-truncate, or acute sub-falcate, (inclined towards the apex of the pinnae,) lowest pinnae often dwarfed, costules slightly elevated, numerous, veinlets 6, 8 or 10 pairs (according to the space between the costa and the sinus of the lobes) united and then form a spurious intermediate costule, 3 or 4 only of the veinlets free within the short lobes, sori copious each on the middle of the veinlets in 2 distinct lines, or series between each pair of costules never extending to the lobes, involucre rotundato-cordate, sub-ciliate or glabrous, soon deciduous.—*Hook. Sp. Fil.* iv. 78 (the fertile fronds are sometimes considerably contracted, and sometimes as broad as the sterile ones).—*Aspidium multilineatum*. *Wall. Cat. n.* 353 ;—*Aspidium prionophylloidi*. *Wall. Cat. n.* 355. A variety only.—*A. penninerum* *Bl. En. Fil. Jav. p.* 153 (but not of other authors)—*Asp. truncatum*. *Gaud. in Freyc. Voy. Cryp. p.* 333 *. 10.

Sisparah and Carcoor ghats—Nilgiris—Anamallays—a very large species.

PLATE No. LXXXVI.

4. *Nephrodium Arbuscula* (Desv.) Caudex creeping, stipes approximate, a span to a foot or more long, fronds firm-membranaceous, scarcely sub-coriaceous, pubescent 1-2 feet long, a span broad, oblong-lanceolate, acuminate a good deal yet abruptly attenuated at the base, pinnate, pinnae approximate sub-petiolate from a dilated base, frequently auricled above, and rotundate below, narrow-oblong gradually and finely acuminate, coarsely crenato-serrate, lower ones (several pairs) dwarfed, remote sub-deltoid and sub-trilobed three or four pairs of the veinlets anastomosing, a few free veinlets only in the teeth, sori solitary near the middle of each veinlet except in the teeth, indusium small reniform.—*Zoöf. Sp. Fil.* iv. 74. *Aspidium Hookeri*. *Wall. Cat. n.* 338. *Asp. puberulum*. *Wall. Cat. n.* 338—*Nephrodium Hookeri*. *Moore*.

Anamallays and Pulneys—beds of rivers at 3 to 4000 feet.

PLATE No. LXXXVII.

5. *Nephrodium unitum* (Sieb) Boot long creeping underground, densely rooting, stipes a span to a foot and more long, stout glossy brown; fronds 1-2 feet long, rigid-coriaceous oblong acuminate, suddenly contracted and attenuated at the base (by the dwarfing of the pinnae there) glabrous above, cano-tomentose beneath, especially on the rachis costae and veins, pinnate, pinnae numerous approximate 4-6 inches long erecto-patent from a truncated sessile sub-hastate base, linear-oblong gradually acuminate 3-6 lines wide the margin pinnatifid, lobes short, triangular, ovate, acute, rigid, the margins a little reflexed, veinlets very prominent beneath 3 or 4 of the lowest pair uniting, and at their junction excurrent and forming as it were a false or intermediate vein reaching to the sinus, sori copious on the veins crowded, at length confluent, involucre small reniform at length glabrous.—*Hook. Sp. Fil.* iv. p. 81 ; *Sieber Syn. Fil.* 4[^] *Aspidium callosum*, *Blume* ;—*Aspidium lanuginosum*, *Bory in Hb. Hook.* (but not of Willd). *Asp. aridum*, *Don.*—*Asp. vambosum* *Wall. Cat. n.* 352; *Polypodium scabridum*, *Wall. n.* 302 ;—*Asp. cucullatum*, *Bl. En. Fil. Jav. p.* 151 ;—*Nephrodium cancscens* *J. Sm. in Hook. Journ. of Bot.* iiL p. 411 ; (not Wallich)—*Asp. pteroides*, *Bl.* (not Sw.);—*Nephrodium mucronatum*, *J. Sm.*—*K. Smithianum*, *Fral*

Nilgiris and Anamallays—not very common.

PLATE No. LXXXVIII.

6. *Fojtrodiam promnquum* (Bf.) Caudex very long, creeping sometimes copiously, and luxuriantly rooting atipitcs var; much ia length from 1-2 feet, fronds sub-coriaceous 1-3 feet long, glabrous, or often more or less pubescent, resinoso "lamlulose, eepeeiaHJ beneath, teddisWMWwn when dry, rather glossy, pinnated, pinuaa numerous, shortly petiolate, 3-5 inches kmg, \ to i j an inch ar more wide, linear-lanceolate, acute rather than-acuminate, sometimes broader and cuneate at the base, someti awa contracted, pii.natifid \ or down to the costa, the segments rounded or ovate, obtuse or acute, veinleta curved, one or two of the lowest opposite pair united, sort near the middle of the mas, or sub-marginal, sometimes confined to th* lobes, sometimes extending to the disk, and not onfrequently i-orming i continuous intramural rial line following the course of the sinuses, the whole length of the pimtte, involucre reniform, setose, I look. Sp. FU. m p. 79—Aspidiitm uuitura, 8w; Syn, Fil p. 47;—i sp. gongylodes, Sch. Fit. p. 193; A?p. Poltlianum, iV. and A- A. oljtusatuin, FK&£ Sp. Pi. v. p. 241 ;—Nephrodium uiiitum, ffr. f«rf. Fl'. S..... Hioil. p. 148;—Polypodinm aecundum, Wall Cat- n. 30] ;— Xeph. paludosuui, Liebm~FU, Hex. p. 123 ;—Felix Zeylan, deutieul, non ramosa. JIurm, Kt->ji p. 98 (.44/. 1-

Anamallays—3000 feet in the Karambe-Vile (a large swamp) Elev. -500—Malabar, in weJIs.

PIAXE No. LXXXIX.

7. *Nephrodh'm termmaiu* (J. Smith) caudex creeping sculy, stipes H^J feet iong, a little scaly at the base, frond about tie »srae length, sub-membranaceous, nijmig or ovato-oblong, aninimitti, pinafte, terminal phunx, generally free btil tiff™ dcfiiny pinn;[it]», latera? pinna; 4-S inches long patent, scarcely pctiylate from a bruutl (or sometimes euntrueted) baMcUnear oblong finely acuminate, p"1 natlid about halfway down towards the ^asta, wit h numerous subovate rather acate slightly falcate segments, liwest pair of vfinwW united below the aJaaes, tad confined to the segments, inv<ili; res renifona. Ut ok Sp., l-iL iv 73—Asp. termiBaas, Wall. Oil-v- 386 ;—Nephrodram Ciuaingir. J. Smith. i-oker jau». Bot. iii. p. 411 ; Kcph. conionemoB. Fit. Gen. Fil. 308 ;—Lau 6w» IjWoec enia, Pr. Kpin. /Jo(. p. 35 ;—Asp. Schwenkii p. ffilL tn J?i. foot.—Aspidmm onitura, Hook, ti Arut, Bet,-of Beak Top,

Anamallays—In moist forests and outskirts of Sbolas 2000 to i000 feet elevation.

PLATE No. Xa

* * * r«wu /'«.

OLEASTDEA, Cttmuiifesi ^{relect} (18C-!)-2r>:-.

(Ifeuronia, JDore.;—OpHopteris, KHrtwardt ;—Aspidii sp. Awe;—Hy] opeltidia sp. Bory ;—Polypodii s^ rftiot).

Sori indusiate, globose, approiimato to the costa, the *receptctelti* therefore MtVbaal on the veins or venules. *Indu num* reniform. affixed *t the siuw. F«ns simple or forked from a central costa ; *venules* parallel, unisoriferoua dorsdly near their base, their *aji* curved forwards, and connivent with the thickened margin.-

Fronds simple, sub-mumbranaceoiaa or aub-coriaceooa, atiiies nodoso-aiticBlrrte. Ethizome creeping or erect and frutescent. (Moore).

1 *Ohandnt. mniforviu*. (Cav.) Qutdices sub-erect or scandejit, stoat, woody, knotted, coljously rooti«s belqw, dans ly cli thed with oppressed imbricate subulate scales, at fir3t ferruginous then diaphanous at length do iduona, or leaving only small black spots, th* iMuiins of the persistent scales; fronds 6 inches to i foot long, scattered or ftea in tenuinal whorla, laaceo3ni«, acuminate, generally attenuated at the baw, 1 to 2 inches broad, coriaceous and glossy, or firm-itiembtanoceousj, glabrous or partially villoiw or pubescent oil the v«nst and costa and ciliated on the margin ; petiole 2 lines to 1 inch }>. g. joini very near the base, glabrous or setose >>r Bcaly, & >& in LI continuous but flemose line near the costa—Hook, up. Fil. iv. 166—Aspidium neriiforme, &c. Syn. Fil. •• p- 42 ; Asp. Wallicuiianui!™ Manger tt. Bury Ft. Ind. Or Crypt, p. 51. t. (J ;~As>. articulatmn, 3#, % «. Fil. p. ». 13.; O^andnt moiliB. Pn ol. Olexandra hirtelh, Mi-j. in Schk. Fil Sup, < t. 129.

Anamallays rare—Western dopes of Nilgiri*—Eavines 5n ilr. OucIsteriony'a vallyy, 5000 feet elevation.

[•LATE No. \er.

NEPaaotTEPis, Sehott (Gen. Fil. (t. 3)

(Kephrodiam, Link;—Lepkloncaron, Ft6.—Aspldii sp, And.;—SeparodS sp. Auct, ;—Hypopeltidis sp. Bory ;—Polypodii sp. tuet. Davallise sp. Avet.—Tectariaa sp. ; Cavanilles ;—Polygtichi sp. Auct. ;—Aothropteridw ep.; J. Smith,

Sori iBdusiate, rotndate ; the *rtctptadn* terminal on the lower anterior venules, *Imhtium* rotundato-cordato-rertifort^i affixed at the sinus oi sub-70 niform affixed oblique-transverK'ly by O.e Bfcuate posterior margin. *Veins* pinnato-furcaU fktB * central cost* 3 *vtuua* direct free, thickened ;it V10 apices.

Fronds pinnate, narrow elongate, herbaceous or sub-coriaceous, the pinnae articulated. Rhizome short erect, producing elongated slender stolones which bear fasciculate crowns at intervals; or elongately creeping; sometimes tuber bearing (Moore)

1. *Nephrolepis tuberosa* (Presl.) Caudex indistinct, apparently wiry root-fibres, frequently bear large oval scaly tubers, stipites 1-4 inches and more long, deciduously paleaceous, from 1-3 feet long linear-lanceolate, coriaceo-sub-membranaceous acuminate, pinnate, pinnae numerous approximate J-1 inch long glabrous, horizontal from a truncate or cordate base, more or less auricled above, oblong obtuse, or especially the fertile ones crenated, rarely acuminate, often subfalcate, lower and sterile ones shorter and more obtuse, auricle acute, sori transverse about equidistant from the margin and the costa, involucre firm, coriaceous reniform or nearly half-moon-shaped, brown, opening towards the apex of the pinnae, the base and point of insertion broad and generally black. *Hook. Sp. Fil* iv. 151—*Aspidium sublanosum*. *Wall. Cat. n. 365 (in part)*—*Aspidium pendulum*, *Raddi, Fil Bras. p. 30 t. 45*;—*Nephrodium delicatulum*. *Dene. in-Jacqem. Voy. Bot. p. 178 t. 179*;—*Aspidium Tavoyanum*, *Wall Cat n. 1032*.

Common in subalpine jungles on the Western side of the Presidency.

PLATE No. XCII.

2. *Nephrolepis exaltata* (Schott) stipes 1 foot and more long, and as well as the rachis and costa more or less villosopaleaceous, often quite glabrous, fronds sub-coriaceous 1-2 feet long oblong-lanceolate pinnated, pinnae 1-3 inches long; oblong more or less acuminate with a broad truncated or sub-cordate base, parallel with the rachis, with a sharp auricle above and sometimes below the margin entire or crenato-serrate, sori almost quite marginal, involucre coriaceous reniform with a very broad sinus. *Hook. Sp. Fil* iv. 152—*Nephrolepis hirsutula*, *Presl.*;—*Aspidium pilosulum Langsd. and Fisch. p. 14 t. 16*;—*A. Schkuhrii BL En. Fil Jav. p. 147*,

Wynad—Anamallays—Nilgiris.

PLATE No. XCIII.

3. *Nephrolepis acula* (Presl.) Stipites 1-2 feet long, sub-paleaceous with subulate long ciliated scales mixed with longer ones, terete, very sinootli olivaceous, fronds 2-4 and more feet long 8-12 inches broad oblong-lanceolate, membranaceous, more or less firm; pinnae horizontal J to 1 inch broad 5-8 inches long, oblongo-lanceolate, distant, more or less acute or acuminate, obliquely truncatocucuate at the base, entire or serrated or irregularly and coarsely crenate, rarely sub-auriculate lower ones oblong-elliptical obtuse, sori distant from the margin, but nearer to it than to the costa, involucre cordate.—*Hook. Sp. Fil* iv. p. 153—*Aspidium acutum*, *SchL Fil* p. 32 t 31;—*Asp. splendens*, *Willd. Sp. PL V. p. 220*;—*Asp. paludosum*, *Raddi. Fil. Bras. p. 29*;—*Nephrolepis biserrata*, *J. Smith, in Hook. Journ. Bot. Ill p. 413*; *Arana-panna. Rheed. Hort. Malab. XII. p. 61 to 31*.

Eavines near Kirkumbaddy, (North Arcot Hills.)

PLATE No. XCIV. *Fig. A is a portion of a hairy sterile form of frond which grows often on the same plant with the fertile fronds.*

LASTREA, *Bory. Diet, class d^v Hist. Nat v 588*.

Dryopteris, *A danson*;—*Gleichenia*, *Necker*—*Aspidium*, *Swartz in part*,—*Nephrodium*, *Richard* in part; other authors;—*Thelypteris*, *Schott*;—*Arthrotritys*, *Wallich*;—*Hypodematium*, *Kunze*; *Amauropelta* *Kunze*; *Arsenopteris*. *Webb et Berthelot* in part;—*Hemistheum*, *Newman*;—*Lophodium*, *Newman*;—*Gymnothalamium*, *Zenker m. s.* *Dichasium*, *A. Braun*;—*Camptodium*, *Fée*;—*Oochlamys* *Fée*;—*Pachyderris*, *J. Smith m. s*;—*Lastreastrum*, *Presl.*;—*Pycnopteris* *Moore*; *Polypodii* sp. *Auct*;—*Tectarise* p. *Cavanilles*;—*Phegopteridis* sp. *Auct*;—*Arthropteridis* sp. *J.^s Smith*.—*Cystopteridis* sp. *Auct*;—*Polystichi* sp. *Auct*

Sori indusiate globose; the *receptacles* medial, or rarely terminal or sub-terminal on the venules. *Indusium* roundish, reniform or sometimes small and irregularly reniform, plane or fornicate fugacious or persistent; the basal sinus at which it is affixed, variously deep, narrow broad or shallow. *Veins* simple, forked or pinnate from a central costa; *venules* free, the anterior usually (sometimes more) fertile.

Fronds herbaceous or coriaceous, pedate, pinnate or bi-tri-pinnate, the fertile ones sometimes contracted—Rhizome-short thick erect or decumbent or elongately creeping. (Moore.)

1. *Lastrea eriocarpa* (Descaisne) Caudex ascending, stout, clothed with a very dense cushion-like mass, 1-3 inches thick of aureous subulate scales from \ to 1 inch long, not extending to the stipes, stipites a span to 1 foot long, pale-brown, glossy, quite

glabrous and scaleless as are the main rachises ; fronds firm-membranaceous, pale green, 3 inches to 1 foot long, sub-quinquefidly deltoid, acuminate, very pilose on all the costae and costules on both sides, and on the veins beneath with white hairs, tripinnate, primary pinnae oblong or ovate acuminate 3 inches to a span long, petiolate lowest pair especially on petioles or branches 2-3 inches long semi-ovate, the lowest basal secondary pinnae the longest, pinnules oblong-ovate $\frac{1}{2}$ to 1 inch long obtuse deeply pinnatifid, decurrent at the base, the segments oblong-ovate toothed or subinciso-pinnatifid, veinlets forked, sori most copious, involucre large pale-colored membranaceous reniform convex very villous.—*Hook. Sp. Fit.* iv. 141—*Nephrodium hirsutum*. *Bon. Prod. Xep.* p. 6; *Hypodematiium onustum*, *Kunze. in Flor.* 1833 p. 689 ;—*Aspidium pilosulum* *Wall. Cat.* n. 337 (*not Kunze*) *Asp. subdiaphanum*. *Wall. Cat.* n. 343--*Hypodematium Ruppellianum*, *Kunze. in Schk. Fil. Suppl.* t. 21. *Cystopteria odorata*, *Pr. Tent Pterid* p. 93.

Anamallays, on the Peringoonda Hill 5000 feet elevation.

PLATE No. XCV. *The plant figured is rather a dwarf form of this species.*

2. *Lastrea hirtipes* (Moore) Caudex short thick erect and as well as the stout tufted stipites and rachis densely crinite with large long subulate intensely black flexuose scales (more or less deciduous) fronds 2-3 feet long, sub-coriaceous ovato-lanceolate pinnately confluent pinnatifid at the apex, pinnae 3-6-8 inches long more or less remote, horizontally patent from a truncated or subcordate and nearly sessile inauriculated base oblong, long-acuminated variously lobed or pinnatifid or crenated or even serrated at the margin, lobe* obtuse or acute, veins pinnated sori dorsal upon the veinlets remote from the margin, involucre, small reniform sub-coriaceous—*Hooker *y-Fil.* iv. 115—*Nephrodium hirtipes Hooker*—*Aspidium atratum*, *Wall. Cat.* n. 380.

Nilgiris—very abundant 4000 feet and upwards. Anamallays—Pulneys*

PLATE No. XCVI.

LASTREA (*continued.*)

3. *Lastrea divisa* (Wallich). Caudex large, fleshy creeping, furnished with numerous coarse roots, stipes 2-3 feet long, very scaly at the base, hairy and furrowed above, fronds 3 or more feet long, triangular-ovate membranaceous, bi-pinnate with the pinnules pinnatifid | down to the costa, pinnae petioled, distant broad-oblong acuminate, varying in length from 3 inches above to 1½ foot below; rachises of the pinnae furrowed above and covered with weak hairs on both sides, and furnished with a broad glabrous wing which gradually disappears towards the base of the rachis of the lower pinnae, but is so prominent the whole length of the rachis of the upper pinnae, that they may be said to be pinnatifid rather than pinnate, costa and veins furnished more or less with weak hairs on both sides, sometimes glabrous, pinnules alternate distant sub-sessile 1-4 inches long, broad lanceolate acuminate, pinnatifid nearly down to the costa, segments very obtuse, crenated, about ¼ an inch long with narrow acute sinuses, veins pinnate, veinlets simple or forked, sori in 2 rows between the costa of the segments and the margin, 4 to 8 on each side (*i. e.* 1 to each lobe or crenature) involucre much lacerated, very membranaceous and fugacious, rarely to be detected except under the microscope.—*Nephrodium divisum*, Hooker. *Sp. Fil.* iv. 133;—*Aspidium divisum*, Wallich. *Cat. n.* 393 :—

Sholas about Ootacamund on the Nilgris 7,000 feet elevation—Anamallay Hills 3,000 feet elevation.

PLATE No. XCVII.

4. *Lastrea recedens*. (J. Smith;) Caudex, a short thick ascending rhizome, paleaceous with subulate ferruginous scales, stipites tufted a span to a foot long, rather slender, very scaly at the base, the rest and the rachises rather densely fusco-pubescent, fronds a foot long, and equally broad at the base, firm, membranaceous deltoid more or less pubescent beneath, often nearly quite glabrous above, below tri-pinnate, above bi-pinnate, primary pinnae broad-oblong acuminate petiolate patent (but not horizontal) from 3 to 8 inches long, the basal ones much the largest 2½ inches broad, secondary ones oblong, sessile and decurrent at the base, so as to form a narrow wing to the rachis, oblong an inch and more long, very acute, coarsely and very acutely almost pungently serrate or pinnatifid, veinlets simple or once or twice forked, sori 1 to 5 on each lobule of the pinnule. Hooker. *Sp. Fil.* iv. 135.—*Nephrodium recedens*. Hook.—*Lastrea elegans*. Moore. *En. of cult Ferns.*—*Polypodium*. J. Smith. *En. Fil. Philipp in Hook, jour : Bot* iii. p. 394.

Nilgiris—Pulney mountains—4,000 feet elevation—a rare fern.

PLATE No. XCVIII

5. *Lastrea flaccida*. (Hooker;) Caudex erect, furnished with numerous fibrous roots, stipites tufted stramineous, below scarcely scaly, above very glaucous, rachis with a line of hairs on the sulcated upper side, glabrous beneath; fronds 1-3 feet and more long, broad ovato-lanceolate acuminate membranaceous, bi-pinnate with the pinnules pinnatifid nearly to the costa, pubescent-hirsute, "with long white hairs on the costae and costules on both sides, rachis of the pinnules furnished with a very regular line of dense hairs on the upper side, glabrous and convex below; pinnae rather remote, opposite or alternate, lanceolate acuminate, inferior ones 10-12 inches long, by 3 inches broad, superior, gradually smaller (so that one of the superior pinnae is similar to a pinnule of an inferior pinnae) pinnules up to 2 inches long, oblong, lanceolate from a broad adnate base (which is decurrent, so as to form a winged rachis particularly in the upper pinnae) pinnatifid (in the lower pinnae almost to the costa,) secondary pinnules pinnatifid in the lower pinnae, entire or with the apex crenated in the upper portion of the frond: veinlets pinnate from a central vein, terminating within the margin; sori 1-6 on each lobe of the secondary pinnules—*Nephrodium flaccidum* Hook. *Sp. Fil.* iv, 133. *There is no trace of any involucre in the numerous specimens that I have examined. Sir W. Hooker's figure of this plant (Tab. eclxiii. Vol. iv. Sp. Fil.,) does not give a good idea of the plant as it grows on the Nilgiris; I have a specimen from Ceylon exactly corresponding with the figure in the Sp. Fil. but my Nilgiri specimens are far more compound, the pinnules being about equal to the pinnae of the specimen figured by Hooker. I feel certain however, that they are one and the same plant.*

Nilgiris—abundant on the Carcoor ghat—Anamallays 3,000 feet elevation.—Wynads.

PLATE No. XCIX.

(The upper portion of a large frond showing the pinnules decurrent on the rachis).

- A. Magnified upper portion of one of the pinnae showing the line of hairs on the rachis,
- B. Lobes of a pinnule magnified, showing the under side.
- C. A lobe of a pinnule, upper side.
- D. A portion of one of the lower pinnae of a frond.

6. *Lastrea ferruginea*. (Beddome;) Caudex short, stout, erect, stipes densely clothed with large paleaceous scales and scabrous rough tubercles—fronds large deltoid-ovate, tri-pinnate or in large fronds below quadri-pinnate, generally one or two pair of pinnules

minting at the inferior base of the lowest pair of pinnae, pinnules in the upper portion of the fronds and secondary pinnules below) divided one-third to three-fifths down to the costa, apices of the segments very broad, obtuse, crenate, each of the upper segments generally bearing one or more teeth at the apex of the superior vein, the lower segments of the pinnules being generally barren—rachis, costa and Costules densely clothed (especially above) with reddish brown ferruginous pubescence, veins above covered with U&G ferruginous BOSS hairs, below slightly pubescent or glabrous—indurated, reafirm, large glabrous, generally prearistate

Nilgiris, in Sholai on the Koondahs on the road between Avalanche and Sisparah.

PLATE Kb. C,

Ladream aristata. (Slober:) OBudoi! <ig, Mnt, creeping densely caespitose with long subulate fcmigiuiok scales, distant a span to a foot and a half long, the base copiously (reiter, <a8 in the ^ . j . below) the rest and the rachises partially ... setoiw-paWms, frondi a Bpas to 2 feet long, deltoideo-ovate, suddenly acuminate 3-4 pinnate, ... or I, ... coriaceous-membranaceous glossy; primary pinnules all petiolate, lanceolate finely acuminate, l&wgt primary ones with the basal secondary pinnule elongated (hence the ironed Is pedate) ... again once ... sub-falcate, sub-auriculate, mostly mucronato-serrate; sori generally in ... TO ... h pinnule, involutes either ... mil, lenifom. J/o ... Sp. Fl. iv. 27.—Polypodium aristatum. Forst.—Aspidium aristatum. Sw. ... V. ... U pp. 53.—V6F A com&uia-fronds larger below i p&cnate, pinnule, generally larger and more lax—Aspidium conifolium, m. ff<4 u<. ... m.—Aspudum [iolmipee. Zm ia /J, ... p. 287.—Aspidium caruifolium. Kunze in Linnaea, p. 292.

Nilgins—Pulneys—Anamalkys and all mountainous tracts on the Western side of the presidency—very common.

PLATE No; CL (Figure A. it the upper portion of one of the pinnae of a frond of variety, β. conifolia, a more compound and larger variety.)

8. *Lmtrca mmAranifelia*, (Presl. :) Cmidx a thick, erect rhizome with black subulate scales, Spites tufted ft span to a foot ... Oate somewhat 5-angled, acuminate, primary pinnules 3-6 inches long, 1½-2 inches ... middle ... se^ik deeply pinnatifid, uppermost ones ... into a deeply pinnatifid; ... with more or less entire ... lower ones ... and petiole, lowest pair the Utgwit ludf-ovate acminal, the lowest basal pinnule the longest and deflexed, ... the middle pinnae ... with oblong ... & ... , ... ly ... te, large ... ing ... series ... on the dkk and the. matted, involucre, rather small eniform —Hook. Sp. Pl. ... 131.—Nephrodium ... paradoxa. ... —Aspidium fuscipes. Wall. Cat. n. ... ;i.-Aspkium ... enioides ... Methen. Aspid. p. 269.

Nilgiris—Sisparah ami Caroor ghats-Wyoaad-Anaiaallaj.

PLATE No. CII.

Lasirea *V<»»n, (Moore :) Caiadex short, erect, stout, densely rooting below, paleaceous with copious ovate acuminate scale* ... pites tufted a span to 1-2 feet bag, mure or leu sea; as is the radii*, fronds 1-11 foot long, sub-coriaceous ova*, acuminate, ... primary pina© 3-5-6 inches long distant much petiolate, ... tai* or ofe&^aouninata, secondary ones ovate or ovato-oblong, ... isolate, those above the middle of the frond ... obliquely rhomboid etmeate, at the base all more or Ist nitmatifid especially in the lower half with rounded obtuse entire lobes, superior baai! segment ... nerally the largest, ... ace sub-auriculate, ultinnUu pimntlea (when ... n-pmnat<) of the same character, veifflata simple or mostly forked, sori rather irirej^Ur nearer the costa the; the margin, ... involucre rather large, persistent, renifona. ff<*. \$p. /, / . iv. 1:32. Neabxdwua parpuroscens. ifo<i ... —Aspidium ... Hidana spar^um. Spr.—Aspi-j ... Oof. a. 290. ABptdinm purpurescu^ . /; / . ;* . /<7. J av. p. 167. Asptd. mtidulum iVail. Cat. n. 383—Asp, WeJgliamtBi ... catophoroB. A'-. JS(* <&* . n fr 26<.

A common fern, in moist mountainous tracts on the "Western side of the presidency."

PLATE No. CEX

10. *Lutrtia deparioi*, (Hook. :) S'ipes sleniler.) 1½ foot ... very {mkaeou bebw with large Uneecolato-subulffr brown scales, fronds ... Tett long, ovato ac<mijate, meoibtmcaoiM ghbrous, bi-piuuate, primary piowe 4 5 ioehea kog, broad-la, ... petiolate,

acuminate, pinnules about an inch long, rather distant, obliquely rhomboid-ovate, acuminate, laciniato-pinnatifid, unequally cuneate at the base and there sub-auricled above, the segments or teeth each bearing a solitary sorus at the *Yery* extremity terminating a veinlet, involucre generally larger than the tooth which bears it, convex cordiform with a deep sinus. *Hook. Sp. Fil* iv. 139—*Hooker. Fil Eocot t.'Z*—*Diclisodon deparioides. Moore. Ijindex. Fil* p. xcv. and 316.

Anamallay Hills. Rare.

PLATE No. CIV.

11. *Lastrea falciloba*. (Hooker;) Caudex short, thick, tufted, copiously rooting, stipites tufted a span to a foot long, free from scales; fronds 1 to 1½ foot long, more or less slightly hairy on both sides, firm, rigid, coriaceous-membranaceous, ovato-lanceolate, finely acuminate, pinnate, main and partial rachises hairy, pinnae 2-4 inches long, numerous rather distant, sessile linear lanceolate, deeply nearly down to the costa pinnatifid, the apex long tail-like entire or serrated, segments oblong, linear, falcate; the superior basal segments of each of the pinnae generally much longer than the others, involucre reniform very hairy—*Aspidium falcilobum, Benth. Hong Kong. Flora, p. 455*—*Nephrodium (Lastrea,) calcaratum, Hook. Sp. Fil* iv. 93. *Aspidium ciliatum, Wall. Cat n. 351*—*Aspidium Reinwardtianum, Kze. Bot. Zeit.* vi. p. 261? *Lastrea viscosa, J. Smith in Hooker. Journ of Bot.* iii. p. 412.

Nilgiris—common in ravines about half way down the Sisparah ghat—Anamallays, beds of rivers 2,000 to 4,000 feet elevation.

PLATE No. CV.

12. *Lastrea ochthodes*. (Kunze); Rhizome short, stipites crowded, moderately long flexuose, fusco-paleaceous towards the base, rachis and costa hispidulous above, and glabrous below, or hispidulous on both sides, frond sub-coriaceous, firm, glabrous, the margin sparingly canescently hispidulous, olivaceous above, paler beneath, lanceolate acuminate, at the base gradually and long attenuated, pinnate, pinnae deeply pinnatifid, sessile with a callous gland at the base beneath, patent or divergenti-patent from a broad sub-equal base linear-attenuated, the lower ones gradually abbreviated and dwarfed, the lowest abortive segments falcato-oblong, or linear rather acute, margin more or less reflexed in fructification, the lowest segments on each side longer, distinctly but slenderly pinnately veined, sori either in a continuous line near the costule, one at the base of each vein, or near the centre of the veins. *Hook. Sp. Fil* iv. 109—*Aspidium glanduliferum, Wall.*

Var : a. *Aspidium ochthodes. Kunze in Linncea.* xxiv. p. 282—rachis costa? and costules canescently hispidulous on both sides, sometimes nearly glabrous below, except a glandular pubescence on the veins; pinnae gradually attenuated, sori at or above the centre of the veins, involucre often hairy when young, margin of frond often much reflexed in fructification.

A very common fern.

PLATE No. CVL

13. Var. β. *Aspidium tyloides. Kunze in Linncea,* xxiv. p. 281—rachis costae and costules glabrous below, lower pinnae suddenly abortive, reduced to tuberculated glands—sori at the base of the veins close to the costule.

Nilgiris—rather rare.

PLATE No. CVII.

14. *Lastrea spectabilis*, (J. Smith); Caudex erect, ½ an inch in diameter and together with the base of the stipes, clothed with long brown ovate acuminate scales, stipites 1 foot and more long and with the rachis and primary costa elongated, stramineous glabrous, fronds 1½-2-3 feet long, 1-1½ foot broad, membranaceous, firm, broad-oblong or ovate acuminate, pinnate, pinnae patent 1-2 inches broad, from a truncate or sub-cuneate base, oblong acuminate, deeply pinnatifid three-quarters or four-fifths of the way to the costas, segments oblong or broad-oblong, rather obtuse, sub-falcate rather sharply serrated, the sinuses rounded at the base and there furnished with a short ligulate but very distinct tooth or gland, veinlets conspicuous, flexuose forked, sori small on a superior branch, rather near the margin than the costule, involucre small reniform.—*Kze. Hook. Sp. Fil* iv, 115—*Aspidium spectabile. Blume. En. Flip.* 158—*Lastrea, J. Smith in Hook. Journ. Bot* iii. p. 412.

Carcoor ghat. (Wynaad)—Anamallays—rare—Ravines in the North Arcot hills near Kirkumbaddy.

PLATE No. CVIII.

15. *Lastrea amabilis*. (Moore); Caudex, decidedly creeping, thick as a swan's quill, paleaceous with ferruginous scales, stipes solitary, a span to a foot long, slender, sub-flexuose, paleaceous below, fronds 6-12 inches long, sub-deitoideo-ovate, acuminate, bi-pinnate, sub-

membranaceous, primary pinnae 5-12 rather distant, terminal one as large as or larger than the rest, all long petiolate, lowest pair often bipartite, so as to form a pedate frond, pinnules petiolulate 1/2 of an inch long, obliquely rhomboid-ovate, sub-falcate, acute, sub-aunculate at the superior truncated base and coarsely spinuloso-serrated, except at the inferior base, sori in a single series at the sinuses of the serratures close to the superior margin and apex of the pinnules, indusium reniform.—*Hook. Sp. Fil.* iv. 25—*Polystichum amabile. Hook. Aspidium amabile. Blume. En. Fil. Jav. p. 165.*—*Aspidium rhomboideum. Wall. Cat. n. 364*—(I have always found the involucre in young state quite reniform and not peltate as described by Sir W. Hooker).

Pulney Hills—Anamallays. Not common.

PLATE No. CIX.

16. *Lastrea gracilescens.* (Hook); Caudex rather short, thick, horizontal creeping on the surfaces of the ground, scaleless, copiously rooting beneath, stipites very numerous and crowded on the upper surface of the caudex, slender a span to a foot long, stramineous brown, fronds a span to 1/2 foot and more long, membranaceous, oblong-ovate or sub-lanceolate [acuminate pinnated, pinnatifid at the apex, pinnae sessile, 2-3-4 inches long, nearly 1/2 an inch wide, oblong acuminate deeply pinnatifid, segments oblong, obtuse, plane quite entire, veins distant, all simple, sori small nearer the margin of the segments than the costules, involucre small, reniform, glabrous soon obsolete.—*Hook. Sp. Fil.* iv. 93 ;—*Aspidium, Bl. En. Fil. Jav. p. 155*;—*Aspidium Thelypteris. Benth. Fl. Hong Kong (vix. Swartz) A. glandigerum. Kze. Analicta Pteridogea p. 44*—*Metten Asp. p. 86.*

Travancore Hills. Rather rare.

PLATE No. CX.

LASTEEA—(continued).

The Filix-Mas group.

17. *Lastrea patentissima*. (Presl.;) Caudex short, stout, erect, densely paleaceous with broad-lanceolate scales varying much in colour, stipites short, copiously scaly, rachis densely clothed with long subulate tawny or golden scales : fronds very large, pinnate 14-15 inches broad ; pinnae patent, deeply almost to the partial rachis pinnatifid, segments very close and compact, oblong-parallelogram more or less sharply toothed towards the apex, margins ciliated, partial rachis and costa more or less scaly below, nearly glabrous above, sori in 2 rows, one on each side of the costa of the segments, situated on the centre of the superior veinlet, indusium reniform—Nephrodium (Lastrea) Filix-mas variety *β*. parallegrammum ; *Hooker. Sp. Fil.* iv. 116;—Lastrea Filix-mas variety *γ*. *Moore* ; *Aspidium patentissimum*, *Wall. Gat. n.* 340;—*Aspidium Donianum*, *Spr.* iv. p. 321 ;—*Aspidium Wallichianum*, *Spr.* iv. p. 104;—*Aspidium paleaceum* *Don. fl. Nep.* p. 4 (not Swartz)—Lastrea patentissima. *Presl. Tent. Pterid*—*Dichasium patentissimum*. *Al. Braun. Flora.* 1841 p. 710.—Nilgiris, common in ravines and sholas about Ootacamund.

PLATE No. CXI.

18. *Lastrea elongata*. (Swartz;) Caudex short, stout, erect, paleaceous, stipe and rachis more or less scaly, or nearly quite glabrous, fronds large, very broadly ovate, bi-pinnate with the lower portions often tri-pinnate, partial rachis more or less scaly, pinnules glabrous, segments more or less deep, obtusely rounded, crenated ; sori generally one to each segment on the centre of the superior veinlet* indusium very large (as in *L. Cochleata*, but the frond is not contracted as in that species).—*Aspidium marginatum*, *Wall. Cat. n.* 391.—*Aspidium elongatum*, *Sivart. Syn. Fil.* p. 55 ;—Lastrea elongata et marginata, *Moore* ; *Aspidium Filix-mas* var. *γ*. elongatum. *Hook. Sp. Fil.* iv. 117.—*Asp. depastum*, *Schk. Fil.* p. 50 t. 51;—*A. erosum*, *Schk. t. c.* p. 46 t. 45;—*Aspid. Canariense*, *Al. Braun. Flora.* 1841, p. 708. — (*Kze. Linnwa* xxiv. p. 255J.—*A. Ludovicianum*, *Kze. in Sillim Journ. 2nd Series*, vi. p. 84.—*Nephrodium Floridanum*, *Hook. Fil. Exot. t.* 99.—*Asp. Schimperianum*, *Hochst and A. Braun. Flora* 1841 p. 708.

Anamallays—Nilgiris rocky hills—5,000 feet and upwards.

PLATE No. CXII.

19. *Lastrea intermedia*. (Beddome ;) Caudex short, erect, paleaceous, stipe short scaly; fronds pinnate, ovato-lanceolate, 6-10 inches long, 3-4 inches broad, pinnae distant, short ovate to broad lanceolate, pinnatifid more or less deeply, (but not pinnated) segments broad, obtusely rounded, glabrous—sori very large, reniform, irregularly placed.

This small pinnate species seems a very distant variety of the Filix-mas group, it has the very large involucre of cochleata, but it seeds on all its fronds, and they are never contracted, or very slightly so—it is intermediate between the next species and cochleata.

Nilgiris—near Malee Mand.—Anamallays 5,000 feet.

PLATE No. CXIII.

20. *Lastrea odontoloma*. (Moore;) Caudex short, erect, densely paleaceous, stipes and rachis more or less densely covered with golden, or tawny scales, fronds lanceolate, pinnate, with the lower pinnae again pinnated (hence bi-pinnate below) partial rachis scaly, pinnae narrow, lanceolate to linear-lanceolate, pinnules more or less sharply toothed (sometimes with very long sharp teeth at the apex) often lobed at the base, sori reniform small, in a nearly regular row on each side of the flexuose costa of the pinnules.

Nilgiris—Anamallays—above 5,000 feet.

PLATE No. CXIV.

21. *Lastrea cochleata*. (Moore ;) Caudex stout, erect, paleaceous, stipes and rachis scaly, or often quite glabrous, fronds 11 to 3 feet long, broad ovate-lanceolate, pinnate with the pinnae pinnatifid to nearly the base, pinnules incised with sharp teeth on the lobes below the serratures ; fertile fronds contracted, lower pinnae again pinnated, upper ones pinnatifid, sori very large, closely packed and perfectly covering the under-surface of the fronds. Nephrodium (Lastrea) Filix-mas, var. *h*. Cochleata. *Hook. Sp. Fil.* iv. 117;—Nephrodium cochleatum, *Don. Prod. Fl. Nep.* ;—*Arthrobotrys avara*, *Wall. Cat. n.* 1034;—*Arthrobotrys macrocarpa*. *Wail. Cat. n.* 395.

This very curious species is only to be found in fructification in the cold wetter, in fertile fronds, when they first appear in October or November, are quite contracted and covered with one mass of fructification; they diffuse again in January or February. I have never detected any appearance of fructification on (the broader sterile fronds which are growing all the year round, and it is quite an error I think I suppose, that the enlarged sterile fronds have the effect of a diminution.

Wyand, AamaUays and other localities, very abundant from 2,500 to 4,000 feet elevation—Nile MB 5,000 to 6,000 feet rare.

PLATE No. CXY.

The above 3 species belong to the Fiff-Mat group of Zaxtrts, and probably few botanists would agree as to what are distinct species, and what varieties only. Sir William Hooker considers them all (even the Uu& } a* only varieties of the European "Lastrea Filix-Mas." Mr. Moore looks upon them at different times, and Dr. Wallieh founded a genus for them; but curious <i>ecis under the name of "Arthrobotry," I have had many of them, growing under cultivation, and not found them constant; whether they are distinct species or "lily varieties, I have thought it less deserving to separate them each under a distinct name, than to group them, two names tack as "Lastrea Filix-Mas, patensissima," &c.

(b) *Lastrea orbicular, peliady affinis.*

* K**i** reticulated, with free included veins.

ASPIDIUM—Sicurtz. Sohrad, Jimrn. 1,800. ii 4. 2*) (reducf),

(Bathmimn, Preal j—Proftre^ Pred ;—Podopeltb, Fue ;—Polypodii. sp. Anct ;—Tect:irit'X sp. Cavanilla ;—Phymatodia sp. Presal ;—Drynarise. sp- Fée :—)

Stems terete, rotundate, the receptacles compital, i.e. produce the points where several veins join, or medial, more rarely terminal. *Indusium orbicular peltate.* Vein pinnate from a central costae, prominent; or rarely uniform; venella and veinlets commonly anastomosing into (forming two or three series of) irregular or nearly elliptical sided areoles, from the ultimate of which proceed free divaricate veins.

Fronds simple, pinnate or tri-pinnate, herbaceous. Rhizome short, erect, or decumbent. (loore).

I. *Aspidium polijmm-phivti.* (Wallich.) Caudex creeping, stipites from 1/2 to 1-2 feet long, few inches a little scaly at the base, fronds very variable in size, from 3-4 inches (when they are generally cordate or 3-lobed, or tri-foliate) to 2 feet or more long, adult coriaceo-membraceous, pinnated with 4-8 pairs of pinnae and terminated by an odd one, as large as or larger than the basal ones very large and long, and generally unequal, bi-partite, at more frequently bi-foliate, the segments curved upwards, intermediate ones 5-6, or 8 inches long, oblong, acute or acuminate, sub-opposite in distant pairs sub-jetiolate, inferior base unequal, the keel often dilated, primary or coats veins horizontally patent, slightly arcuate, crossed by arched veins transversely, the areolae or Creoles are occupied by copiously anastomosing veins and the sterile aim-pie or forked venule, imbricated, generally small, all complete; involucre peititte, rarely persistent or very distinct—*Hoo&er. gp. m. n. Si.±WaU.* Cat n. 332—AspiJ. rostratna. Wall. Cat. n. 3.—Asp ad. repandum, Willd. Sp. Pi. v. p. 216 ;—B^t!inuum Fie.

Nile—very common in ravines on the Coonor glmt, and other localities—1'ulncy Hula,

PLATE No. CXVI.—(Fig. A. a J upline si mpk frond J.

PLATE No. CXXVII. is a figure of a fern common on the Aiwmalley Hills, 3,000 feet elevation. I believe, only a variety of *A. polymorphum* MI, and I have called it *polymorphum* β. *construdim*; it differs from the normal *I.*, in having contracted fertile fronds and very large, 4 or 5 I have never been able to trace any *g* «*» inclusion B "f on" that is very, seldom traceable on the normal, Etm-ltt. Mfl fronds do not seem to differ in any way from

2. *Aspidium* JL No CXYIII. This is a variety of a species of *A. J. Hum* or *S.* it is probably an undescribed species. I procured it from AamaUay, and was not fortunate to find the fronds are perfectly glabrous and shining on both sides.

CYRTOMIUM. *Presl. Tent Pterid.* 8G.

(PhaneropLlebia, Presl.;—Aspidii Sp. Auct. ;—Polypodii. Sp. Auct.)

Sori indusiate, globose in several series parallel to the costae; *the receptacles* medial on the excurrent, free or anastomosed venules or veinlets, rarely terminal near the margin. *Indusium* orbicular peltate. *Veins* pinnato-furcate, from a central costae ; the lower anterior *venules* free, the rest angularly and irregularly anastomosing, forming unequal sub-hexagonal areoles, within which are produced 1-3 excurrent *veinlets*; or the upper venules only angularly anastomosing.

Fronds robust coriaceous pinnate. Rhizome short, thick, erect, (Moore).

1. *Cyrtomium caryotideum* (Presl.); Caudex short, thick, erect, densely paleaceous with large erect scales, stipites tufted 10-12 inches long, very scaly below, fronds. -J a foot to 2 feet long, oblong sub-coriaceous-carnose, (when recent) of a pale yellowish green colour, opaque (not glossy) pinnated, pinnae 3-4-6 inches long, pinnate ovate much acuminate (sometimes repando-lobate) falcate sharply serrated, superior base much broader than the inferior, generally extended into a long sharp acuminate appendage or ear, the lowest pair and terminal pinnae often with one on each side, veins anastomosing, pinnate illexuose, costal areoles with a solitary soriferous free veinlet, superior ones with two or three veinlets clavate at their apex, sori scattered or sub-seriate, indusium orbicular, peltate entire or lacinated at the margin, rachis and rather short petioles setaceous-paleaceous. *Hook Sp. Fil.* iv. 40 ;—*Pfeschl. Tent. Pterid.* p. 86 t. 2 f. 26 ;—*Aspidium caryotideum*, *Wall Cat. n.* 376 ;—*Aspidium anomophyllum* (*Zenker Plantae Indicae*) var. *macroptera* et *microptera*, *Kunze* ; *Cyrtomium falcatum*, *Pappe et Raws. Syn. Lil. Austr.* p. 15 (not of Swartz).

Nikiris—Sholas about Oolacamund—rather rare.

(The variety "*microptera*" of Kunze has more numerous and smaller pinnae than the plant here figured, which is "*macroptera*" of Kunze, there are however intermediate forms, and they cannot even be considered as varieties.)

PLATE No. CXIX.

POLYSTICHUM. *Roth. Tent Fl. Germ.* iii. 69. (*redact*).

(*Hypopeltis*, *Richard*; *Aspidium*, *Auct.*; *Rumohra*, *Raddi*; *Hemigonium*, *J. Smith*; *Peltochlaena*, *Fée* ; *Cyclopeltis* *J. Smith*. *Hemicardium* *Fée*; *Teetarise* Sp. *cavanilles*; *Nephrodii* Sp. *Presl.* ;—*Lastrea* Sp. *Auct.* ; *Polypodii* Sp. *Auct.* ;*J*

Sori indusiate, globose; *the receptacles* medial, or rarely terminal on the venules, *Indusium* orbicular peltate. *Veins* pinnato-furcate, or simply forked from a central costa, *veinlets* free ; the lower anterior one usually, sometimes more fertile.

Fronds simple pinnate, or bi-tri-pinnate, rigid, coriaceous, the margins usually mucronate-serrate—Rhizome short, thick, erect. (Moore).

1. *Polystichum auriculatum*. (Swartz) ; Caudex stout, thick, erect or oblique, more or less copiously scaly, stipites brown or stramineous, 4 inches to a span long, more or less paleaceous, as is the rachis, fronds a foot to 2 feet long oblong—or broad-lanceolate, pinnated sub-membranaceous or coriaceous, pinnae horizontal, varying much in size and form 1-3 inches in length, sessile or nearly so, in the normal state from a broad cuneate base; truncated and sharply auricled above; excised beneath, falcato-lanceolate, acuminate, sub-entire or serrated especially on the upper margin and towards the apex unarmed, or varying extremely in length and breadth, and becoming more or less pinnatifid with the segments or lobes or teeth variously spinulose, often deeply pinnatifid, and even again pinnate at their base, sori in two rows nearer the margin than the costa, involucre membranaceous, very fugacious (only to be detected in very young fronds)—*Hooker. Sp. Fil.* iv. 11 ;—*Sw. Syn. Flip.* 44 \ *Polypodium Linn. Sp. PL* p. 1548 ;—

(The normal form which is the only one found in Southern India has simply pinnated fronds, in some of the forms found in Northern India, the fronds are bi-pinnate).

Very common on the higher ranges of the Nilgiri and other lofty mountains on the Western side of the Presidency.

PLATE No. CXX.

2. *Polystichum aculeatum* (Sw.); Caudex short, erect, stipites tufted and rachises more or less clothed with ferruginous scales of two forms, one slender and resembling hairs on the stipes especially, mixed with large ovate or lanceolate ones, sometimes two

fronds 1-3 feet long, oblong-lanceolate-acuminate, aometima. proliferous, bl Wy tri-pim
 imate from a ta • lish sub-petiolate, bas. lo»g-or linear-lanceolate, wb-felcate, pinnules dose, saWhot, ft*
 sub-petioate or dwnnent at the very b»» with the adjacent on, a, spinose iy or seto.sely satiate* or lobrtt., the ttpri
 uricled, sori generally in 2 rows on each pinnule, and usually nearer the costa than the margin, costa and costules more or less villoo-
 palaceous beneath—*Hook. Sp. Fl. iv. 18*—*Polypodium, Linn*;—*Aspidium aculeatum, Sie.*; *Aspidium rufo-barbatum, Wall. Cat. p. 369*
and 370;—*Asp. squarrosum, Don. Prod. Nep. p. 1*;—*Aspidium setosum, Wall. Cat. n. 371*;—*Polystichum Wallichianum Presl*; *Aspi-*
disra bradiypteiun, A.K. en Linn<ra xriv. p. 2SS;—*Asp. eub-iiterme, AV. J. c p. 200.* ! *Polystichum taeticoptera* m et
Kze. L. c.

Very common about Ootaeamirad and the higher elevations of the Pnlneys and Anamallaya—a very variable species, and tl
 an numerous forms wliicli have received different names, but they all run one into another. *Poiijstkhun rnfu-barbatum* (Wall
 very beautiful form, common about Ootataimmi 1: it is densel j clothed with reddish h dw.—Kfite ex., i. is the *Polystichum angulare* (Willd.
 Sp. \\\ v. n. 237) considerefl a distinct spesdes by most botanists, but united with *P. aeukatum* by Sir W. Hooker—it is a very com-
 mon Eona at Ootacamnd—fronds much ino: membr oaeetHu, pmnniea smalt, orbicular, rhomboid, mostly auriculae, tin awrtturea seti-
 ferous rather than spinulose.

VLATE No. CXXI. *Petytkhun aatitatwn* (S^w.)

PLA-TY. No. CXXII. *PolytHehttn angulare* (WiUd.)

TEIBE i. (§ It) ASPLENIE^I.

(n¹). Indusium simple diati.

* Ve-us parallel transversely combined by a marginal vein.

TaucroPTEBia Prt#l Tent Pier id. 10>.

(*Neottoptem ifris, 7. A«m*,—*Aaplenii* gp. Auct).

Sori indusiate. linear-elongate, parallel oblique, the *reetptaeU** lateral, anterior, fcjrffmww narrow-linear, metftbninnaceous, plane.
 Veins simple or forked horn a central costa; *vmula a* [proximate, parallel united at their apicM by a continuous slightly arcuate >S*ⁿ
 i tal vein.

Fronds sits pic, coriaceous often robust. Rhizome short, tbielc, erect. (Moore).

], ! *ri* Phyllitidii* (Do«.) fronds tufted about 1 \ foot long 2 "> inches broad, lancftn late sub-coriaceous, tapering at the
 base, sessile or dect. e back below sub-acute, ve tM appraximai ^{^v}
Prod. Nep. p. 7—*Hooker, Sp. Fl.* . iil 80;—*Neottopteri3 stipitata, J. &M.*,—*Neottoptem Phyllitiiiis. J* • *110QLJ.*
 iii. -400.—*Aspleuitun simplex. Blwnt. Kit. p. L7 t.*

Moist woods on the Anw allaya 3,000 to 4,000 feet elevation, very abundant—(only differs from *T Nidut* in he ng much
 smaller).

PLATE No. OXXtll.

ASPLENIE.E (continued).

* * *Veins free.*

ACTINIOPTERIS *Link. Fil. Sp. 73, 79.*

(*Belvisise* sp. *Mirbel*;—*Asplenii* sp. *Auct.* ;—*Blechni* sp. *Fred* ; — *Acrostichi* sp. *AucL* *Pteridis* sp. *A act.* *Acropteridis* sp. *Fee*).

Sori indusiate, linear, elongate ; the *receptacles* marginal in the contracted rachiform segments,, lateral on the veins (which are few and longitudinal). *Indusium* plane, membranaceous, opening on the inner side. *Veins* few simple, nearly parallel from an indistinct costa ; the basal and external ones sub-marginal, soriferous.

Fronds flabellately-partite, the segments rachiform, hardly foliaceous with few veins and marginal sori. Rhizome sub-globose. A curious little palm-like fern, the sori though marginal and apparently pteroid, are really parallel with and lateral on the veins, it must therefore be placed amongst Aspleniaceae. (Moore).

1. *Aeliniopteris radiata* (Link) *Link. Fil. Sp. Hort. Berol. p. 80*—*Flooker* *Sp. Fil. iii. 276.* *Asplenium radiatum*, *Konij* ; *Acrostichum australe* *Vahl Symbol i. p. 84. t 26*;—*Acropteris radiata* *Fée Gen. Fil. p. 76* ;—*Pteris Metlen. Fil Hort. Lips. p. 53*—*Blechnum flabellatum* : *Presl. Tent Pterid.p. 103.*

Found all over the presidency in dry rocky places from the sea level up to 3,500 or 4,000 feet.

PLATE No. CXXIV.

ASPLENIUM *Linnæus Gen. Pl. 783.*

(*Phyllitis*, *Alamch* ; *Onopteris*, *Necker*; *Cenopteris*, *Bergius*; *Darsea*, *Jussieu*; *Acropteris* *Link*; *Amesium* *Neioman* ; *Homalonneur*, *Klotzsch* ; *Tarachia*, *Presl*; *Brachysorus*, *Presl*; *Hypochlamys* *Fée* ; *Darseastrum* *Fée* ;—*Allantodites* sp. *R. Brown* ; *Athyrii* sp. *Auct* ; *Polypodii*, sp. *Anet.*; *Aspidii* sp. *AucL* ; *Scolopendrii* sp. *Roth.* ; *Diplazii* sp. *Auct.* ; *Acrostichii* sp. *Linn* *Blechni* sp. *Auct.*)

Sori indusiate, linear short, or elongate oblique ; the *receptacles* lateral on the anterior side of the veins. *Indusium* linear membranaceous, plane, or fornicate. *Veins* simple or forked from a central costa (sometimes single and costaeform in the ultimate narrowly cut segments) or forked from the base of the segments, the costa being evanescent or wanting, *venules parallel*, direct free.

Fronds coriaceous, herbaceous or membranaceous ; rarely rachiform, simple lobed pinnate or variously decomposed ; the rachis or veins not rarely proliferous. *Sori* usually on the anterior side of the venules, but often inverse in the basal auricles, sometimes diplazoid. Rhizome short, erect, or decumbent, sometimes stoloniferous. (Moore).

1. *Asplevium ensiforme*. (Wallich). Caudex short, thick, scarcely repent bearing dark-brown subulate scales at its summit, and at the base of the stipes—fronds cespitose a span to 1 and 1½ foot long, ½ to 1 inch broad, linear lanceolate, elongate firm, coriaceous-carnose, brownish green entire, gradually acuminate, and gradually and finely attenuated at the base into a petiole 2 or more inches long, veins sunken, erecto-patent usually once forked, sori linear, broad in age, neither extending to the costa nor to the margin, about half an inch long. *Hook. Sp. Fil. iv. 8d*—*Wall Cat. n. 200.*

Anamallays—banks of the Toracadoo river, 4,500 feet elevation—rare.—Slioks on the Kudràmukh (5,500 feet) near Mangalore.

PLATE No. CXXV.

2. *Asplenium Wigkianum*. (Wallich.) Caudex small, sub-repent rooting scaly above, stipites tufted a span or more high, fronds a foot and a half to two feet long, ovato-lanceolate coriaceous, pinnæ distant, petiolate, erecto-patent 4-6 inches and more long, elongato-lanceolate, silbgiassy rather coarsely, but not deeply serrated, (or occasionally in some sterile fronds deeply and irregularly pinnatifid with the segments serrated) rather longly acuminate and entire at the apex, attenuated at the base and gradually decurrent into the petiole, veins simple, rarely forked approximate, sori erecto-patent linear extending from the costa but not to the margin, indusium firm, white, and the same white color and texture extends to the vein, or as much of it as is occupied by the indusium, rachis compressed, scarcely winged. *Hook. Sp. Fil. iii. 105.*—*Wall Cat n. 2215*—A coriaceous. *Bory in Bel. Crypt p. 46.* *A. longipes.* *Fée.*—A Walkene. *Hook Sp. Fil. iii, 108.*

Anamallays—Bolamputty valley in the Coimbatore hills.—Pulney mountains—on rocks and trees in moist forests on the banks of rivers 2,000 to 4,000 feet elevation,

PLATE No. CXXVI.

3. *Pteris* *mi...* (R. II. B.) pinnule much smaller with an unequal euneate base—scarcely acuminate the apex—sententia obtuse, superiorly rounded, superiorly serrate generally deeper than the others and bifid.

Anamallays.

PLATE IV: 10. exxvii.

4. *Asplenium pervicacifolium*. (L. Smith). Stipes and rachis vivid, slightly woody, fronds 2 feet and more long, sub-erect, patent 4-6 inches long, petiolate narrow-oblong lanceolate, finely acuminate, sometimes sub-falcate, more or less serrated at the apex, deeply inciso-serrate, the base obliquely cuneate, superior rounded or sub-truncate, inferior sub-excised, veins dark obscure, usual, soci linear, remote rather short, patent often irregular not reaching to the costae. * the margin, involucre linear, firm, sub-coriaceous. —Hook. Sp. Fil. iii. 108.—Aspl. Zenkerianum. Kiz. in Linnæus. xxiv. p. 259.

Nilgiris—Sholas Dodabett and behind the Avalanche bungalow

PLATE X0. CX.W : II.

5. *Asplenium varians* (L.) Caudex small, erect, densely rooting, frond petioles tufted slender, 1-3 inches long, bifid, paleaceous above, fronds 2-4 inches long, lanceolate bi-pinnate, primary pinnule 5 an inch long on short petioles, dentate, then the pinnule are variously forked, sori few, 2-3 on each pinnule at length confluent, involucre pale brown, membranaceous, entire sub-athly. —Aspidium varians. Wallich. Ucri-fhook; Asplea p] abeium. R. Br.—Aspl.

Nilgiris—Common about Ootacamund.

PLATE X0. CXXX

6. *Asplenium tenuifolium*. (Don.) Caudex horizontal stout, when old, scarcely paleaceous, stipes tufted 3-4 inches to a span long, castaneous at the base, fronds oblong lanceolate, ultimate pinnules obovate—or linear-cuneate, tapering into the petiole, bifid, sori numerous, on the disc of the pinnules, oblong, generally on a forked nerve, and the membranaceous wings open towards each other—Hook. Sp. Fil. iii. 192. —Don. Prodr. Fl. Nep. Wallich.

Nilgiris—Common in Sholas on the banks of the Ootacamund. —Annam, Nilgiris.

PLATE X0. CXXX

7. *Asplenium* Caudex long, young fronds clothed with small black sub-erect scales, fronds sparse but approximate, stipes 4 inches to a span long, scaly at base, and as well as the slender rachis purple-brownish gloaty, fronds oblong or linear, lanceolate 6-14 inches long, and acuminate, membranaceous dark-green sub-transparent pinnate, pinnule very numerous, approximated, oblong-lanceolate, superiorly truncate parallel with the rachis not auricled, superiorly deeply inciso-serrate, segments bi-dentate monosorus, veins forked, sori solitary (rarely 2) on the marginal serratures or segments, small oval-oblong, involucre brown, membranaceous entire. Hook. Sp. Fil. iii. 111. —Asplenium. Wallich. 8. *Asplenium chellwonim*, Sie, ta Mut in Asplea. p. 185 t. 5. f.

Trivancore Hills—Mecra—Nilgiris (Avalanche and Teddiwattaa).

PLATE So. CXXXL

8. *Asplenium resectum* (Sm.); Caudex long, creeping, branched about as thick as a goose quill, stipites scattered distant generally (as well as the slender rachis) ebeneous-purple and very glossy, sometimes herbaceous and opaque, 5 inches to a span long, fronds membranaceous, dark-green 4-5 inches to a foot and a half long, from deltoid-ovate to narrow-oblong acuminate, pinnate, pinnae varying much in number, size and shape (terminal ones very small or more or less confluent) sub-rhomboid-ovate or lanceolate often falcate, especially towards the apex, acute or even acuminate, generally approximate from $\frac{1}{2}$ an inch to 3 inches long, more or less inciso-serrate, superior base truncated and parallel with the rachis not auricled, inferior base, and sometimes the whole inferior half-excised, cut off as it were in a straight line or deeply lunate form, so that the costa is in part, or nearly wholly close to the inferior margin, veins forked at the superior base two or three times, sori (rarely sub-diplazioid) rather numerous, small oblong in the superior half, in the inferior few and those towards the apex, or none; indusium membranaceous. *Hook. Sp. Fil. III* 130.—*Asplenium erosodentatum*, *Bl. En. Fil. Jav. p.* 183.—*A. decurrens*, *Wall.*;—*Asp. tinilaterale* *Lam. Encycl. II* 305;—*A. cristatum*, *Wall. Cat.*—*A. serrasforme*, *Metten. Asplen. p.* 119. *t. 4-fy.* 13;—*A. emarginato-dentatum*, *Zenkes M. S. Kunze in Linnoea XXIV. p.* 263; *A. amoenum*, *Presl.*; *A. fraternum* *Presl.*;—*A. abscissum*, *Bl. En. Fil. Jav. p.* 182—*A. porphyrocanlon et erythrocanlon* *Bl. I. c. p.* 182 and 3.—*A. lastum*. *Wall. Cat. n.* 209 (*not Siv.*);—*A. excissum*. *P?rsl.*

Nilgiris, Anamallays, Pulnies &c, very common at an elevation of 3,000 to 5,000 feet.

PLATE No. CXXXIIL

9. *A. mulijugum*. (Wnlich.) Caudex erect, stout, with densely fibrous roots, stipites very numerous, coespitose 4-6 inches long ebeneous, black glossy as well as the rachis, fronds erect or flexuose, or sub-decumbent, 8 inches to a foot long, elongated linear-oblong, moderately acuminate, sometimes proliferous at the apex, rather firm-membranaceous in texture, dark opaque green, pinnated, pinnae* 12-30 and more pairs horizontally approximate, gradually smaller at the apex, 4-8 lines long, falcato-oblong, obtuse, obliquely cuneate at the apex, 4-6-8 inches long, falcato-oblong, obtuse obliquely cuneate at the base sessile, superior base truncate prolonged into a sharp auricle parallel with and contiguous to the rachis, inferior base cut with a horizontal line which extends nearly the length of the inferior margin of the pinnae, the rest superior, and the apex crenato-dentate, costa slender, reniform parallel with and very near the lower margin, veins distant, superior ones oblique, simple or forked, inferior ones few and almost parallel with the costa and margin, sori oblong, rather large, those above the costa 2-5 rarely more oblique, inferior ones 1-3, involucre broad. *Hook. Sp. Fil. III.* 140—*Walluh. Cat. n.* 207; *Aspl. normale*, *Don. Prod. fl. Nep. p.* 7;—*Asp. : multicaule*, *Wall. Cat. n.* 208; ***Aspl. opacuin***, *Kunze in Linnoea. XXIV. p.* 261.

Nilgiris—Anamallays. Common on the higher elevations.

PLATE No. CXXXIIL

10. *Asplenium trapezifonne* ? (Roxb.) Rhizome erect, rachis flattened above, fronds 14 inches to nearly 2 feet long, 3 to 3½ inches broad, membranaceous glabrous, lanceolate, pinnated, the lower pinnae the largest, and gradually smaller upwards, pinnae 16-20 pair, shortly petiolate, the lower ones from 1½ to nearly 2 inches long, 6 lines broad, trapezoid-lanceolate, acuminate, crenated with the crenatures obtusely or acutely bifid, superior base generally more or less auricled, inferior exciso-cuneate, costa flexuose, all the veins forked, except 1 or 2 near the apex, which are simple; sori 5-7 on each side of the costa, involucre membranaceous—*Iloxb. Crypt. p.* 497 *i*

Nilgiris and Anamallays—Common.

PLATE No. CXXXIV.

11. *Asplenium Brasiliense* (Raddi.) Rhizome erect, stipes glabrous, grooved and winged above, convex beneath, fronds 10 inches to 1½ foot long, about an inch and a half broad, elliptic linear-lanceolate, rigidly membranaceous, glabrous, dark-green, pinnated with the upper and lower pinnae gradually smaller, pinnae numerous very shortly petiolate, | to § of an inch long, 3-4 lines broad, trapezoid-lanceolate obtuse, crenated with the crenatures obtuse, entire or obtusely bifid, superior base auricled, inferior base exciso-cuneate, costa of the pinnae flexuose, superior basal veins forked, the upper ones simple, inferior veins all entire, or the basal one only forked, sori 2-4 on each side of the costa, but none on the auricle, involucre membranaceous thin, at length reflexed—*Raddi. Fil. Bras. f>.* 36, *t.* 51, *l.* 1. *Aspl. lunulatum*, *Swartz.*—*A. lunulatum* var. *sphenolobium*, *Kze. in Linnoea. xxiv. p.* 264.—*A. pulchrum*. *Wall. Cat. n.* 2211.—*A. brachyotus*. *Kunze in Linnoea xxiv. 261.*

Nilgiris—Common about Optacamund.

PLATE No. CXXXV.

(Willd.) Caudex short, stout, densely **radiceo** **stipite** **avajriH** **mori** **na**, **caespitosa** scarcely an inch long
 and as well as **racis** **caetms**, with a narrow **win** on P-LH **aiac**, **iroitiH** a **s** **r** **md** **mw** **long**, **elongato-lanceol**, **tc** **M** **mi** **late** **rigid**
 flub-coriacio-memb **anaceou** **3** **blackis** **i**-green, pinnated, **pinm** **i** **m** **iticii** **long**, **m** **imerous** approximate h., **r** **spital**, **semi-ovate** **sub-accula**
 rather obtu **superiot** **base** dilated, **I** **irunc** **to** and parallel with **l** **file** **mc** **jiis** **fi** **Car** **K** **auriclet**, **inferior** **base** **cut** off horizon tally, the **r** **st** of
 the **nwif** **ia** deeply and **pian** **rtifuily** **ii** **icised**, lobes **oblon** **tr**. obtuse **base** **bifid**, **inferior** **pinu** **c** distant, **MB** **aller** **sub-triangala**,
 vans simple or forked, **sori** broad, **w** **li** **iuu** 2-3 **nn** the lower aid, **of** **tlle** **R** **At** **ts** **n** **o**
 143 ; II **i** & **f** **Sp.** **K** **c** ; **329** ; — **J** **sp.** **subalatum** **Uaa** **Ly** **rt**, **Arn.** **Bot.** **Beech**, **io** or rarely one on the **oppw** **it** **Jo**, **Hook.** **Sp.** **Fl.** **iii**
 221G. **Pi***, **p.** **312** **t** **<** **.** **!** **;** **o** **dentophyllum.** **Wall.** **Cat** **a**

Nilgiri — wry abundimt ill Uloibt WCHHI^ T> H.L. i.; r.
 • v^sr* iTvuua j^ tut WVJXm r elevation*.

i i.ATI. So. CXXXVI.

ASPLENIUM (*continued.*)

13. *Asplenium auritum*. (Swartz). Caudex short, ascending, crowned with paleaceous ovate acuminate scales, stipites cespitose 4-6 inches long, slightly winged above, lurid greenish-brown, fronds oblong or broad ovato-lanceolate, acuminate pale green, coriaceous truncated not contracted at the base, pinnate pinnatifid at the acuminate apex, pinnae often numerous, horizontal sub-petiolate 2-3 inches long, straight lanceolate or linear-lanceolate, acute or acuminate, or oblong and obtuse, the margin entire or variously toothed or serrate pinnatifid, superior base generally auricled, auricle often free or truncate with a sub-triangular auricle, sometimes the pinnae are deeply pinnatifid in a regular manner, or the pinnae are in part or wholly again pinnated with the pinnules various in shape, entire or serrated, veins oblique, once or twice forked, sori oblong, generally copious, arranged in 2 series between the costa and margin, often confluent, indusium rigid-membranaceous of the same color as the frond, rachis compressed green, more or less sulcate and winged. *Book. Sp. Fil.* iii. 178 ;—*Swartz. Fl. In. Occ. p.* 1616 ;—*Asplenium sulcatum. Moore.*

Nilgiris, Coonoor on rocks rare—Anamallays rocks in the bed of the Toracaddoo river 4,500 feet elevation.

PLATE tfo. CXXXVII

14. *Asplenium prolongation*. (Hooker). Caudex small woody inclined, rooting scarcely scaly, stipites 2-4 inches long, tufted stramineous sub-compressed, fronds 4-5 inches to a foot long at the utmost, coriaceous or sub-chartaceous, oblong or narrow linear-oblong falcate, suddenly terminated in a caudate, naked extension of the rachis 1-2 inches long, rooting at the very apex, bi-scarcely tri-pinnate, primary pinnae 1-1½ inch long, horizontally patent, generally approximate, or crowded, semi-ovate obtuse, petiolate semi-pinnate (pinnules more numerous on the superior than the inferior side) pinnules 3-4 lines long, mostly simple, entire rarely forked, still more rarely, and only in the lowest superior pinnule bi or tri-partite, pinnules and segments narrow linear often curved, obtuse monosorous, veins single, sori oblong or linear, very narrow, marginal, involucre firm-membranaceous of the same pale green color as the frond.—*Hodgk. Sp. Fil.* iii. 209—*Hook. 2nd. Cent. of Ferns—42.*

Shevagherry Hills—rare.

PLATE No. CXXXVIII

15. *Asplenium planicaule*. (Wallich). Caudex small, thick, erect, densely rooting, crowned with black subulate scales, stipites 3-5 inches long, tufted, and as well as the rachis compressed sparsely and deciduously villosopaleaceous, fronds a span rarely to a foot long, sub-coriaceous, firm oblong acuminate (apex pinnatifid) petiolate, sub-horizontal dimidiato-ovate, acuminate venoso-striate from 1 to (rarely) ½ inch long, superior base obliquely truncate, sub-auriculate, inferior base excised for half or more of the length from the base, the rest of the margin irregularly and often deeply inciso-pinnatifid, segments narrow, sometimes pungent, veins erecto-patent, conspicuous approximate, once or more forked, sori linear-elongated, those towards the apex of the pinnae and those below the costa parallel with the costa, those in the auricle more patent, involucre pale-brown, firm. *Hook. Sp. Fil.* iii. 163 ;—*Wall. Cat. n.* 189. *Asplenium falcatum* var. *c. abbreviatum, Kze. in Linnaea.* xxiv. p. 260 ;—*A semihastatum. Wall. M. S. (not Kze.) ;—Tarochia truncata. Br.*

Very common in most mountainous tracts on the western side of the presidency.—Myhendra hill near Berhampore.

PLATE No. CXXXIX.

16. *Asplenium contiguum*. (Klfs.) Fronds pinnate, pinnae linear-lanceolate attenuate, inciso-serrate, serratures toothed, the superior base rotundato-cuneate sub-auriculate, inferior abscisso-attenuate, sori contiguous, parallel with the costa, caudex repent, stipites 6 inches long, frond equally long, pinnae an inch and a half to 3 inches.—*Hook. Sp. Fil.* iii. 166 ;—*Kaulf. En. Fil. p.* 175.

Anamallay Hills, 3,000 feet elevation ; Nilgiris 7,000 feet—Wynad.

PLATE No. CXL. (Fig. A is one of the pinnae of a more cut variety, common in the Wynad.)

17. *Asplenium falcatum*. (Lam.) Caudex repent, stout, more or less clothed with dark-brown sphagnoid scales, stipites 6-10 inches long, lurid-brown, and as well as the rachis deciduously villosopaleaceous, fronds 8-10 inches to 2 feet long, sub-coriaceous ovato-lanceolate, pinnate pinnae, horizontal rather long-petiolate 4-6 inches and more long from a broad obliquely cuneate base 1-3 of an inch broad, lanceolate; much and often finely caudato-acuminate, lobato-pinnatifid, the segments pointing upwards, the superior

base the broadest, sub-auricled generally acute, and as well as other of the inferior lobes serrated, inferior base excised, towards the apex the lobes are reduced to rather large remote serratures, superior branches, sori long-linear, numerous divaricate from near the base in £ ^^^^ZZ^Z^^^T T« S narrow, firm-membranaceous. Forst. Prod. p. 80;—Aspl. Freyc. Voy. xi. (p. 317. ^/"J. /-f. ;. 75 ;—Asp. euhratina. G<nd in

Anamallay (The scales of the ccsdei are hair-like, and the plant here figured is perils rather a variety of A : longissimm, Blume-if j I have not found the true falcatum.)

PLATE No. C m .

18. *Asplenium macrophyllum*. (Swartz.) Caudex repent, stout, palaceous with subulate sphagnoid, dark-br scales stipites 4-5 inches to a foot long, broad-lanceolate, gradually tapering into a narrow or less elongated 3.5-6 inches long, undivided lobes, esp. the superior ones, from 1 to 3 inches broad in the broadest part, superior base rounded, inferior excised in the middle, terminal much larger than the rest, or trifid, veins numerous, crowded, parallel-radiate, several times forked, J very bug i ^ ^ the veins 2-3 inches long, involucre very narrow, ^ * . ? * * » * i i ; i s s ; - s - * . ^ - ^ Journ. 1800 a Kaulf. in Sib. Syn. n. 68;—A. K>ulfU3sii. Pr. T., t. Pttridp. IOC. -A, canaliculatum. SI Bn. FU TJ p. 180;—A. coriacum. Roa. Crypt. Fil. p. 437;—A. I. alaysonia oud, * i | t dte p. 101 j - A . xnegnlophvlhm. Den, in ^ Soc. Linn. vi. 275;—A. platyphyllum. J.

Far. fi *MpSy8te<-^pijmM broad-lanceolate long caudate; A. amplylhim. Wall. Cat. n. JO35 Anamallay forests on rocks and trees 2,000 to 4,000 feet elevation.—M TaTOI *M"oi. Wall

PLATE No. CXLII

19. *Asplenium caudatum*. (Forst.) Caudex nearly as thick as a swan's quilt, terete laotkei especially towards the apex, with broad-subulate brown sphagnoid imbricated falcate scales, stipites (rich and the whole frond when young) villosulo-squamose, aub-aggregate a span or more long, dull-lurid-brown, fronds 1-1 1/2 foot long, coriaceous-chartaceous, pinnated acuminate, the apex pinnatifid, pinna numerous rather remote, 2-3-4 inches long, petiolate, or leaf elongated and obliquely cuneate sub-rhomboid base, lanceolate, gradually and very long acuminate, base rounded, sub-aoned, scarcely truncate, the inferior more or less excised, the margins serrate, superior serratures entire sharp, the rest bifid or inciso-serrate, veins erecto-patent mostly forked, sori linear parallel with and near the costa, often imbricating in age, frequently confluent, involucre firm-membranaceous, elongated almost 1 tt.—Fortt. Prod, p, 80-f-Jks & SBXWmt BL En. Fit. Jav.p.Ui ; Aspl truncatUobujn, Ft. —A: cyathu, ^ j . ^ II ^ Sp. Fil. iii. Attrolab. Bol p. 19 ;—Diplaaima cyatheaeformium. Pr. Jritn. J?U (p. S3 ;—A multisectum. S^ #a, J!% ; (p. 1g5

Cochin—(I have not myself met with this species, and the drawing is taken from a specimen kindly sent me from Ceylon by Mr. Thwaites.)

PLATE No. CXLIII

NOTE.—The above species belong to the (amply pinnate) furcatum group, viz. j>lanicaule--conHguin--falcatum--macrophyllum, and caudatum are very closely allied, and botanists do not agree as to the limits of the species.

20. *Asplenium furcatum*. (Thunb.) Caudex oblique, scarcely repent, stout, clothed above with eon silky hair-like ciliated scales, stipites copious, tufted 1/2 inches to a span long, more or less clothed as in ciliated hair-like scales or glabrous, frond a span to a foot and more long, ovato-lanceolate, acuminate, tri-pinnate dark-green and glabrous above, pale and often villous beneath, pinna and pinnules more or less late, secondary ones more or less decurrent generally narrow, cuneate or sub-spathulate or rhomboid, truncate at the apex bi-trifid or bi-tripartite, the apices dentate, or variously and often very irregularly incised or more forked erect (giving a striated appearance to the leaf) with the central vein (there is no (Satinet • costa)

chiefly on the lower half of the pinnule, involucre x. A[^]aceous very narrow. *Hook. Sp. Fil.* iii 165 ;—*Thunb. Prodr. Fl. Cap.* p. 172 ; *Asp. fragrans. Schk. Fil.* p. 199 t. 130 b. (not Swartz);—*falsum R[^]tz. obs.* vi. p. 83 ;—*A. adiantoides, Lam.* (nonalior); *A. prsemorsum Siv. FL In. Occ.* iii 1620 ;—*A. Camriense, Willd. Sp. FL* v. p. 339 ;—*A. geminaria. Bory*;—*A. strictum. Bory*;—*A. Mascariense. Desv.*;—*Asp. nigricans. Kze.* \—*A. tripartitum. BL* ;—*A. falcatum var. abbreviatum. Blume* ;—*A. cuneatum. Hook, et. Grev. t.* 189 (not Lam.);—*A. laceratum. Desv. Mem. Linn. Soc.* vi. 278 ;—*A. hirsutum. Heyne in Wall. Cat.n.* 212 ;—*A. Mysureuse. RotK. in Wall. Cat. n.* 213 ;—*A. cicutarium. Roxb. Crypt PL p.* 38 ;—*Tarachia Browniana. Presl. Epimel. Bot. p.* 260.

Very abundant about Ootacamund in the Nilgiris and on the higher ranges of other lofty mountains on the western side of the presidency.

A very variable species as to the shape of the pinnules and the amount of pubescence.

PLATE No. CXLIV.

A—is one of the pinnae of a much cut and hairy variety, very common at Ootacamund (*A. prsemorsum var. ? furcatum. Moore.*)

B—pinnules of a broader-leaved hairy variety.

21. *Asplenium laciniatum.* (Don.) Caudex thick, short, ascending, densely clothed with blackish falcate imbricated subulate rigid scales, stipites caespitose 4-6 inches, brown, and as well as the stramineous rachis partially and deciduously scaly compressed, fronds erect a span to a foot long, oblong-acuminate, subcoriaceous tawny, brown when dry, very opaque, pinnate, the apex narrow, pinnatifid, pinnae distinctly petiolate 20-50 horizontal, | an inch to 1 inch long, semioval or semioval—lanceolate, subfalcate auricled at the superior base, excised at the inferior, far more than half the length of the pinnae lobed and inciso-serrate, or again pinnate especially in the lower half, the rest laciniato—pinnatifid, pinnules cuneate bi-trifid, superior basal one (corresponding to the auricle in the more entire pinnae) large broad flabelliform cristato-laciniate, veins distant forked, sori oblong 3-4 radiating in the auricle (or ultimate pinnule) towards the apex arranged nearly parallel with the costa.—*Hook. Sp. Fil.* iii. 164 ;—*Don. Frodr. Nep.* p. 8 ;—*Aspl. caespitosum Wall. Cat. n.* 217 ;—*A. falcatum v. ft. laceratum—Kunze in Linnaea.* xxiv. 2160 ;—*Aspl. depauperatum—Wall. Cat. p.* 234.

Nilgiris—(Schmidt.)

I have never met with this fern, and the figure here represented is taken from Sir William Hooker's Species Filicum.

PLATE No. CXLV. (*Fig. A. variations of the pinnae.*)

22. *Asplenium exiguum.* (Beddome.) Caudex, a small erect rhizome with copious fibrous radicles and clothed above with numerous subulate black scales, stipites numerous, 3-12 lines long blackish purple more or less furnished with long black subulate scales, fronds \ inch (often copiously in seed) to 6 in. long, 2\ to 8 lines broad, rachis sulcated above, convex beneath, slightly flexuose, more or less extended at the apex into a naked tail and often bearing a young plant, pinnae numerous, subsessile from a broad base, when young more or less hairy (under the microscope) at length glabrous, membranaceous, in the smaller fronds sub-orbicular and simply crenate, in the larger ones oblong-lanceolate pinnatifid, below cuneato-excised, the superior and inferior basal auricles 3-4 dentate or crenate, the other lobes bi-dentate or entire, superior pinnae gradually smaller, uppermost ones often very minute, distinct or spatulate but fertile, (bearing 1-2 sori) inferior pinnae gradually smaller, subrotund or flabelliform (always fertile) sori of the larger pinnae arranged in a double row, 1 row of 4-5 on each side of the costa and approximate to it, superior auricle generally bearing 1 diverging sorus, rarely two, sometimes none, lower auricle generally barren, rarely bearing 1 or very rarely 2 sori—veins obscure, terminating in a thickened point with the margin.

Nilgiris rare. I have only found it on the banks of the river in the shola above the Kalhatty ivater-fall, growing on rocks. It would be difficult to give a correct idea of this variable little species from description only, the figures however are very characteristic. It is nearly allied to Asp. camptorachis. Kunze. Linn. XXIV, 262, and I should have referred it to that species, except for the character, "sorts in parte pinnae inferioris nullis," which could not apply to any of the fronds that I have gathered to this species.

PLATE No. CXLVI.

23. *Asplenium Trichomanes.* (L.) Caudex short, thick, densely fibrous, stipites 1-4 or 5 inches long, numerous tufted dark, castaneous or black ebeneous glossy marginal, fronds 4-6-12 inches long, linear-lanceolate coriaceous-membranaceous, dark dull-green paler beneath pinnated, pinnae numerous horizontal, scarcely petiolate, lower ones distant and smaller, oval orobovate or oval-oblong, obliquely cuneate at the base, superior base rounded, sometimes truncated or even auriculate, sometimes excised at the inferior base, the margin

entire (jarry) e re iiato-serrate, «orta subcentral, veins l w, distant oblique^r lobe-''' forked above the middle, sort oblique in eqtial series, involucre pale-brown, membwnwswna entire or jagged.—*Ilonk.* ^, r, *FIL* iii. 136 ;—Zt><». >>. *Fl.* p. 1540, tn •wrt ;—A *TrichotomanoMea* ; (*Ctp. J*)em. 2:57, «. 63? (nrt J/w-&.)—A. melanoekum ; *WUM Sp. PL* \ 332.—A. HarovB &odr, A. *microphyllum-Tinos (de Metten)* ;—A. saxatite, *Salitb, I'rod.* p. 403 ; A. densnri. *Brack fil U. S. JSzpl Exp.* p. 151 t. 20 y—k. *dichro um. Est. (Moon)* ;—A. beteroebrom, i «. in *Linn.* ix. 139 ;—A. ancops. *Sol. It. S. Hook ti Gre*. lc Fil t.* 195 ;—A. ewtaoeum. *Sch. in v. p.* 611. *Linn.*

KaUiutty GO tie SUGiria between 5,000 and C,000 feet elevation.

PLATE No. CXLVII.

21. *Asplaiium nitidum.* (8>.) 2-3 feet high, stipea a foot and more high, terete glabrous, oiackish-brown, frond deltoid a foot broad, bi-pioa>te vi^his, terete furrowed, purate alternate, horiamtaily j latent, pinnules distinct, petio) ate rhorabeo-ov,»t<^, aagled at the 'ase above and below, rounded at the apex, serrato-detitate above 'unato-striate beneath radiato-venoB, lowest pinnules ; unstifid at the bss^ or furnished wiJi a ctmeato-oboTfths auricle, superior onea gibbous above, aE quite glabrous, glossy above, paler i beneath, sori contiguous strai'ht and oblique near the coata not extending to the margin, involncrea whitish membrauteous, i^!0, 5y«. *Fil. pp.* 84 at</ 2^0 >''' A. insigoe. ^KWW. *Jh. /iV. Jay. p.* 188 ;—A. pulchelluui. *Wall Cat. n.* 214.

Sisparah gh.it on the Niigiris -4,000 feet elevation.

PLATE No. CXLViii.

25. *far, \$ obtvetm.* pin miles obtuse—veins more prominent.

Boiampatty Valley—Coimbatore Hill.s—Travancote Hills.

PLATE No. CXLIX.

(*Not. varitty fi. has the pinnute tfutixd more like those of A. spathulinum (J. Sm.) a Ceylon *peeut, the ••ori of spathulinum, tow & and extend to the margin. The folk- sing 5 species—Aspl. nitidum. Sur. Aspl. cuneatwn. Lam.; Atpt. ajine. Sw. Aspl. spathulinum»i.J.Sm.; and Aspt. laurpitifolium. Lam. are all very cloudy allied, and it U notary point totickle to which specks <tn\$ fern of the e huatm group should be referral*).

AXHYRIUM *Beth. Tent Fl. Gent.,* iii. 58, *redact.*

(*Solenopteris, Zeriker; Asplenü sp. Atut; Aspidiisp. Anct.; Diplozii ap. Attet.; Polypodlisp. Awet.; fTephrorii up. An ••/•• Dares*) sp. Anct.; *Tectarii* sp. Cus. • milln; *Lftstrea* sp. *J. Smith. Allantodisc* sp. Auct;—*Cystopteridis* sp. Aoct.)

Sori indusiate, ahjji t-oblong-] mate, or anequftHy or Bometimes equally hippocrepiform ; the recs []tales on the ante!ior or sometimes .iiso crossing and return ing along the jjoak'ric- side of the ve las. *Indisium* of the same form, i-ten laeerly-fitabriate. I'ant simple i or forked from & central <••ta ; *ori tuia* free, some&nts !innate.

Fronds herbaceous, [ji-tri-pinnate. Son more or less general!}', the basal ttallyis rarelj newly all arcuate. fUiajme short, erect or creepbg—although aome or a greater portioaof the *ori are similar to those of *Asplenium*, the occurrence of hippocrepiform sori, more cr less aomerous, sufficiently distinguishes tliis genus. {*Moore*}.

1. *Athyrium Ilohettadxriamim.* {A'afj Rhizome short, horia)nUlcsepik: se, dens!y (Viru^neo psleaceous, partial rachises, margined ^labrous, uinary sl[ortor Bhortish, and the's^pes aoglid loosely gquatuoso-pftk accous, rhizome sh. rt, fwniKmtal c«spito9«> < lei isely fervugi «iw» II-orp • J •aclaume mbrii;cl;broua, opaque olivaceous, paler beneath, lanceolate [ong-acamin**** slightly flexuose, pianaio-pinaftifid or sab-bi-pinnate, pitmse d«anent into a short petiole, divergent-patent tther remote, obliquely ob- lo:ig, aurioled al. ore, attenuate at the apex raorfj OT] w s obtuse, low or ones divaricsted, abbreviated, superior ones confluent, pinnules or seg- ments ovato-elliptic, sub-falc ••, rotundate or truncate, deecurrently cuneate At tike bi • more or legs con^iuent, involucrea bullate, pale brown.—*Hi sol. Sp. Fil.* iii. 220 ; _A1kutoJi: i l.henaefceriana. *KM, in Sebi. Fil Sv.* p. 11—p. 63—t. 26 ;—*Asplen lam, Mitto. Aspl.* p. 192.

KFilgiris, Anamalbys and WYNad, not uncommon—I angles about Palghat,—Coorg and South Canara, very abundant fran the tiSains up to 4,000 feet.

PLATE No. iUL

ATHYKIUM (*continued.*)

2. *Athyrium falcatum* (R. H. B.) rhizome short caespitose densely covered with golden scales—stipes short more or less covered with linear golden scales, fronds 6 to 12-14 inch long with the rachis above dilated or winged, pinnate, linear-lanceolate acuminate pinnae numerous sessile alternate, smaller towards the base of the frond, and confluent or pinnatifid at the apex, 8-12 lines long, falcato-ovate deflexed, obtuse or acuminate, generally furnished with a large obtuse auricle at both the superior and inferior base, above pinnatifid about J down to the costa, segments obtuse crenate, sori numerous in a line on each side of the costa, and on each side of the vein of the auricles, at length confluent and nearly covering the under surface of the pinnae.

Anamallays, elevation 5,000 feet, dry grassy places.—The Myhendra hill near Berhampore—4,500 feet—Mahableswhar hills.

PLATE No. CLI.

3. *Athyrium macrocarpum*. (Blume) fronds sub-coriaceous glabrous pinnate with the pinnules pinnatifid or pinnate (*i. e.* bi-pinnate) pinnae petiolate, pinnules sessile trapezoido-oblong obtuse, obtusely crenate at the apex, superior ones confluent, superior basal one larger, repando-crenulate at its upper base sub-rotundo-auriculate, sori very large, involucre more or less lacerato-fimbriate, asplenioid, lunate or hippocrepiform, rachises sub-marginate, glabrous or slightly furfuraceous stipes paleaceous below—*Blume in Herb Hooker* :—*Aspidium Blume En. FLL Jaw p. 162* ; *Athyrium foliolosum Moore Ind. Fit. p. 143 (vix WallichJ* ;—*Lastrea macrocarpa, Moore Ind. Fil. p. 95* ;—*Aspl. fallax. Metten Asplen. p. 194, t 6 l. 7-8.*

Nilgiris—Anamallays.

PLATE No. CLII.

4. *Athyrium macrocarpum var. ft.* (R. H. B.) fronds much larger and bi-pinnate, lower pinna* with their pinnules petioled with their petioles dilated so as to form a broad wing to the partial rachis, or sessile with a dilated base, sori not so large as in the normal form (at least for the size of the plant).

Nilgiris—abundant near Neddiwattam.

PLATE No. CLIII.

j. *Athyrium Filix-femina*. (Bernh.) Caudex ascending paleaceous with broad ferruginous scales, stipes tufted a span to a foot and more long, stramineous-brown fronds 1[^]-3 feet long, oblong rather suddenly acuminate, sub-membranaceous bi-rarely tri-pinnate, primary pinnae numerous patent from a moderately broad sessile base oblong-lanceolate acuminate 4-6 inches long, pinnules numerous, approximate horizontally patent sessile [^]-f inch long, oblong rather obtuse, lower ones deeply pinnatifid, the segments ovate with 2 or 3 strong and sharp serratures, superior ones more entire coarsely serrated, uppermost ones confluent into a pinnatifid or serrated acumen, sori copious, one to each segment of the pinnule near the rachis oblong, involucre very convex, straight or variously curved or hippocrepiform membranaceous more or less fringed or erose at the margin.—*Hook Sp. FIL iii. 218*—*Bernh. Schrad IV. Journ. Bot. 180G. 1 pt. 2. p. 26 t. 2 l. 7* ;—*Allantodia tenella Wall. M. S. in Herb Hook* ; *Athyrium tennifrons— Wall Cat. n. p. 206 ?*

Forests on the north bank of the Godavery—Camptee.

PLATE No. CLIV. A. A magnified portion of one of the pinnae shewing the spiculae on the rachis.

6. *Athyrium pectinatum*. (Wallich). Stipes scaly below, rachis glossy furrowed, sometimes furnished with a few deciduous allies ; ironu membranaceous very variable in size, 6 inches to 3 feet long bi-pinnate with the pinnules of the lower, pinnae pinnatifid almost to the rachis—(*i. e.* sub-tri-pinnate) pinnae distant 3 to 8 inches long, short petioled ovato-lanceolate acuminate rachis of pinnae often dilated or winged, pinnules $\frac{1}{2}$ to 1 inch long (the superior basal one generally longer and larger), sub-sessile from a dilated base more or less deeply pinnatifid (as shewn in figures A. and B) segments crenate often sharply so, the superior basal one generally larger, veins pinnate, veinlets simple or forked, sori near the costa, 2-3 on the larger basal segment and 1 on each of the other segments, involucre membranaceous straight curved or hippocrepiform—spore cases very black when ripe.

NOgiris—very abundant about Ootacaraund, banks of streams by road-sides (a dwarf form -with **incurred** ninir; ^{les}) and in all
Sholas.

PLATE No. CLV.

A very variable species, the figure represents nearly jrd's of a frond (the apex and stipe wanting). *AOiyrim atpid*^{oides} (Schleclit) is, I believe, only one of the more compound and **finely** cut varieties of this species, **there** are numerous intermediate forms—" *Athyrium rymwgrammvide* & (Kl.), specimens of which I have received from Ceylon through Mr. Thwaites (C. P. 1341) seems to differ in its much larger **pinnse**, (14 inches long) and in its more regular aspleuroid Sori—Plato No. CLVI. is a drawing from Mr. **Thwaite's** ^{spect} men, it is recorded by Sir W. Hooker as from the NilgirU, but I have never myself met with it.

8. *Athyrium nigripa*. (Metten.) frond bi-pinnate, membranaceous nearly glabrous, **pintw** ptiulstfc **oblongo-fanceolate**, acute ^{pin} miles sub-decurrent cuncato-oblong rather obtuse, lowest ones sub-petiolate more or less pinnatifid, superior **ones** inciso serrate ^{confluent} sori near the eostules raclds, glabrous very flexuose.

WJlgiri. ^—in Sholas **Neddiwattaa** and Sispamh.

PLATE Ha CLVII.

Athyrium [>] *austral**. (Brack.) fronds bi-pinnUe, **tteltatd** membranacea, pinimiea pinuatifid attenuated at the apex, oblong-obtuse, inciso-serrate involucre quite terete, (sausage like), Wer ones often double bursting **irregularly**—**B%** ^{ck. Fl. U. St.} *Expl, Sxp*, 170 Allactodia australia and tenera *Br. Prod. Fl Nov. Boll.* p. 149. A~pl. Browuii / *Smith Uoo.i: Pit. X, Zeal ii. p. 14&-"* A. aasimile *End. prod. Fl. Xorf. p. 30 A*, spectabile *W<dL Vat. n. 237. Asp!* *multicaulatum* *Wail. Cat 229*;—Allantodia sy ^{lvatica} *Bl. En. Fit, Jar. 173 j*— *Diplazium brachysormm* *Mettai--tepl* \ physusomm *Sieb Ft. MUta* », 2G8,

The inditium is like that of Allantodia, the lower ones are often double as iu Diptasium, it has hardly *n* right to a place in ^{Aspl} *Atlyritnn*, or *Biplazium*, and would be better placed next to Allantodia in a genu-i distinguished by free venation.

Kilgiis—about Ootaeamuad and Neddiwat ^{an}.

PLATE No. CLVIII.

- A. **Magnified** portion of a pinnule upper side showing the winged costa.
- B. C. Under side (showing the fructification and the cordate acuminate scalea present *on* the cosia.
- D. A magnified sorua.

(Athyrm Selenopteris (Metteu), said to be found on the Nilgiris, is quite unknown to me, it is perhaps a form of A. H< ^{ben} asterianum).

* * * Veins reticulated, the **marginal** vdulets ^{free}.

ALUXTODIA. *R Brown, Prod. Ft Nov. Soil, U9.* (redact.)

(A^plenii Sp. *Utmmiut*;—Heniidictyi Sp, *PresL*)

Soil indusiate, oblong-cylindrical j the *receptacles* sub-lateral, anterior on tne basal part of tie **mra**. *Udusium* membranace ^{ous form} ^{reticulated} ^te at first involving tite sorus at length reflesed, MM. **bnpu** **parallel** at the base and there **totihrtn**, **ing** iorked and ^{>*} donated areoles towards the margin j the **ultimate** **veplete** free clavate terminating within the margin.

Fronds **pinnate** tender herUceous Eluzomo dfl ^{cumbent} (Moore.)

late, & sUe, *i!T^JZT*^{iana}, i^^_^^^M^^dherbaceo-n^mbr^ceouM^u, Urge, **munawi** oWo ^{ig-lanceo} towards the **mti** ^{al areoles} *WTT* ^{etym: Brunonis Prod. Test. Pir. l. 3, and 25-26. Asplenium} ^{reticiOatum I} ^{W £} *Brunoian* ^{reticiOatum I} ^{W £} *S» /v" i« £?* ^{ten.} ^{wp<, j} ⁷¹ ^{~Asplen} ; ^{reticiOatum I} ^{W £} *Gtals* in Canaro, r;irt.

PLATE No. CLIX,

(b) *Industa commie* in pairs back to back.

* Veins free,

DIPLAZIUM *Sivarts Schrad. Journ.* 1800. ii. 4. 61,

(*Lotzea, Klotzsch and Karsten*;—*Asplenii* sp. *auct*; *Scolopendrii* sp.;—*Allantodese*. sp. *atut*;—*Callipteridis*, sp. *Bonj*;—*Hernionitidis* sp. *SwarU*;—*Anisogonii* sp. *Hooker*;—*Microstegia*: sp. *Pred*—*Hypochlamydis*. sp. *Fee*;—*Athyrii* sp. *auct.*)

Sori adaxial linear all or the lowermost only double, i. e. the receptacles occupy both sides of the veins. *Indusium* narrow, membranaceous, plane or fornicate; in the double sori affixed in pairs back to back on opposite sides of the same venule, one opening anteriorly, the other posteriorly; in the simple sori, as in *Asplenium*. Veins simple or forked from a central costa; venules direct free.

Fronds herbaceous or coriaceous, simple pinnate or variously compound. Rhizome short, erect, rarely sub-arborescent. (The limit between *Asplenium* and the present genus is not very definite, in consequence of some species having but few of the double sori, notwithstanding which *Diplazium* has been almost universally admitted since the time of Swartz, by whom it was founded) (Moore.)

1. *Diplazium lasiopteris*. (Kunze.) Caudex creeping with wiry roots compactly scaly at the apices of the branches; stipites a span and more long, brown scaly and hispid, fronds 8 to 12 inches long ovato-lanceolate acuminate membranaceous pinnate, pinnatifid at the apex; pinnae 2-5 inches long, 1/2 to 1 inch wide, sessile from an obliquely truncated auriculate base linear-lanceolate acuminate more or less deeply pinnatifid, segments falcate more or less serrated and generally with an incurved acumen, hairy above, glabrous below, except on the costa, veins pinnate in each segment, veinlets simple or rarely forked, nearly all soriferous, lower ones double—*Kynte. Fit, Hort. Lips, Bot, ZeU.* 1-456—*Linnaeus* xviii. 568 and xxiv. 270.—*Diplazium decusatum, Moore and Hoult Gard, Mag, Bot.* iii. 231—*Asplenium tomentosum Melt. Asp, p.* 182. *Asplenium Sclerohydrum*—*Hooker JSp. Fit.* iii. 251

(*Asplenium Thwaitesii* (C. P. 1343) a specimen of which has been forwarded me by Mr. Thwaites from Ceylon seems hardly distinct—the large bi-pinnate species (C. P. 3100J is quite distinct from this).

Nilgiri Hills—very abundant about Poomberry,—Nilgiris, near Ootacamund rare.

PLATE Xo. CLX,

2. *Diplazium sylvaticum*. (Presl.) Caudex stout erect woody sending down very stout unbranched verniculate fibres, paleaceous at the summit with rather large almost black subulate scales; stipites a span to a foot long stout scaly only at the base, fronds 1 1/2-2 feet long ovato-lanceolate sub-membranaceous, pinnate, pinnatifid at the apex, pinnae below petiolate horizontally patent from a generally truncated base elongate ovate-lanceolate acuminate sub-falcate entire or sub-sinuate or sub-pinnatifido-lobate rarely sub-auriculate at the superior base, lobes rounded entire or serrated, veins fasciculate-pinnate in the lobed pinnae, each fascicle corresponding to a lobe, sori very slender, lower ones or more double—*Hooker. Sp. Fit.* iii. 248.—*Pml Rd, Ilceni.* i, p. 42.

Nilgiris—abundant down the Sisparah ghat.

PLATE No. CLXI,

3. *Diplazium dilatatum*, (Blume.) Caudex stout woody erect, stipites stout 2 feet and more below paleaceous (with lanceolate acuminate scales, fronds glabrous very large membranaceous or coriaceous-membranaceous tri-pinnate below with the pinnae, deeply pinnatifid (hence sub-tri-pinnate) pinnate above, and pinnatifid at the apex; pinnae more or less petiolate, again pinnate or pinnatifid with the pinnae or segments from simply crenate or even entire to deeply pinnatifid, very variable in size, veins pinnate simple or forked never uniting, sori narrow linear not extending to the margin, lower ones double.—*Blume En. Pl, p.* 194, *Asplenium diversifolium Wall. Cat. n.* 203 (not *Bl.*)—*Diplazium extensum J. Sm. Hook, Journ. Bot.* iii. 408;—*Dipl.* affine *l, Sm, l. c.* 40;—*Asplenium dilatatum. Hook. Sp. Fit.* iii. 258;—*D. acuminatum. l. Sm. Cat. Cult, Ferns?* *Dipl. datum J/W.* p, 1801 *D. latifolium, Moore.*

(This and the last species are both very variable, it is doubtful if the two are really distinct.)

Nilgiri—Sisparah ghat and elsewhere.—Wynad—Anamallays—Coorg, &c.

PLATE No. CLXII,



Athyrium filix-femina
(L.) B.

DIPLAZIUM (*continued*).

4. *Diplazium polypodioides*. (Metten). Caudex erect, often a trunk, stipes and rachis more or less prickly and scaly, fronds very large, coriaceous-membranaceous, bi-pinnate with the pinnules more or less deeply pinnatifid, often nearly down to the rachis, primary pinnae (at least the lower ones) petiolate, ovato-lanceolate, acuminate 8 inches to nearly 2 feet long, pinnules sessile or sub-sessile, 3-5 inches long, $\frac{h}{l}$ to 1 inch broad, oblong broader at the base and gradually attenuate to the acuminate apex, segments oblong-parallelogram, or slightly falcate obtuse, crenated or serrated; veins simple or forked, extending to the margin, sori one to each vein, on each side of the costa touching the costa, but not extending to the margin, generally only one of the lowest ones double.—*Metten. Fit. Hort. Lips. p. 78* j. *Diplazium frondosum*, *Wallich*;—*Asplen. ambiguum*—*Hook, et Arnt. Bot. of Beech.—Voy., p. 107*;—*Diplaz. nigro-paleaceum*, *Kze. in Linnæa*, xxiv., p. 270;—*Asplen. Fieldingiana*. *Kze. in Linnæa*, xxiv. p. 268;—*Diplaz. asperum*. *Metten and Blume*.

Very abundant in most mountainous parts of the western side of the presidency. In some parts of the Anamaliays, it is quite a tree fern.

PLATE No. CLXIII

* *Veins connivently anastomosing.*

CALLIPTERIS. *Bory. Voy. i. 282*;

(*Anisogonium*, *Presl.*; *Digrammaria*. *Hook* (not *Presl.*); *Microstegia*, *Presl.*; *Asplenii*, sp., *Auct.*; *Diplazii*, sp., *Auct.*; *Oxygonii* sp., *l. Smith*).

Sori indusiate linear, all or the lowest only double, *i.e.*, the *receptacles* occupying both sides of the veins. Indusium narrow membranaceous plane or fornicate, in the double sori affixed in pairs back to back on opposite sides of the same venule, one opening anteriorly, the other posteriorly; in the simple sori as in *Asplenium*. *Veins* forked or pinnate from a central costa; *venules* anastomosing irregularly at an acute angle, or each opposite pair uniting between the primary veins in superposed acute sub-triangular areoles, the marginal or superior *veinlets* free.

Fronds herbaceous or coriaceous, pinnatifid, pinnate, or bi-tri-pinnate, sometimes proliferous. Rhizome short, erect. Large growing ferns only distinguished from *Diplazium* by the connivently anastomosing veins which are analogous to those of *Nephrodium* (in *Aspidieae*) and *Goniopteris* (in *Polypodieae*.) (Moore.)

1. *Callipteris esculenta*. (Houlst. et Moore). Caudex stout, erect, very scaly at the summit, stipites tufted, stramineous-brown, angled; fronds ample broad, oblong acuminate bi-pinnate, below pinnatifid, in the middle simply pinnate, terminal pinnae large, pinnatifid at the base, primary lateral pinnae 1J-2 feet long, petiolate horizontal oblong acuminate, pinnules distant horizontal sessile, or shortly petiolate from a broad truncate frequently hastate base oblong gradually acuminate 4-6 inches long, varying in breadth entire or serrated, or variously and regularly lobed or pinnatifid at the margin, most so at the base, the lobes obtuse, serrated, veins very patent, fasciculate pinnate, the branches uniting with those of the opposite fascicle, sori copious on the veinlets rather short, linear decussate often diplazioid, and at length confluent, involucre narrow, brown membranous, costae beneath often squamuloso-furfuraceous. *Hook. Sp. Fit. iii. 268.*—*Houlst. et Moore. Gard. Mag. Bot. iii. 265*—*Callipteris ambigua*, *Moore*;—*Callipteris Malabarica*, *J. Sm. Hooch. Journ. of Bot. iii. 409*;—*G. Serampureuse*, *Fée Gen. Fit. 219*;—*C. Wallichii*, *J. Sm.*; *Asplenium ambiguum*, *Sio*;—*A. esculentum*, *Presl.*;—*A. bi-pinnatum*, *Roxb. Cal. Journ. Nat. Hist. iv. 499*;—*A. Moritzii*, *Metten*;—*Anisogonium esculentum*, *Presl.*; *Digrammaria esculenta*, *Fée*.;—*Diplazium Malabaricum*, *Spreng*;—*Hemionitis esculenta*, *Konig. M. S. Herb. Brit. 31 us*;—*Microstegia ambigua esculenta et pubescens*, *Presl. Epim. Bot. 91-91-260*.

Very common in moist places and banks of streams in the plains throughout the western side of the presidency—Nilgiris and Anamallays—banks of streams, &c, at no great elevation.

PLATE No. CLXIV.

(TRIBE 1, § 15.) POLYPODIES.

POLYPODIUM, *Linceus, Gen. Pl. 784, (reduct)*.

(*Psidopodium*, *decker*;—*Marginaria*, *Bory*;—*Cryptosorns*, *Fée*;—*Cenopteris*, *Blume*; *Dicranopteris*, *Bl.*;—*Adenophorus*, *Gaudichaud*; *Amphoradenium*, *Desvaux*;—*Phegopteris*, *Presl.*;—*Pseudathyrium*, *Newman*; *Gymnocarpium*, *Newman*;—*Gymnodium*,

A. *Bmw*; -Arthropteris, *J. SvM inpart*; -Gkpyropteris, *Frtid*; -(*M. auhm*, *Zippto M. S.*; -C Wapler»; A. *Br*un U. &*, -*Leptostegia*, *Zippl M. S.*; -Phylacopteris, *A'<<t* St. S.*; *Hypolepidis* sp. 4 «ce»; -*Lcpieystidis* sp. *J. Smith*.

Sori uon-indusiate, globose or ovoid, superficial or immersed; the *receptacle** terminal or medial on the free veins. *Vein** &*: pic or forked from a central costa, or simple costsofom in the ultimate segments, *venukt* free.

Fronds coriaceous, herbaceous, or membraaceous simple, pinnatifid pinnate or bi-tri-pinnate, articulated or continuous **wi& *** rhizome, the pinnie sometimes articulated with the metis—Rhizome creeping, or short, erect, or decumbent, or caudiciforro.

1. *Polypodium paraxUicum*. (Metten). Caudex ascending, furnished with ovate peltate serobknkte scales, stipes 2-4 li very hairy, fronds coriaceous, sparingly clothed with black hairs beneath **I f 2** | inches long, linear huceolati, ciliated, rather obtuse entire veins forked, lower veinlet generally extending to the margin, snperior veinlet terminating with the sorns, sori short, oblong ox ^ rotund on a rather prominent receptacle furnished with long black *sate*.—*Melten Polyp.*, p. 36;—Urarmnitis attemwta, *Kiul: t in l* sxiv, p. 251.

Anamallaya—Common on trees at 5,000 feet elevation—Nilgiris—at Neddiwattam, and on rocks and trees *down the* *Sispara* ghat.

PLATE No. CLXV.

2. *Polypodium parvium*. (Bory). Caudex creeping, clothed with ferruginous narrow lanceolate scales, sti pi tcs 3-4 hi margined, fronds rigidly -mcinbranaceous, glabrous 3-4 inches ling, *WicfoVAe d<<Av aWo*t to W c>eta. ^VKcaAI&V, w^jaswa •* *i •nAttwitr. VJIV* sobuXxuuMA, ijviviwvg vJ ova&c-fAjtang* rather obtuse, rarely **o ilong-lanc*olate eBt'** *am ttUotFrtted* and long decumnt, veins evident, incrassated below the .apt*, **rawly** sorifenma in the middle of the back, *siri* ^{3"fi} on each side. *UetUn Polyp.*, p. 48.—*orjr. W ^* <i ^>. !=/.* v., 2, 182;—P. inconspicuuni, *JH. Kl Jiw.*, p. 130.

Amimallays on rocks, banks of the Toracadu river 4,300 feet elevation—Nilgiris, Lamb's rock (near Coonooi).

PLATE Hb. CLXVI.

3. *Polypodium obllquatum*. (Bluræ). Caudex short, creeping, rather stout fermgiuoo-paleaceous, stipites approximate 2-3 lines to U inch long glabrous, fronds firm-membranaceous, scarcely sab-coriaceous G-12-U inches long, 1|-2 inches broad, Unceo acuminate and sub-caudate tapering below, deeply pectinato-innnatifid nearly to the b:iae, segments approximate from a brtwd * linear-acumbate often acute entire, lower ones gradually shorter, the lowest triangular much abbreviated, costuk and simple obi rems evident not extending to the margin, sori several in 2 rows, one on each side, the costa oblique, wmk in an oval cavity (**which** is tuberant on the upper side of the frond) surrounded by an elevated Iwrder.—*IiwL Sp. FIL* iv. 190 y—*Bbant Fit, Jav.* jK 1 f 1, 2, 58, R—*CryptoBoras, Bhimei. Fee Gm.*, p. 231;—*Ctenopteris rufescens, Kte. Sot. Zeib.* iv., p. 425.

(The fructification of this specia which belongs to the gemis "Cryptosorus," Ft-e is very peculiar, it is sunk into oval cavities on the lower side of the frond; the fructification of *Frosaptia* is somewhat similar, but in that genus the cyst is marginal, the general "I" ppearance of this species is very similar to the *Prosaptk*s; it would be better if it wa3 removed from *Polypodium* and placed in the *genna* proposed by *Fee, vit.*, "Cryptosorus.")

Slievagherry mountains.

PLATE No. CXXTII.

4. *Potyptidiium paltidosuni*. (Blume). Caudex short, erect, covered with scales at the apex, furnished with numerous black roots; stipes elongated 1£ foot and more, long fusco-stramineous, scaly only at the very base, fronds 1^3 feet long, 6-12 inches wide, sub-coriaceo-Tmembranaceous broad-oblong-lanceolate acumiate, sometimes bi-pinnate below, above pinnate, pinnatifid at the apex, jinn» distant, sub-pectiolate alternate 3 to 10 inches long, 1-2 inches broad, in some cusea aub-erecto-iiatent clongtit^oblong acumiufu, those are again pinnated have distant patent pinnules J-1 bch long from a broad always adnate, but not decurrent base, oblong obtusely acum nited, always more or less deeply **pianatifid** at the margin, b;ml pair often more elongated, superior pinna; deeply pinnatifid with long • pinnatifid or entire segments, veinlets rather distant, simple or forked, sori rather large not numerous, intermedia between the costule or primary vein, and the margin, **redds**, cost«, costules and principal veins often hirsute—*Hook. Sp. Fil.* iv. 214 •—*Bkmi Fil.*

Jav. p. 192 t dO;—Polyp, brunneum, *Watt. Cat. w.* 333 ;—*P. longipes*, *Wall. Cat. n.* 316;—*P. adnatum*, *Wall. Cat. No.* 328;—*Phegopteris*, *Metten PJiegopl*, p. 29.

Very common about Ootacamund on the Nilgiris.

PLATE No. CLXVIII.

Polypodium nigro-carpum. (Beddome). Caudex stout, sub-oblique densely paleaceous, stipes 1-2-3 feet long, densely paleaceous towards the base, scabrous above, fronds membranaceous, semi-transparent, deltoid-ovate acuminate, tri-pinnate below, bi-pinnate above and pinnatifid at the apex, pinnae alternate, distant petioled deltoid ovate 6-12 inches long, in the basal pair the inferior basal pinnule is wanting, and the other inferior pinnules are larger than the superior ones, pinnules shortly petiolate in the inferior pinnae, sessile in the superior ones, oblongo-ovate, secondary pinnules sessile from a broad base or the lower pairs shortly petiolate, obtuse at the apex more or less pinnatifid, segments obtuse, veins prominent not extending to the margin, but terminating within it in a pellucid dot, costa and veins furnished with weak whitish hairs on both sides, sori medial on the veins, 1 to 8 on each of the secondary pinnules becoming quite black when ripe.

Nilgiris—Very common in the Sholas on the higher ranges.

PLATE No. CLXIX.

6. *Polypodium rugulosum*. (Labill). Caudex long, creeping, rufo-villous, whole plant more or less hairy and glanduloso-viseid, especially beneath, stipes 1-2 feet and more long, varying in size from a crow's to a swan's quill, and as well as the main rachises glossy and rough with elevated points, bright castaneous or stramineous, frond varying from 6-8 inches in length, very slender (perfect and fertile) to 5 feet in length, from 4 inches to 3 feet wide at the base, deltoid-ovate sub-coriaceous (rarely sub-membranaceous and flaccid) tri-pinnate, primary pinnae generally in distant petiolated pairs, lowest primary pinnae oblong-ovate acuminate; secondary pinnae sessile from a broad base, oblong acuminate pinnules J to § inch long, oblong or linear-oblong obtuse lobato-pinnatifid with small rounded lobes, rarely angulato-dentate at the margin, margins often much reflexed, the veins of the lobes very flexuose, veinlets pinnate, simple or forked, the lower veinlet extending to the margin of the sinus of the lobes, and there bearing a solitary sorus (10-14 on each pinnule) but so copious that they frequently cover the whole under surface of the frond, secondary rachises terete, not winged. *Labill. Fil. Nov. Holl.* ii., p. 92 t. 241.—*Hook. Sp. Fil.* iv., p. 272 ;—*Polypodium Paepigii*, *Kze. in Lin.* ix., p. 50;—*Pol. fulvescens*, *Hook. et Grex. BoL Mix.* ii., p. 239;—*Pol. viscidum. Spr.* ;—*P. viscosum, Roxb.* ;—*Pol. viscoso-viscidum, Thouars Fl. Trist. cTAcunha*, p. 33 ;—*Cheilanthes ambigua, A. Rich. Fl. n. Zeal.*;—*Cheilanthes Dicksonioides, Endl. and Kze. in Schk. Fil. Supp. t.* 8 ;—*Hypolepis Dicksonioides, Hool Sp. Fil.* ii., p. 61. ; *Hyp. Paepigiana, Metten FIL Lechl*, p. 18.

Nilgiris, most abundant about Coonoor and Ootacamund.

This fern when growing has much the general aspect of "*Pteris aquilina*"—the fructification is of course quite different.

PLATE No. CLXX.

7. *Polypodium ornatum*. (Wallich.) Caudex erect, clothed with copious long subulate scales, stipites stramineous, 1-3 feet long and up to about an inch in diameter, paleaceous at the base, smooth and polished or setaceo-paleaceous above, fronds generally very large, 1 to 6 feet long, broad ovate acuminate, firm-membranaceous quadri-pinnate, costae, costules and veins furnished with long white soft silky spreading hairs, rachis of the pinnae muricated beneath with hard aculii and furnished with setaceous scales, pinnae opposite, petiolate or sessile 1-2 feet long, 8-14 inches broad, broad-oblong acuminate, pinnules sessile, oblong acuminate 4-7 inches long, rachis furnished with a very regular broad wing, tertiary pinnules 6 to 10, 1-1 £ lines long, entire or slightly crenated, veinlets simple, forked, or pinnate terminating within the margin, apex thickened.—sori 1 on the lower vein of each tertiary pinnule (*i. e.*, in two lines, on each side of the costa of the secondary pinnules). *Wall. Cat p.* 327.

Wynad__Carcoor ghât abundant, one of the handsomest ferns in the presidency,

PLATE No. CLXXI.

* * Veins *anastomosing*,GONIOPTERIS. *Pard., Tent. Peti-i.* 181,

(*Glyphotensium*, *Smith*)—*Polypodii* sp. *Auct.*;—*Meniscii* ap. *A. net.*;—*Gymnogrammatis* ap. *Avct.*; **Aspidu Bp. A***
Ctenopteridis sp., *J. Smith*;—*Phegopteridis* sp. *Auct.*

Sori non-inflated, globose; the receptacles medial or terminal. *Veins* pinnate, *prominent, venules* (the lower pair or more connivently anastomosing at an acute angle, from the apex *is* produced an excurrent veinlet, **which, is either short and free or** to reach and unite with the next pair of the *venule*).

Fronde herbaceous or sub-coriaceous, pinnatifid, pinnate, or pinnato-pinnatifid. *Spore casea* often *erect*. *Ebizoio* short decumbent. (Moore).

This genus bears the same relation to *Polypodium* in *Polytrichum*, as *Xepirodium* does to *Lactaria* in *Aspidicium*.

1. *Gonv/pUria proUfera*. (Presl). *Caudex* thick, *erect*, *stipites* clustered, *erect*, *varying in length*, *fronds*; *stipites* 1-2 feet and more long, sub-coriaceous pinnate, and at the apices **is** the *axils* of the *pinnae* repeatedly proliferous with *small* extended, *pinnae*; 3-6 *indies* long, sessile *obovate-lanceolate* acuminate, sometimes auricled at the base, *1/2* to *1* inch or larger *pinnae*; connivent at an acute angle, from the apex **of which** are produced *excurrent* *veinlets*, which are generally all *net-like* to form a continued *spurious vein* or *costule*; these *veinlets* however are sometimes short and free, and sometimes *some* are *together* *forming* *one* *vein*; *sori* *ovate*, rather than sub-rotund in the middle *in the* *veinlet*, sometimes *a* near the point of junction, *and then confluent*. *Hook. Sp. Fit.* iv, 1C;—**Polypodium proliferate**, *Roxb. in Hull. Cat. n.* 312, *ftct AatiZ/j*; *Ma^ acium, Se. Syn. P.* P- 19;—*Hook. 2nd Cent. of Ferns t.* 15;—*Witt. Sp. PL* v., p. 135;—*P. laxum, Kze.*;—**Phegopteris**, *Mittcn*;—*Ampdopteris dogans*, *Bot. Zei*, (vi, p. 114;—*A. firma, Kie, in Lin. ixiv.*, p. 133.

Hills near Kamptee and Jubbulpore, very common—Nilgir, (Zenkner)-

PLATS No. CLKXII

* * * *Vein* reticulate with fine included veinlets.**Five veintetM, divaricate.*PLEOPELTIS. *Hornhotdt and Bouplaud. Willd. Sp. Pl.* v, 211. (extant).

(*Atftctosia*, *Mwmt*;—*Anajwltis*, *J. Smith*;—*Chryopteris*, *Link in part*;—*Microgramma*, *Prttt.*;—*Microsorium*, *Link*;—*Anaxetum*, *Sclott*;—*Heuridnm*, *Presl.*;—*PhymaUxlc*, *Vrtd. l*—*Lep^oru*, *J. Smith*;—**PbyHitidia**, *J. Sm.*;—**SympJ«ciun**, *Kn>^'^^*
Microtenw, *PretL*;—*Dry* (*mien i s*, *J. S'm.*;—*Colyaidis* sp., *Prtsl.*;—*Mecaiorisp.*, *Klvbtch.*;—**Polypodii** ^', *A. urt.*;—**Tectfrivap.**, *Ca^ai*
Drynanae sp., *Auct*;—*Craspedari** sp., *Auct*—*Phcljodii* sp., *J.net.*;—*Dryusiathyi* sp., *Auct.*;—*Dipteridia* sp., *J. 6w.*;—*Niph* *oil* sp.
Auct.;—*Selligiia* sp., *Pred.*;—*Marginaria* sp., *Bartl.*

Sori non-indurated, sometimes covered while young by *periderm* scales, *rotundate* or *elliptic* (sometimes **with** the *receptacles* *diffuse-confluent* *in* lines) *superficial* or *imbedded*; the *receptacles* *compitoid*, *i. e.*, produced on the points whence *several* *reticulated* *veins* radiate, rarely *medial* *venule* pinnate or *pinnate-furcate*, *from* central *costs*, *parallel* or *oblique*, *whence* *several* *veinlets* *diverge* *from* *the* *veinlets* *are* *produced* *in* (usually) *several* *series* of *irregular* or *hexagonal* *areolae*; within the ultimate of **which** are produced *irradiately* directed straight *curved* or *hooked*, often numerous, free sterile *veinlets* which are generally **diattractly** clavate at their apices.

Fronde membranaceous, or more or less coriaceous, often *opaque*, *simple* *pinnatifid* or *pinnate*, sometimes furnished with scattered *peltate* *scales*. *Sori* *striae* or *irregular*, *rhomboid* *erect*, *the* *fronds* *reticulated*, (Moore.)

1. *Pleopeltin pkymateda*. (Linn.) *Caodes* *lunji*; **creeping**, *more or less* clothed **with** dark-brown *deciduous* *reticulate* *scales* or **bristles**, *in* *age* *the* *caudex* *is* *covered* *with* *a* *thick* *woolly* *coat*, *stipites* 2-3 *inches* *to* *1* *foot* *and* *more* *long*. *fronds* *very* *flexible*; *camoso-coriaceous* from a few inches to 2-3 feet long, often simple (undivided) *middle* *rib* *isolate*, and *scarcely* *exceeding* **10 inches** *long* *or* *trifid* or *tripartite*, *or* *a* *more* *or* *less* *is* **deeply** *pinnatifid*, and then **appearing to attain the** *largest* *size* *and* *a* **diattract** of **10** *to* *12* *inches* *long*, *the* *segments* *of* *the* *fronds* *are* *obovate* *or* *oblong* *or* *linear*, *acute* *or* *obtusate*, *the* *margin* *is* *entire*, *reticulation* *intermediate*, *generally* *obscure*, *sometimes* *when* *the* *frond* *is* *translucent* *the* *veins* *are* *apparent*, but *veniferous* *diverging* *and* *anastomosing*, and *forming* *a* *series* of *large* *costular* *areolae* *with* *often* *lesser* *but* **subequal** *areolae* *ones*, *secondary*

numerous, united into smaller areoles, but varying in size and form and including numerous free divaricating veinlets more or less impressed, and forming pustules at the back, sori often very large, oval or globose, compital either forming a single or double series between the costa and the margin, or irregularly scattered over the frond, *Hook. Sp. Fil. v., p. 83* ;—*Polypodium phymatodes*, *Linn. Maut. p. 360* ;—*Drynaria*, *Fée* ;—*Chrysopsis peltideum*, *longipes* and *terminalis*, *Link, (fide Metten)* ;—*Polypodium ensiforme*, *Kze. in Schk. Fil. t. 54, l. a* /—*Polyp*, *alternifolium*, *Lk* ;—*Polyp*, *grossum*, *Langsd. and Fisch, p. 0 t. 8* ;—*Drynaria vulgaris*, *J. Sm.* ;—*Phymatodes*, *Presl*

Malabar, at no great elevation.

PLATE No. CLXXIU.

2. *Pleopeltis leiorhiza*. (Wallich.) Caudex very thick, creeping, paleaceous with ovate oppressed deciduous peltate scales, stipites 1 £ and more feet long, stout, fronds ample, subcoriaceo-membranaceous glabrous, 2-3 feet long oblong or oblong-ovate pinnated, pinnae 10-12-30, erecto-patent 8-12 inches and more long, oblongo-lanceolate much and very finely acuminate, cuneate and slightly petioled, superior ones sessile and sub-decurrent, terminal one very long, the margins entire, venation manifest uniform, costules scarcely distinct from the veins, but they do anastomose, so as to form large costal soriferous areoles, and a less imperfect series near the margin, the rest of the frond is occupied by a net-work of small areoles, including free veinlets, sori large in a single series nearer the costa than the margin, moderately sunk, so as to form slightly elevated corresponding pustules on the back of the frond, *Hook, Sp. Fil. v., p. 91* ;—*Polypodium leiorhizon*, *Wall Cat n. 303*.

Anamallays, on the Kooch Mallay 4,300 feet elevation.

PLATE No. CLXXIV.

PLEOPELTIS (*continued.*)

3. *Pleopeltis oxyloha*. (Wall.) Caudex creeping, stout, paleaceous with dense subulato-falcate ferruginous scales 2-5 inches long, fronds coriaceous, or coriaceo-membranaceous 6-12 inches and more long, deltoideo-ovate acuminate trifold, or deeply pinnatifid to within J an inch of the rachis with 5-11 segments, which are 3-6 inches long, J to 1 inch wide, very patent from a broad base oblongo-lanceolate, very finely acuminate entire, thickened at the margin, the lowest ones cuneato-decurrent, terminal segment often the longest and most narrowly acuminate, venation conspicuous, costules often prominent beneath distant, united by transverse veins forming 3-4 series of primary areoles, which are filled up by lesser ones including free veinlets, sori large not sunk, arranged in a single series nearer the costa than the margin. *Hook. Sp. Fil.* v. 77 ;—*Polypodium oxylobum*, *Wall. Cat.* 294, *Mett. Polyp.*, p. 106 ;—*Phymatodes*, Pr.

Nilgiris—On trees about Neddiwattan—rocks near Makurty peak—Sisparah ghât, and many other localities—Anamallays 4,000 feet and upwards, and other localities on the Western ghâts.

PLATE No. CLXXV.

4. *Pleopeltis longissima*. (Blume). Caudex creeping, fleshy, partially paleaceous with rather large ovate appressed brownish scales, stipites 1-1J foot or more long, fronds sub-coriaceous, 1|-4 feet and more long, 6-10 inches wide, narrow-oblong, scarcely acuminate, deeply pinnatifid, nearly if not quite to the rachis, generally leaving only a narrow wing, segments very numerous, 22-40, and probably many more, 4-6-8 or 10 inches long, rarely exceeding J an inch wide from a broad decurrent base, elongato-oblong acute or obtusely acuminate, the margin slightly thickened, venation evident, often slightly prominent and distinct (except the veinlets) on the under side, costules or rather primary veins horizontal, flexuose forming a series of large costal soriferous areoles and a second lesser series, secondary veins forming a net-work of small areoles including free veinlets, sori large, copious sub-oval, sunk into a hemispherical cavity (forming a pustule or pouch on the upper side, the mouth with a distinct elevated rim) arranged in a single series on nearly the whole length of every segment and close to the costa. *Hook. Sp. Fil.* v., p. 80 ;—*Drynaria rubida*, *J. Sm.*;—*Polypodium longissimum*, *Metten. Fil. Hort. Lips.*, p. 37. t. 25. l. 18, *Polyp.*, p. 102 (*in part only* ?) *J Mettenius* unites this with *P. nigrescens* of *Blume*. Sir Will. Hooker thinks them distinct and refers the Ceylon specimens to "*nigrescens*."

Bolamputty valley in the Coimbatore hills, banks of the Pambâr—Foot of Carcoor ghat, Wynad.

PLATE No. CLXXVI.

*5. *Pleopeltis membranacea*. (Don.) Caudex creeping, stout, the younger portion paleaceous with blackish-green ovate acuminate scales, stipites distant or sub-aggregated 1-5 inches long, if longer winged above with the decurrent base of the frond, fronds G inches to 2-3 feet long by less than an inch to 6 inches broad, thin membranaceous and translucent or firm-membranaceous and opaque, lanceolate or oblongo-lanceolate, or oblanceolate, acuminate, the base long attenuated and much gradually decurrent upon the stipes glabrous, the margin entire (or rarely more or less deeply sinuato-lobate or pinnatifid, and even fimbriated throughout the whole length with long narrow unequal segments), venation very distinct, costules horizontal or nearly so slender, usually remote, connected by transverse veins which form the primary areoles, and these are filled up with irregular net-work, of which the areoles are very unequal and include copious free veinlets ; sori compital, rather small, usually in two series between the costules, more or less numerous according to the width of the frond, rarely reduced to one sorus near the costa, where a single series parallel with the costa is formed, not unfrequently there are 3-4-5 series (not very regular) between the costa, (in one instance a single series only appears between the costules and those of a very large size and abnormal in form, often oval or oblong and lying parallel with the costules.) *Hooker Sp. Fil.* v. 70 ;—*Polypodium membranaceum*, *Don. Prod. Fil. Nep.*, p. 2 ;—*Polyp. grandifolium*, *Wall. Cat.* n. 282 ;—*P. heterocarpum*, *Bl. Fil. Jav.*, p. 167 t. 75.

Nilgiris on trees near Neddiwattan—Anamallays from 2,000 feet upwards—Wynad, Coorg, South Canara ghâts and other mountainous tracts.

PLATE No. CLXXVII.

G. *Pleopeltis irioides*. (Lam.) Caudex creeping, clothed with brown-black ovate obtuse scales, fronds 1-3 feet long, coriaceo-carnose very glabrous, sessile or shortly stipitate, elongato-lanceolate towards the base, gradually attenuated and decurrent as far as the very base of the stipes entire, the margin revolute, acuminate or obtuse at the apex, undivided or irregularly dichotomous, fertile in the upper portion, costa manifest, venation that of "*Drynaria*" immersed (visible in the dried stato) areoles with numerous incurved appendices, free veinlets incrassated at the apex, costal areoles sterile, the rest 4-6 seriate fertile, bearing numerous sori (14-20) irregularly scattered,

sori semi-immersed minute, inserted on a manifest receptacle on the back of the veinlets or on the angle of the lesser areoles. *Met.*
Polypodium irioides, Hook. *Sp. Fil.* v. 67 ;—*Phymatodes*, *pretL* ^Rrynaria, .I. &N. —P, w^ile, *«*//•—*Miabsorima* *Lept* ;—
 irregular, *Zwi /& Gtn. t. 20, if. l. 3* ;—*PhymaWe*, polycephak, *JfY. Ztatf*, p. 198. «. 8/ 19 j-*Aspidiura micro.* ^puu., *Bl. En. Fil.*
 /af., p. 142 ;—*Polypodium glabrum*, *Rorf* >. in *Wall. Cat. n. 281* }—P. poly cephal urn, *Wall Cat.* ». 273.

On trees in moist woods—Aamallays, Coimbatore hills, Nilgiris, ic. at no great elevation.

PLATE No CLXXVIII.

7. *Pleopeltis tridactyla*. (Wall.) Aquatic, caudei creeping, branched, the young apices only paleaceous with blackish *ltftd* to
 subulate scales, stipites more or less apart, 1-3-4 inches to 1 foot long, winged upwards, and as well as the back of the costa ;:1, V, ^ < 1c,
 furfuraceo-squamose, fronds 2-3-9 inches long, f-U and 2 inches wide, firm membranaceous very dark, dirty green (when dr S***
 black) lanceolate acuminate entire, (rarely tub-hastate, trilobate or tri-partite, or 5 fldu-pinnatifid) below long-tapering into a grwn
 Recurrent wing upon the petiole, glabrous above, margin entire, venation very conspicuous, costules prominent beneath, rather wd
 extending about two-thirds of the way to the margin, then uniting and forming large costal areoles, within which the sori h
 origin, a second series of smaller areoles is formed nearer the margin, and these and the rest of the frond are filled op with a nrt-wor
 Bmaller irregular areoles including free simple or forked veinlets which have clavate apices, sori small not very numerous, 1 3 in
 large areole oompital upon the secondary veins of the primary areoie, often confluent into transi *erss, oblong* r linear (grammitoid: *•*
Hook. Sp. Fil. v. 75 ;—*Polypodium tridactyloH*, *Wall. Cut. n. 315* ;—*//<*>£. tt Grev. Ic. Fit. t. 20!* ;—*Phy mated.* *na, Prod.* ;—*Drynaria dubia*
J. Sin. in Hook. % Journ. of Sot. iil, p. 397 ;—*Polypodium pteropua*, *BL Fil. Jav., p. 1C8 t. T6.*

(I have never seen the fronds tripartite or pinnatifid in any of the Southern Indkn or Ceylon specimens).

Anamallays—very abundant in rivers : 3,000 to 4,000 feet elevation, growing on rocks under water—Rivers in the *Bolampatty*
 ralley (Coimbatore hills),

PLATE No. CLXXIX.

8. *Pkopdti* WighiUma*. (WallicK). Oadex creeping, blackish, paleaceous with rather dirty-brown ovato-Unce&hte sclt
 stipites sub-aggregated a few lines \a 1-2 inches long, bonds extremely variable in siao and texture, from M inches to U ft • 1 fro"
 J of an inch to nearly 2 inches wide, lanceolate or linear-lanceolate coriaceous and opaque, or coriaceous-mem branaceous or quite incu
 ceous, bluntly or sharply acuminate, much and gradually attnuateci, at the sometimes quite sessile base, the margin enti t<< •
 venation reticulated with free included veinlets, but there are primary veins which form large costal areolaa incl 1' >
 and numerous forked free mulcts and the compital sori, sori often nmoh auk (with protaberanea, it the buck! to
 nearer the costa than the margin varying much m size, when young wholly or partially covered with very coma >t I
 scales which are soon deciduous, then the sori becomes very large and pulvinate. *Book Sp. Fil.* v. 57 • *__jraH p*
6isJB loriforme, *Hook. l. ft* ;—*Watt. Cat.* ». 271 >—1**. leiopteris*, ffar. *« *Liim.xsin., p. 319* ;—*rieopelUM trnda, //It'*
Gen. Fil. f. 18, (not P. nudum, Mtttn:) *Lepisorus*, *J. Smith* ;—*Drynam*, *Fie Gen. Fil., p. 27(1 j—Pojyp* ,*uJJ*
p. 253 ; -P. *sesquipedale*, *Wall. Cat, p.. 275* ; -P. *excavatum*, *Witd. Sp. PL v. 158* ; -P. *gladiatum*, *Wall. Co**. » ^ 7 9^ P W
Kze. MM. Polyp., p. 92 ;—P. *atro-punctatum*, *Hook, and'Ami. Bat. Back Voy., p. 103* ; ^P. *liueare—JA*
Pleopeltis elongata, Klfi. ;—*Polyp. Cueiutzii, Mettn Polyp, p. Ul.*

Common in all hilly regions on the Western aide of the presidency.

A very variabh »peci«t—*PteopeUis sesquipedalis*, (Wallic/tJ U the larger and more numlrm j
 mediate fonts.

PLATE STo. CLXXX.

6. *Plmptltulepidota*. (Willd.) Camle* long-creepm-, r>^<>m with lanceolate ferruzirn
 ipche. long, fronds coriaceous-carnoe, 3-9 inches long, J to J h^ wu(i) i;m(i;O);lt, m>>r, M ^ l w m ^ us l**> sli1 lito "mote_ l 2-4
 the base above, sparingly beneath, copiously funusht] w1tn or t, i cu l; u' ovate, smalt appressed pelutc
 circumference and denticulate veins immersed j_n distinct, the primary veins form large oWwnwl
 irregular and different sized areoles and a few free vovnlets which are rarely forked, sori genua] y elongated areoles, which include
 minute, puivinate globose or oval, stalked a^, mixed with the spore cases. *Hook So Fil* L * " ^ ^ wd often exceeding!
 r • >^ Ob i—*WUid. in Schlecht Adunbr.,*

1, 8
 -147;—*Pleopeltis linearis*, *Klfs.*;—*Pleopeltis ensifolia*, *Hook Ex. Fil. I, 02*—*Polypodium mar-*
S^n the ywnger froD^wuen (3ry)—2-1^itit rcvt>lutol Wilid_ Sp_ PL vu 139 >~ pleoP^81tis Kaulfussiana, Presl.;—Polyp, leucosporutu,
Kl. in d^... simple on frond free veinl

• 11
 Nilgiris common in woods about Ootacamund.

Very similar to the last species in outward appearance, the venation however is **different**, and the wider-surface of the frond « always clothed with orbicular peltate serties. The venation is only to be detected by waking the frond, it is thin, much more **prominent** than that of *P. WiglUiana*. The venation is more that of *Phlebodiitm*, (kti of *Pleopeltis*, and fa is sometimes a narrow areole formed near the costa within the large elongated areole; this areole, however, is not always formed, the connecting veinlet being sometimes absent, (Vide magnified figure of venation) the receptacle* are situated on the converging apices of several veinlets.

PLATE No. CLXXXI.

10. *Pleopeltis hemionitidea*. (Wall.) Caudex creeping, scaly, furnished with wiry scaly fibrous roots, stipites very short (3-6 lines long) scaly winged upwards, fronds 6 inches to \ foot long, 1-2 inches broad, membranaceous sub-diartaceous, sub-transparent very dark shining green, broad lanceolate, gradually acuminate into a fine point at the apex and gradually attenuated at the base, entire glabrous, main costa slightly scaly beneath near the base—venation very prominent, costules and veins blackish, the former pinnate nearly horizontal, the latter forming about 5 series of sub-quadrate areoles, in **which** are inconspicuous free veinlets which are either simple or forked, but without clavate apices. Sori compital rather large, forming one series between the costules, and these very irregular in shape and size, sub-globose or oblong, or even (by confluence) linear lying transversely with regard to the costa, parallel with the costules. *Wall. Cat., p. 284*;—*Polypodium hemionitideum*, *Hook. Sp. Fil. v. 73 j—M&tlen Polyp., p. 112*;—*Drynaria, J. Sm. j—Selliguica, Pr. Tent. Pt., p. 216. t. 9, l 17*;—*Colysis, Pr. Epim., p. 147.*

My specimens have only a single row between each of the costules situated in the 2nd areole from the costa, they are not probably in full seed. It is allied to "P. membranacea," but differs in flavirig mwh darker green, more crisp fronds; the veins form more regular areoles than in that species, and both costules and veins are dark and prominent, the venules are very inconspicuous and are not as recurved nor are their apices as thickened as in "membranacea" •

Sampajee ghât, (Coorg) 4 miles down from Hereara in ravines growing on rocks—Nilgiris, (Maclvor, in Herb. Hook.)

PLATE No. CLXXXII.

NIPHOBOLUS. *Kaulf. FmtTi. Fil. 124.*

Cyclophorus, Desvaux;—*Pyrrosia, Mirbel*,—*Candollea, Mirbel in part*;—*Scytopteris, Presl.*;—*Spharostichiim, Presl.*;—*Poly-campium, Presl.*;—**•Apuolpilebia**, *Presl. y^Gyrosorium, Presl. y—Galeoglossa, Presl.*;—*Gynosorum Presl.*;—*Craspedaria, Link in pan*;—*Nipliopsis, J. Smith*,—*Polypodil sp., Auct.*

Sori noninflusiate, globose, cyclase or elliptic, superficial or immersed, buried amongst dense stellate pubescence; the *receptacles* terminal or medial to the excurrent free or irregularly anastomosing veinlets. • *Veins* internal obscure, pinnate prominent or uniform, from a central costa *venules* anastomosing, sometimes transversely parallel, forming **parallelo** grammoid areoles with excurrent free or occasionally connivent or anastomosed veinlets, sometimes uniting in roundish or oblong hexagonal unequal oblique areoles with variously directed simple or divaricately forked veinlets, the veins of the fertile fronds when contracted less developed.

Fronds simple or lobed, rigid coriaceous opaque, clothed especially beneath with stellate hair-scales or sometimes even lanate; the fertile often **contrasted**, sometimes also more elongated, occasionally fertile at the apex only, and then there contracted, clothed especially beneath with dense stellate pubescence. Sori uni-multi-serial, often crowded and confluent. Rhizome creeping often elongated, or sometimes short, decumbent. The species of *Niphobolus* may be known by having polypodioid sori buried amongst stellate hairs, (Moort).

The venation of Niphobolus is very variable in different species. Presl. has formed 8 genera out of it.

1. *Niphobolus porosus*. (Wallich.) Caudex creeping, subnate-paleaceous with ferruginous scales, stipites aggregated short scarcely any or 3-5 inches long, and then **winged** or margined to the base, **fronds caraceous-corneous** 6 inches to a foot and more long, £ an inch to 1-1½, inch wide, lanceolate or linear-lanceolate or even linear often finely acuminate, the margin quite entire (or rarely spuriously and very unequally pinnate with remote long and narrow segments) from near the middle gradually attenuated downwards to the caudex, at

first wholly tomentoso with deep ferruginous stellated hairs, at length glabrous on the upper surface punctate the dots corresponding with the sori, venation (pinnate Bunk, veins pinnate but not prominent, venules transverse and forming with the main veins a parallelogrammatic areoles, with two or three times only one emergent free clavate veinlet in each areole) sori and at first quite sessile but the sori scarcely rise above the surface of the tomentum appearing in the form of small tubercles, at length a circular opening appears on the surface of the tomentum arranged indeed in series, but it is impossible to say how far these series are confined within certain areas. // *CoA. Sp. Fil.* v. 48;—*Polypodium porosum*, *ff. W. C.* (s. 256);—*Polypodium sticticum*, *Metten Polyp.*, p. 128;—*Niphobolus sticticus*, *Km*;—*Kiph. Sdiraidi Atiisi*, *Kxt. Bat. Zat.* vi., p. 12!;—*Cydo pilots*, *Vr.*;—*Kipli*, *feus*, *I?*, *Fil. Jav.*, p. 58 t. 24;—*Polyp. Mysweose*, *1/0*;—*P. hmituuj*, *Writ. M. S.*

(The venation which it exhibits (that of the genus "*Campytocheilum*" is evident in the young sterile fronds, but in the sterile fronds it can only be detected by rubbing off the tomentum and soaking the frond in water).

All in the mountainous Western side of the peninsula, from 1,000 feet up to 5,000.

PLATE No. CLXXXIII.

Fig. A. a magnified portion of 6 fronds showing the venation.

Fig. B. a portion of a frond showing the dots on the upper surface, which correspond with the receptacles on the thickened apices of the veinlets.

2. *Niphobolus adnascens*. (Sw.) Caudex creeping, paleaceous with lanceolate setaceous scales, stipites distant 1-2 inches long, fronds dimorphous, carnosu-coriaceous dark-green above, but hoary with sparse stellated pubescence beneath and paler and even white with more copious compact tomentum; sterile fronds 2-4 inches long, spatulate or elliptical-lanceolate obtuse; fertile ones 6-8 inches long, linear or oblong obtuse or acute, both kinds tapering below into the stipes, costa sub-carinate, costules sunk obscure, their areoles including 3 or 2 veinlets which are generally free with clavate apices, though they sometimes anastomose; sori deep sunk in the tomentum and in the substance of the frond on each side of the costa, arranged 5-6 in obliquely transverse series, capsules long stalked, mixed with long; stalked stellated scales. *Hooker Sp. Fil.* x. 47;—*Polypodium adnascens*, *Sw. Syn. Fil.* pp. 25 and 228;—*Cyclophorus*, *Levl.*;—*Polyp. pertusifolium*, *Both. Hook. E. r. Fil.* t. 1 G^h—*Kiplu donatus*, *Bl. Fil. Jav.*, p. 52 t. 20;—*N. varius*, *Kiph. En. Fil.* p. 125;—*Polyp. verrucosum*, *ff. All. Cat. a.* 27 j;—*P. caudatum*, *Metten Polyp.*, p. 126;—*P. vittarioides*, *Wall. Cat.*, p. 270;—*Niphobolus*, *Presl. (6de Metten)*.

(The venation is only to be detected by thoroughly soaking the frond).

Common in all the Western Coast forests from the plains up to 5,000 feet.

PLATE No. CLXXXIV.

3. *Isipkoh'jim angustatum*. (Sw.) Caudex long, creeping, branched paleaceous with falcate subulate setaceous scales, stipites remote U-shaped, long, fronds 5 inches to a span or more long, 1-2 inches wide, tapering below into a petiole, glabrous above hoary, sub-ferruginous with dense stellated pubescence, coriaceous-carnose sterile fronds usually the smallest and broadest and with shorter petioles broad or obovate-lanceolate; sterile fronds longer and generally narrower in proportion, venation sunk obscure, costular areoles with free veins and more or less connected veins, sori very large, sub-jugal, sessile oval partially sunk in the frond, very convex forming a single line on each side between the costa and margin, sometimes confluent, *Hook Sp. Fil.* v. 43;—*Sw. Syn. Fil.*, pp. 27 and 224;—*Niphobolus*, *Jija B.*;—*Pleopeltis macrospora*, *Vorlic*;—*Polypodium sphaerocephalus*, *Wall. Cat.* n. 272;—*Niphobolus*, *Hook. et Grev. Ic. Fil.* f. EM;—*Baiwrocwpas*, *ff. ixr.* «*Amt. Hot. of J. Burch. Voy.*, p. 74 t. 18.

Niphobolus, very rare—(the specimen here figured was found by the late General Johnston, I have not myself found it) Tranquebar (Rottler).

PLATE No. CLXXXV.

1. *Aiphatatum annularifolium*. (Metten.) Caudex very long filiform, copiously rooting, paleaceous with appressed setaceous ferruginous scales, fronds dimorphous, carnosu-coriaceous sub-glabrous above, beneath densely clothed with ochraceous or sub-ferruginous stellated tomentum, sterile fronds (on petioles 1-1 1/2 inches long) 1/2 to 1 inch long orbicular or elliptic, or sub-cordate; fertile ones (on stipites 1-1 1/2 inch long), 1 1/2-2 inches long, 1/2 inch wide, linear or linear-oblong obtuse, venation immersed in the fleshy fronds (though prominent

ment in the younger fronds when dry)—2-3 series of very irregular-shaped areoles on each side of the costa, which are usually or contain one or two clavate simple or forked free veinlets, sori generally covering the whole back of the linear fronds without order, the elliptic (generally sterile) fronds are sometimes slightly contracted and fructified at the apex. *Metten. Polyp.*, p. 123, t. 3 and 9-10; *Hook, Sp. Fil.* v. 54;—*Acrostichum*, Sw. *Syn. Fil.* p. 191-419: *Tab.* ii. 1 j—*Witt. Sp. Pi.* y., p. 100—*Galeoglossum* Presl.

(It is very doubtful if this fern should be retained in this genus).

Common in the lower forests of the Aizamallays, Wynad, Coorg, &c, parasitic on trees.

PLATE No. CLXXXVL

DRYNARIA. *Bory Ann. Be Nai* v. 464, t. 12-14.

(*Polypodium* Sp., *And.*—*Phymatodis* Sp., *Presl.*)

Sori non-indusiate, large rotundate, or by confluence elongated, sometimes immersed: the *receptacles* produced on the points where several reticulated veins join, *i. e.*, compital. *Veins* pinnate prominent from a central costa; *venules* compoundly anastomosing in two or three series of irregular quadrate areoles, within the ultimate of which are produced free divaricate sterile *veinlets*.

Fronds pinnatifid or pinnate, dimorphous, the sterile short sessile, quercifolij strongly veined; the fertile many times larger, with the segments articulated. Rhizome creeping,

1. *Drynaria quercifolia*, (L). Caudex creeping, short, stout, densely clothed with red-brown satiny lanceolate-subulate soft scales, fronds coriaceous or sub-coriaceous of two kinds; sterile ones varying in size from 3-12 inches and more long and 7-8 inches wide, green when very young, but soon turning dark-brown, glossy, cordato-ovate variously lobato-pinnatifid, sometimes half way down to the costa: fertile ones 1-2 feet long, long-petiolate broad-ovate deeply, nearly to the rachis, pinnatifid, segments 5-9 inches long, 1-1½ wide oblong acuminate entire, venation manifest, costules distinct rather distant, united by transverse veins forming 4-6 primary soriferous areoles filled up with a network of small quadrangular areoles with or without free veins, sori compital small, numerous, two in each primary areole, consequently in two series between and parallel with the costules—*Hooker Sp. Fil.* v., p. 96;—*Polypodium quercifolium*, *Lin. Sp. Pl.*, p. 1547;—*Phymatodes*, *Presl.*;—*Polyp.* *Linntti, Bory. An. Sc. Nat. Ser. i.* v., p. 464, t. 12 j—*P. sparsisornm*, *Desv.*;—*P. Schtuhrii*, *Bory. b. e.* *

Very common on the Western side of the Presidency from the plains up to 4,000 feet—growing on trees or rocks.

PLATE No. CLXXXVII.

TRIBE I. (§ S) CHEILANTHER.

Sori marginal, terminal on the veins,

CHEILANTHES, *Swartz. Synop. Fil.* v., 126.

(*Gymnia*. *Hamilton M. S. (Don.)*;—*Ottionoloma*, *Link*;—*Physapteris*, *Pteth*;—*Myriopteris*, *Fie* j—*Aleuritopteris*, *Fie*;—*Adiantum* sp., *Aucl.*—*Ahosori* sp., *Aitcl.* j—*Pteridia* sp., *Auct.*—*Cassebeerse* sp., *J. Sm.* •—*Nothochliffnse* sp., *Auet.*;—*Hypolepidis* sp., *Auct.*;—*Acrostichi* sp., *Auct.*•—*Pellese* sp., *Aucl.*;—*Adiantopsisidis*, *Fie*).

Sori indusiate, transverse marginal, generally on a reflexed tooth or lobule; normally sub-orbicular, small distinct, sometimes contiguous and by lateral confluence elongate, the *receptacles* punctiform at the apex of the veins, *ladutium* membranaceous or formed of revolute portions of the slightly altered margin of the same form as the sori. *Veins* simple or forked from a central costa; *Teaolea* free.

Fronds usually small, pinnate variously pinnatifid or bi-tri-pinnate; membranaceous or sub-coriaceous, sometimes pulverulent to densely hairy or scaly beneath. Stipes and rachis generally ebencons. Rhizome tufted or creeping—(Moore),

This genus differs from *Pteris* in the receptacle being punctiform instead of linear elongated.

W

dots

1. *Cheilanthes tenuifolia*. (Sw). Caudex short, creeping scaly, stipes elongated rarely scaly, fronds sub-niembrauceous glabrous 34 inches to a span and more long, ovate acuminate or more or less deltoid sub-tri-pinnate, ultimate lobes of the primary and secondary divisions the largest more or less pinnatifid, pinnules elliptic, oblong or oblongo-lanceolate sub-pinnatifid or crenate with broad blunt teeth, involucre mostly elongated more or less confluent, more or less crenated or denticulate, sometimes transversely wrinkled, stipes and rachis purple-black, main rachis winged above, secondary and tertiary rachises all with a narrow wing, *Hook., Sp. FH.* 82 ; -*Suav. By*. Fit. pp.* 129 and 332 ; -*C. rupestris*, *Wall. Cat. n.* 67 ; -*C. micrantha*, *Wall. Cat. n.* 68 ; -*Aspidium tenue*, *Retz. Obs. D'P. f.* *Peris hUmms, ForSL Prod.* 421 ; *Trich. tenuifolia*, *Burn. Ind., p.* 237 ; -*Dryopteris campestris*, *Rumph. Amb.* v.

A common fern in dry localities all over the presidency, it is not found at any great elevation.

PLATE No. CLXXXVIII.

CHEILAKTHES (*continued*).

2. *Cfadlanthes vaiiam*, (Hooker.) Root tufted, stipites 4-6 inches long, slender, ebeneous glossy, plane and margined on the upper side, obsolete! / secoso-paleaceous, fronds sub-menibrainaceous glabrous about a span long, the pinnatifid apex acuminate, pinnate above, bi-pinnate below; primary pinnae distant, spreading or a little curved upwards sessile, superior ones **lanceolate**, **acuminate** pinnatifid at their base, and somewhat auricled at the upper base, lower ones deltoid, acuminate pinnatifid at their base, pinnatifid acuminate (caudate) in the upper half, pinnules **lanceolate** acuminate or acute pinnatifid below, the lowest inferior pinna* the longest *Hooker Sp. Fil.* ii. 89;—*Pteris variana*, *Wall. Oaf. n.* 86;—*Pteris casspitosa*, *Ejtd. Cat. n.* 90;—*Cheilanthus tenuifolia*, *J. Smith, in Hook. Lond. Journ. Bot.* lii., p. 404;—*Ch. laxa*, *Moore*.

Anamallays—rare.

PLATE No. CLXXXIX.

3. *Cheilanthus Mysoremia*, (Wallich.) Roots densely caespitose, the fibres very woolly, stipites **slightly** scaly below short 1-2 inches, and as well as the main rachises, deep glossy ebeneous rigid, frond a span or more long, in outline narrow oblong acute **taperine** below by the diminishing of the pinnas, glabrous beneath but firm, bi-pinnate lower **pinna** very small, all of them **oblong-orate** sessile, fraxiuntly opposite pinnate below, the upper half pinnatifid, pinnules or segments linear-oblong plane, (much incurved if dried without pressure) toothed or lobate-pinnatifid, each tooth or lobe bearing one or two **sub-confluent** small whitish sub-orbicular aeri *Hook. Sp. Fil.* ii., p. 94;—*Wall. Oaf. n.* GG;—*Cheil. fragrans*, *Swam Syn. Fil.*, p. 127. et 325, t. 3, l. 6;—*Cheil. Swartzii*. *Webb, et Bert Phytogr. Canar.*, p. 454 *innate*;—*Ch. opposita*, *Kaulf. En. Fil.* p. 211;—*Asplenium J. Tysorensis*, *Herein Roth. Nov Sp Ind Or.*, p. 395 1

Common in dry rocky places on hill sides up to 3,000 or 4,000 feet.

PLATE No. CXC.

4. *Cheilanthefarinosa*, (Kaulf.) Roots tufted, stipites more or less elongated, ebeneous glossy deciduously scaly, fronds sub-coriaceous from a span to a foot long, deltoidly lanceolate, or lanceolate glabrous, white and powdery **beneath**, pinnate, the apex **pinnatifid**, acuminate, pinnae mostly lanceolate **pinnatifid**, the one or two lower most pair more or less half deltoid bi-pinnatifid below, involucre brown, acariose rounded, sometimes confluent and then waved or lobed, the margin entire or toothed and jagged, *Hook. Sp. Fil.* ii. 77;—*Kaulf. En. Fil.*, p. 212;—*Pteris farinosa*, *Forti. Fl. Egypt. Arab.*, p. 187;—*Cheilanthus dealbata*, *Don. Prod. Fl. Nep.*, p. 16;—*Pteris argyropkylla*, *Sw. Syn. Fil.*, p. 105;—*Pt. argentea*, *Bory*;—*Pt. decursiva*, *Font et Sit.*;—*Cassebeera*, *J. Sm.*;—*Allosorus*, *Pral.*

Nilgiris and other mountainous tracts in the Presidency very common; called "the silver fern" there is a variety with the powder of a pale sulphur colour.

PLATE No. CXCI.

5. *Cmlanthes hullom*, (Kunze.) *m8tefficus!pty GmssaOM\$ -«ip»a 0-o'^ciies' loug, te^+sptf. aatwa—«« the "* base, and as well as the rachis, and **stout** *partial rachis* beneath, which extends to the apex of the pinnae deep glossy ebeneous; frond rigid, coriaceous glabrous (a- jlprown when dry) oblong-lanceolate, opaque above, and there under the microscope as it were minutely granulated, **pinnato-pinnatifid** ^{en8} inches long, pinnae rather distant nearly opposite, the tower ones sometimes sub-bipinnate, ovato-oblong, pinnatifid, deeply pinnatifid, the lobes linear crenate on the lowest inferior ones, often again pinnatifid singularly bullate on the upper side, in consequent ^{ta a S111} *kou co3ta*, and veins (the spaces between them being convex) the primary lobes of the pinnae are rather distant, so that pinnae may almost be said to be pinnate with a winged rachis, the margins of the lobes and teeth of the crenatures are much **reflexed*** form semi-orbicular involucre pale at the edge, which become united more or less continuous and slightly erose at the *mi*, ^{ifl} age becoming more membranous, *Hooker Sp. Fil.* ii. 88 *~Runu* *Lin. xiv.*, p. 274.

I have no doubt that the plant here, figured *it tli GheUanihe* oullosa* of Kunze, but I believe it to be only a mountain variety of "*Ch. farinosa*," it is always more or less white and dry beneath.

Nilgiris—very common.

rjv No. exen.

6. *Chailanthes Dalhousiae*, (Hook.) Roots tufted, stipites rather short, ebeneous glossy, deciduously scaly. fronds about a span long, deltoidly lanceolate, glabrous on both sides, and perfectly free from powdery substance beneath. **the ap.** deeply pinnatifid and acuminate; pinnae, upper ones lanceolate pinnatifid, the rest broader and bi-pinnatifid, lowest part of the rachis at the base with a few lobed and jagged. *Hook. Sp. Fl.* ii. 80.

Very nearly allied to *Chailanthes farinosa*, but always destitute of powdery substance—**ita** fronds are larger and membranaceous. Nilgiris, in woods near Makoorty.

PLATE No. CXCIIL.

TRIBE 1. (i) ACROSTICHE^E.

* *Veins fte.*

POLTEOTETA. *Humboldt and Bonpland; Willd. Sp. Pl. V. 39.*

(*Egenolfia*, Schott; *Lacussadea*, Gaudichaud;—*Ectoneura*, Fée;—*Granulina*, Bory;—*Botryothallus*, Klotzsch. *M. S.*;—*Psomiocarpa*, Presl;—*Microstaphyla*, Presl;—*Acrostichii* sp., Auct.;—*Olfersia* sp., Presl;—*Anogrammatia* sp., Fée;—*Gymnogrammatia* sp., Auct.; *Osmunda* sp., Jacquin.)

Sori superficial, non-indusiate, the *receptacles* occupying the whole under-surface, or both upper and under surface of the rachiform fertile fronds. Veins simple or forked, or pinnate from a central costa; venules simple or forked, free.

Fronds dimorphous, pinnate, or bi-tri-pinnate, the fertile with linear contracted segments. **RI** this genus occurs the highest degrees of development of which Ferns swm susceptible. Tho wWo / T^A Crcc^N S « scandent. I« species the whole surface both above and below) is sporangiferous, (Moore.) f tho uft^R-3ur^faco (and in some)

1. *Polybotrya appendiculata*, (J. Sm.) Rhizome thick, short creeping, stipes and rachis scaly; fronds pinnate glabrous, the sterile ones viviparous at the apex, pinnae 25 to 50 pair, sub-opposite or alternate oblong lanceolate obtuse, 2 to 3 inches long, J on inch broad, rather deeply crenate with a setaceous bristle between each crenature, superior basal crenature the largest, inferior base cuneate and alightly unequal, veins pinnate free, fertile fronds much contracted, pinnae much shorter than the sterile ones.

Moist Wests at no great Nation. An,mallays) N^irU, *»

PLATE No, CXOLV.

2. *Polybotrya, asplniiifolia*. (Eory.) Rhizome thick, short creeping, st^< lg obtuse very une qu J . " * P^nate glabrous, sometimes viviparous at the apex; pinnae 25 to 50 pair opposite or alternate, UA se(acuous bristle beu S. ded ^, the *n^erit^*r basal portion being, aa it were, cut away) pinnatifid nearly £ way to the costa, wiaaCrwj fertile f_ronda m " each sc>Jicut, uj>per basal Begmoat the largest and creuate or serrate, others entire or crenulate, veins pinn shorter than the sterile ones.

Closely allied to the preceding species, but easily distinguished.

Moist Forests at no great elevation. Nilgiris—Anamivilays, &c.

PLATE No. CXa

EUPHOGLOSSUM, SbAoa, *Gen. Fil.* (under t. U) (*Acrostichum*, *Fit* ^ surface of the fertile, sometimes cc>ntracted fronds. *Veins*

Sori superficial, non-indusiate, the *receptacle* W ^ ^ * 0 ^ ter^tin^3 within the margin.

Fronds simple, entire, the fertile often somewhat narrower, naked or clothed with scales. Rhizome short erect, or decumbent or elongately creeping ; rarely hum if use and ramose. (Moore.)

1. *Elaphoglossum vUcomm*, (Schott.) Rhizome short creeping, densely tufted with shining brown linear acuminate scales, sterile fronds linear lanceolate acuminate gradually attenuated at the base 10-16 inches long (<£ iriskh tie, swaly. stipe, is. o&e» 4-5 iiiiite&) and | of an inch broad, dothed on both sides-ss-is- tlio- stipa-TPith- sSollr.topubjsesns,- fertile fro adsmticbcoatratt&d; ^tit \$>£-uuliivk \muu, Schott. *Sen. Fil.*(*Suk t.* 15);—*J. S»i.*, *Hook. Journ. W.* 148;—*Elaphoglossum Blmneanum*, *J. Sm., Hook. Journ. Bot.* iii. 400;—*Acrostichum augustatum*, *Bojer M.* 8. ;—*A. Brentelii* in *Jree. Seh&r. Supp. il 3 t.* 102 ;—*A. Gardnerianum*, *Loioevi L t.* 58 ;—*A. lancifolium*, *Dcsv. JSerl. Mag.* v. 310 ;—*A. oeriifolium*, *Wdll. Cat.* 16 ;—*A. petiolatum*, *Sw. Ft. Ind. Occ. iti.* 1588 ;—*A. Plumeri*, *Desr. Prod.* 209 ;—*A. salicifolium*, *WUld.*;—*A. viscoam*, *Sw. Syn. FU.* 10-193 ;—*Olfersii*) *neriifolia*, *salicifolia* et *viscosa*, *Presl. Tent. P'te* >\ 234-5.

Anamallay forests, rocks in the bed of the Toracadoo river, 4000 feet elevation, rare.

PLATE No. CXCVI.

2. *BlapAojlosstitti squamomm*, (J. Sin.) Rhizome short creeping, scaly, furnished with numerous wiry roots, stipes 1 -2 inches long, very scaly, fronds lijiear-lanceolate obtuse, gradually attenuated .it the base, 4-14 inches long, £ to ^ inch broad, densely covered on both sides with velvety ciliated scales, fertile fronds not contracted, *J. Sm., Hook. Journ Bot iv.* 148 ;—*E. vestitum*, *Brack, if. S. Expl. Exp.* xvi, 69 ;—*Aerostichum hirttim*, *Sw. Syn. Fit.* 194-419 ;—*A. Loweanum*, *Kze. Hb.*;—*A. Lowei*, *Fee*;—*A. paleacemu*, *Hook, el Grev. Icons FU. t.* 235 ;— *A. squamosuui*, *Sw. Schrad. Journ.* 1800 ii 11 ;—*Olfersise paleacea*, *Presl. Tent. Pier.* 231.

Nilgiris, on trees about Nediwattan and on the Sisparah ghât, abundant,

PLATE No. CXCVII.

3. *Elaphoglossum, conforms*, (Schott.) Rhizome long creeping, scaly, furnished with hairy fibrous roots, stipes 2-3-4 inches long, (thosi of the fertile fronds often longest) black at the base, furnished with peltate or sheathing scales, fronds narrow lanceolate acuminate furnished with diaphanous margin which is revolnte in age ; 3 to 5 inches long, and | of an inch broad, glabrous, but furnished with deciduous scales on both sides : fertile frond more or leas contracted, *Schott. Gen. FU. (Suh. t.* 15);—*Acroatichum conforme*, *Sw, Syn. FU.* 10-192. (. 1—*Fig. 1* ;—*A. marginatum*, *Wall. Cat.* 17-

Kilgirn—very common on tree3 on the higher ranges.

PLATE No. CXCVIII

4. *Elapiwglos&um sligtnatolepis* 1 (Fee.) Rhizome creeping, very scaly, and furnished witli densely hairy wiry roots j stipes scaly, of the sterile fronds 1-2 inches long, of the fertile 4 to 5 inches, sterile fronds glabrous, often furnished with deciduous scales beneath, lanceolate acuminate very gradually attenuated at the base and decurrent on the stipe, 8-1£ inches long, 1 to 1£ inch broad, furnished with a diaphanous margin, fertile fronds n^£ or less contracted & A mn* oilier thaL me steni'J ,,,,., *Fee Acrost.* 62 (. 2i—*Fig 2 I Kit. Linn.* xxiv. 348.

Nilgiris and Anamallay3—common in ravines at no great elevation, on rocks and tr*es.

PLATE No. CXCIX,

5. *ElapkgloMum lauri/olium*, (Thouara.) Rhizome creeping, scaly, furnished with hairy wire-like roots, stipes scaly often as long as the frond, fronds very coriaceous lanceolate acuminate, sometimes angled at the margii), 4-6 inches long, 1\ to 2 inches broad, furnished with a very conspicuous diaphanous margin, fertile fronds more or leas contracted. *Pet. Thouars Fl. Trittam D'Acunka* 31;— *Elaphoglossum angulatim*, *Bl En.* 201 ; *Id. FL Jav. 25, t. G* ; *Olferatre angulata* et *laurifolia*, *Fresl Tett, Pptr.* 234.

Anaraallaya higher rangc3 on trees—Nilgiris (Honamund.)

PLATE No. CC.

* • Vein* transvertel/ combined in a tingle tritt.

STENOCHLENA...—J~< Smith, Hook. Journ. Bot. iiL 401

(Cafraria, Presl.;—Lomariobotrys, Fée—Osmunda sp., Auct.;—Onodaea sp., Auct.;—Anemia sp., Auct.;—Lomaria sp. Auct.;—Polybotrya sp., Mettenius.)

Sori superficial, non-indusiate, the receptacles occupying the under-surface of the contracted fertile fronds. Veins arcuate at the base forming narrow costal areoles; areoles parallel-furcate, connivent with the thickened cartilagineo-serrate margin.

Fronds dimorphous, the barren pinnate, the fertile contracted pinnate or bi-pinnate having slightly revolute margins. Pinnae with a marginal gland near the base on the upper edge; sometimes articulated. Rhizome scandent, (Moore.)

1. Stenochlona scandens, (J. Smith). Rhizome scandent, (often reaching the tops of the highest trees,) fronds glabrous, pinnate, 4 feet long, pinnae articulated numerous, alternate, lanceolate, acuminate, pungently serrate towards the apex, oblique at base and furnished with marginal gland on the upper edge, 5-10 inches long, 1 to 1½ inch broad. Veins forming narrow costal areoles, spicuous towards the apex of the pinnae, obsolete below; fertile fronds very much contracted. J. Smith, Hook. Journ. of Bot. 401;—Lomaria scandens, Willd.

Anamallays, moist forests up to ,000 feet elevation—C.W. Regl, t (Wynad)—Sampagee ghāt (Coorg)—SoutU Canara, &c.

FLATS No. CCL

• • Veins retiaud.

PACILOPTE Ris. J V ^ JTent p(er. 24]. (Esclm. Emend)

(Polkilopteris, Eschweiler;—Bolbitis, Schott.;—Campium, Presl.;—Cytogonium, J. Smith;—Heteroneuron, Fée;—Acrostichum, Auct.)

Sori superficial, non-indusiate, the receptacles occupying the under-surface of the contracted fertile fronds. Veins pinnate from a central costa, prominent. Areoles arcuately, angularly or irregularly anastomosing, sometimes producing exterior free or irregularly anastomosing veinlets.

Fronds dimorphous pinnate often viviparous, rhizome creeping. (Moore.)

2. Paciloptera repandans, (J. Sm.) Rhizome thick, scandent, fronds glabrous, pinnate 1-2 feet high, of which the stipe is about ½, stipe and rachis more or less acaly—rachis more or less winged, sometimes very conspicuously; sterile fronds, 1-30, alternate sessile or very short, lanceolate from nearly entire or slightly crenated, primary veins pinnate, veinlets anastomosing, the terminal ones long and often bifid which are generally free, a clavate apex—fertile fronds conform to sterile but much contracted, sori when black, J. Sm. Bot. Bee. 426;—Acrostichum repandum, Blume En. Pl. Jav. 104;—Heteroneuron proliferum, Fée, Bot. Bee. in Kew. Jour.; Bot. Bee. 426;—Acrostichum heteroclitum, Presl. Rel. Hook. 1-15 t. 2, Fig. 2.—Paciloptera heteroclitica, Presl.;—Acrostichum contaminans, Wall. Bot. Bee. 426;—Paciloptera contaminans, Moore Ind. Sil., p. 8;—Cytogonium repandum, J. Sm., Journ. of Bot. ii, 4/n

Very common on the western side of the Presidency in moist forests at no great elevation. Anamallays and Sispara ghāt abundant.

PLATE No. CCII.

2. Paciloptera terminans, (Wall.) Rhizome thick, fronds glabrous pinnate, 1-4 feet of which the stipe is sometimes nearly ½ stipes and rachis furnished with a few scales. Sterile fronds, pinnae alternate or sub-opposite petiolate, broad lanceolate sinuate or waved with a longish serrated acumination, terminal pinnae much the longest (as 2 feet long) proliferous at the apex, primary veins pinnate, veinlets anastomosing pretty regularly at right angles. Fertile fronds conform to sterile, but much contracted. Paciloptera terminans, (Wall.) Bot. Bee. 426;—Paciloptera terminans, Moore Ind. Sil., p. 8;—Cytogonium repandum, J. Sm., Journ. of Bot. ii, 4/n

Very abundant throughout Coorg. Lower part of the Sispara ghāt—SoutU Canara, &c.

PLATE No. CS. III.

(b.) *Fronds fertile on the upper pinna;*

ACROSTICHUM; *Zinncus*, *Gen. Fit*, 785. (Emend.) *Pred. Tent Pier* 240

Sori superficial, not indented; the *receptacles* occupying the whole under-surface of the upper pinnae. *Veins* uniformly reticulate in small regular hexagonal meshes, without free veinlets.

Fronds pinnate, thick coriaceous, the upper fertile pinnae usually somewhat narrower. Rhizome thick, sub-globose decumbent, (Moore.)

1. *Acrostichum aureum*, (Linn.) Fronds firm, 1 to 3 or 4 feet high, pinnate. Barren segments linear-oblong, about 4 to 5 inches long, very obtuse, oblique at the base and petiolulate, the midrib prominent, the very numerous equally reticulate veinlets covering the under-surface, fertile segments usually occupying the upper part of the frond, and rather smaller than the barren ones. *Linn. Sp. PL* 1525; *Berth. Hong Kong FL*, p. 443;—*A. marginatum*, *Roieb. Crypt. Pl. Cal. Journ. Nat. Hist.* iv. 180;—*Chrysodium* vulgare, *Fee. Acrost.* 97;—*A. inaequale*, *Willd. Sp. Pl.* v. 117;—*A. apedosum*, *Willd. Sp. Pl.* v., 117.

Banks of rivers and backwaters on the Western Coast—very abundant.

PLATE No. CdV.

ADDENDA.

14. *Pteris patens*, (Hook.) Caudex erect, stipes numerous, stout scaly at their base, rachis stout glabrous, frond ample, erect, strict, membranaceous, pinnate, lower pinnae bi-tri-partite, pinnae 8-16 inches long, strict horizontally patent, numerous approximate, elongate-oblong, acuminate, rarely sub-caudate, sessile or lower ones shortly petiolate, deeply (almost to the rachis) pinnatifid, segments horizontal, very uniform, linear, scarcely acuminate, serrulate where sterile, the base dilated decurrently-confluent on both sides at the lower base, sometimes apart, veins all free, simple or once or twice forked, and a continuous nearly to the apex, *Hook. Sp. Fil.* ii., 177; *Pteris eicelaea*, var. *J. Snu Herb*;—*Pt. decussata*, *J. Smith in Hook. Journ. of Bot.* iii., p. 405.

New Carcoor ghat, (Wynad) abundant—a very large handsome species. I have not met with it elsewhere in the Presidency.

PLATE No. CCV.

NOTE.—Sir W. Hooker informs me that "*Campteria Anamallayensis*," (PL xlv.) of this Work is "*Campteria geminata*" of Agardh, which species is referred by Sir W. Hooker as a synonym to "*Campteria biaurita*" (£) I feel quite certain that the two species "*C. Anamallayensis*" and "*li-aurita*" are quite distinct, the venation and whole habit are different; if my plant is the same as Agardh's, the name "*Anamallayensis*" will however have to be changed to "*geminata*,"

Campteria nemoralis, (Willd.) or what I take to be that species is not uncommon in this Presidency, in outline and general appearance it is in no way different from *Pteris quadri-aurita*, (Retz.) but whilst some entire fronds have quite the venation of *Pteris* and are consequently not distinguishable from "*P. quadri-aurita*" other fronds or some of their pinnae have the venation of *Campteria*, but with smaller costal areoles and fewer free veins than in "*C. bi-aurita*," I have always found this fern growing in localities where, both

"*Pteris quadrifida*" and "*Campteria bi-aurita*" were also to be found, and I suspect that it is a hybrid of the two. Bentham in his Hong Kong Flora joins the two species "*Pteris nemoralis*" and "*Pteris quadrifida*." In "*Pteris quadrifida*," "*Pteris nemoralis*" and "*Pteris quadrifida*," the two species always reach the margin, in "*Pteris nemoralis*" never,

3. *Lindsaea heterophylla*, (Bedd.) Glabrous fronds 10-15 inches high, deltoid, bi-pinnate, and in the lower portion sometimes tri-pinnate, simply pinnate at the apex, lower pinnae 4-6 inches long, upper ones gradual! - smaller and less numerous, (as many as 20) very various in form, sub-rotund, orbiculate, or lanceolate, veins simple or forked, all free, sori continuous round the whole surface except at the base.

Sheveroy Hills, (ravines on the green hills.)

This fern is quite distinct from "*Sekkoloma heterophyllum*," J. Smith, (Plate xxvi of this Work) the veins are always free and never anastomosing. I am not sure, however, that it is not one of the forms referred by Sir William Hooker to his "*Lindsaea (Scheuchzeria) heterophylla*" Sp. Fil., p. 223,

PLATE No. CCVI.

2. *Ilmenophyllum crispatum* (Wall.) erect, fronds ovato-acuminate tri-pinnatifid, the segments linear obtuse generally plane, sometimes waved entire, involucres terminal, sometimes on lateral segments copious ovate, sessile free entire, 2-valved to the very base, the valves convex, receptacles wholly included, stipes with broad crisped wings almost to the base, wing of the rachis also crisp* * Wall. Cat. n. 109; Hook. Sp. Fil. 1-105. H. atrovirens, Colenso in Taam. Phil. Journ. 1

Common in moist forests on the Nilgiris, Auamulays, Wynad, &c, up to 4,000 feet elevation.

PLATE No. CCVII.

4. *Trichomanes intramarginifidum*. (Hook. et Grev.) Caudex creeping, somewhat tomentose, fronds small erect pinnatifid, tapering into short stipes, the segments few, linear-oblong obtuse erect to the point, slightly wided opaque with a slender intramarginal vein, the receptacles sub-cylindrical tapering at the base, sunk slightly in the apex of the segments, the mouth spreading of the receptacles protruding, Hook. et Grev. Ic. Fil. t. 2U; Hook. Sp. Fil. 1-120.

Shevagferry Hills.

PLATE No. CCVIII. (Fig. A., at the corner of the plate is a single frond of a species of *Trichomanes*, lately detected on the mountain near Niddiwattan on the Nilgiris. It is probably undescribed, but as my specimen consisted of only a single frond and no top, I do not attempt a description of it)

NOTE.—*Trichomanes proliferum*, (Flaw) about to be figured in one of the supplementary numbers of this Work, was first detected abundant on the western slopes of the Nilgiris at an elevation of 3,000 feet growing with *T. Stuebelii*.*

Plates 17 to 20 of this work are four Supplementary Numbers to "*Tin Ferns of Southern India*," and contain all the ferns not as yet detected in Southern India. Since the first portion of this work has been in the Press, three of these ferns have been found on the hills near Courtallum in the Tinnevely district, and one has been detected on the Nilgiris, many more will doubtless still be in Southern India, as most of them are also natives of Northern India, Bunnah, or the Straits, so that this work would hardly be complete if they were not figured, all the other ferns found in Ceylon have already appeared in the former numbers of this work, so that this work of 20 numbers will contain figures of all the ferns of Southern India and Ceylon,

ACESTICHILE.

Fronds villosly fertile.—Veins free.

* ELAPHOGLOSSUM. See page C8.

I. *Elaphoglossum spatulatum*, (Sw.) Rhizome short, creeping or sub-erect, densely scaly, furnished with numerous "wiry roots. Stipes 2 inches long, densely covered with reddish setaceous scales, fronds linear-lanceolate to rhomboid-lanceolate 1 to 2 inches long, covered on both sides with numerous hair-like scales, fertile fronds, broad ovate, smaller than the sterile ones, Acrostichium pilosoides var. spatulatum. Hook. Sp. Fil. v. 228.

Ceylon 5,000 to 6,000 feet elevation, rare.

PLATE No. CCIX,

PLEUROGRAMMÆ.

* *Veins consisting of a costa only.*

MONOGRAMMA. *Schkuhri Crypt Oevjäch 82.*

(*Yngularia*, Feej—*Cochlidii* sp., *Kaulfuss*;—*Graimmitidis* sp., *Aucl.*;—*Pteridis*, sp. *Auct.*;—*Pleurogrammatis*, sp. *Feej*;—*Assplenii* sp., *Swarh*;—*Acrostichii* sp., *Smarts*;—*Ternitidis* sp., *Mettenii*, *Dididopteris*, *Brack*.)

Scri sub-immersed, linear elongated, the *receptacle* formed of a portion of the costa—*Veins* consisting only of a costa.

Fronds small, gramiform or rachiform, simple or forked, Rhizome creeping. (Moore.)

1. *Monogramma Junghuhnii*. (Hooker.) Rhizome creeping hairy; fronds linear filiform, grass-like, 2-3 inches long, 2 lines broad, sori in two rows within a vaginiform expansion of the costa, one side of which is larger than the other. Hook Sp. Fil. v. 123, *Vaginularia Junghuhnii*, Mitt. *Pleurogramme t paradoxa*. *Fie Yitt*, p. 38.—*Diclidopteris angustissima*. *Brack Fit. V. St. Exp. Exp.* p. 135—*Monogramma liaearis*, *Junghuhn*,

Ceylon. (C. P. 1281.)

PLATE No. CCXIX.

• *Veins Compoundly anisomoting.*

GYMNOPTERIS. See page 15.

I. *Gymnopteris Fed. Var. pinnatifida*. (R. H. B.) Fronds deeply and irregularly pinnatifid. Segments of the fertile frond* very narrow.

Ceylon. (C. P. 1318.)

A curious lyrate variety of the common *Gymnopteris Feei*. (See page 15). I have not found it in Southern India, though the common form occasionally has the sterile fronds forked, variously lobed, or even sub-pinnatifid, the fertile fronds seem always to remain simple, I may here also mention that I have occasionally found the broad sterile foliage of the common variety with a contracted fertile apex (as in *Hymenofepis*), it is, however, an abnormal state.

PLATE No, CCXL

TENTIDEAE.

Tjssiorsis. See page 18,

I. *Teniopm scolopndrina*, (J. Smith.) Caudex creeping, palaccoos with **tubal&ie scales**, fronds linear, lanco!ate membranaceoua; gradually attenuated at both ends, 1G to 28 inches loog by 1 inch broad—glabrous on both sides, *arcely st;>itate. Sori sunk in i furrow within the margin of the upper portion of the fronds, inuer margin of the furrow **wing**ed, margin of the frond revolute over the fructification diaphanous or sub-indusiate, Haplopteria acolopndrina. *Pr. Tint. Pier. p. 1 i 1* ;—**Tteniopt***ria Forbesii. *Gen. Fil. t. 76.* Pteris scolopentiriua. *Rory. Vitturm Zcykuica Fee.*

Ceylon. (C. P. 1301,1

PLATE No, CCXII.

LINDSÆÆ.

LINDSÆA. See page 7.

* Fronds pinnate.

+ Costa *txccuirte o: margia-*"or obsolete. Sori on the superior margin.

1. *Ziuhcca repens*. (Thw.) Caudex creeping, scaly. Stipes short, fr-i,ids rigid membranaceous linear-lanceolate, 10-18 inches long, 1 inch broad, pinnate attenuated fit the base, pinna very numerous, 40 or more pair, **half del** **bold-ovate obtuse** or sub-acute, base nearly parallel with the iwbu, and with the lower margin quite entire, upper margin **Mmlato-oreate**, costa **parallel with** and close to the margin, veins simple or forked, free, sori short, oblong, one near the margin of each lobuui :—*Lindsaea oblongifolia. Reism.—Hook. Sp. Fil. i. 20G—Davallia Boryana. Prai. Bdiq. Hamk. i. p. 66. ff&A. •-)>. Fil. i. 175—Acroptorus repcu s. Moore. Ind. Fil. Dicksonia repens. Bory Voy, ii, p. 323;—Davallia Macweana, Hook, & 4 « * Bot. of Beechj. Voy. p. 10S,*

Ceylon. (G P. 3389.)

PLATE No. CCXIII.

2. *Linima repens* *Var. minor.* (Thw) a smaller form with the piun;e more memi ranaceous, and pinnatifid or serrate, and short®.—*Odontoloma Boryanum, l. \$M*

Ceyloa. (C. p. 1389.)

PLATE No. CCXIV.

3. *Lindma WaUoerm.* (Hook) Cauder creeping, thicker than *n croVs* (iuill **(crrugino** **ous with scale like hairs.** Stipes very long, often 1 foot, and as well as the rach **his dark purple** gloay, fronds lanceolate pinnate S inchw W 1 t. ot long, pinnae 6-9 pairs with t ttmiiiiiaE one which is sometimes confluent with one or both of the appw |air, coriaceous, sub-opposite remote lanceolate or linear ?nceol;tte wiunl, costs central, veins copious, aim at paratel with t he costa. Sorus marginal, continuous on both sides, *Hook. Sp. Fil. i. 209.*

Ceylon. (C. P. 1379.)

PLATE No. CCXV.

* Fronds bi-tripinnate or decomposed.

† Costa *txccuirte or marginal, or obsolete.* Sori on the superior margin.

4. *Lindsaea Jabell!* (f(t, (Dry.) Caudex crtiqing, stipes tufted, generally elongated, fronds linear-lanceolate and pinnate

oid and bi-pinnate) pinnules approximate, shortly petiolate, rather rigid flabellate and approaching to lunate or sub-rhomboid with the sides unequal, the base obliquely cuneate, sometimes the upper ones are confluent to the superior margin crenulate or soriferous. Sorus continuous or interrupted, involucre toothed. *Hook. Sp. FU*, i. 211, *Dry in Linn. Tram.* v. iii. p. 41. t. 8, l. 2. L. polymorpha. *Bot. Gat. n. U.*

A very valuable species. Sir W. Hooker enumerates 3 varieties.

Ceylon. (C. P. 3311.)

PLATE Ha. CCXVI.

5. *Lindstea caudata*. (Hook.) Stipes terete and as well as the rachis deep brown glossy, fronds bi-pinnate, pinna narrow, numerous, (11-17), lanceolate, the apex long, attenuate caudate, pinnules half ovate, lunulato-falcate decurved, membranaceous base, superior base truncate, upper margin forming almost the segment of a circle quite entire, terminal ones gradually smaller on the caudex or tail-like point, sori at the very margin and continuous to the obtuse apex. *Hook Sp. FU*. i. 215.

Ceylon, (Adam's Peak.) (C. P. 1350.)

PLATE Ko. CCXVn.

ADIANTUM. See page 1.

I. *Adiantum flahdlulahim*. (Linn.) Frond flabellate, bipartite-pedately divided, tri-pinnate, secondary pinnae lanceolate acuminate, pinnules glabrous, sub-coriaceous-chartaceous, obliquely cuneate or semi-orbicular-cuneate, superior base truncate, superior margin 2-4 lobed and serrate-dentate in the sterile one, lobes soriferous; involucre large, the breadth of the lobe oblong, straight, rarely a little curved, hard coriaceous, stipes elongated, ebeneous scabrous below, the rest as well as the slender rachis glossy and glabrous, *Hook, Sp. FU*, ii. 30;—*Linn. Sp. Pl.* p. 1558;—*A. fuscum*, *Lidz. 01\$.* ii, p. 28. t. 5;—*A. amaenum*, *Wall. Cat, n.* 78.

Ceylon. (C. P. 3390.)

NOTE.—*Adiantum rhaiphorum* (C. P. 3102), appears to be only a glabrous variety of *Adiantum caudatum*.

PLATE No. CCXYIII.

TETEEIDK'E.

FTEEISJ See page 11.

PLATE No. GCSIX. is a curious *Pteris* forwarded from Ceylon by Mr. T. W. Beckett. It is, I believe, a variety of my *Pi. Otaria*, and seems intermediate between *JPteris otaria* and *PL erenata*—it is, I believe *Pi. quadrifida aurita* var. *ludens* of Mr. Thwaites' *immera im* (C. P. 1351 and 3060) and Mr. Thwaites suggests that it may be a hybrid.

C. Veins uniformly reticulated, without fret included veinlets.

•LITOBKOKHIA. *Presl Tent. Pter.* 148.

(*Pteris*, *Aganthe*,;—*Doryopteris*, *J. Sm.*; *Heterophlebium*, *if. e.*;—*Pteridis* sp. *ne.*;—*Polypodi* sp. *A. Mi.*;—*Acrostichum* sp. *Auct.*;—*Cheilanthes* sp. *Axtet.* *Lonchitidis*, sp. *Linn.*)

Sori indusiate, marginal linear continuous, the receptacles linear transverse, uniting the apices of the veins. *Indusium*. of the same form, membranaceous. Veins simple or forked from a central costa, uniformly reticulated, evident or obscure, the hexagonal simple, areoles universal, or rarely the basal portion of the veins parallel.

Fronds herbaceous or coriaceous, simple, pedately palmate, pinnate or bi-tri-pinnate, [Rhizome short, erect or creeping (Moore.)

1. *Luhrockia tripartita*. (Sw.) Stipes elongated, stout, and with the rachis sub-castaneous, fronds ample, tripartite lateral branches, pinnate spreading long, petiolate sub-membranaceous glabrous, pinnules 4-6 inches or more long, linear-oblong or linear, lanceolate sessile, acuminate rather deeply pinnatifid, segments approximate, linear-oblong falcate (upwards) obtuse or acute, entire or scarcely serrated and only at the apex, nearly half an inch long, sinuses obtuse, basal veins forming a single arc parallel with the costa, veins forming

& series of 2 or more areoles (parallel with the costules), from which proceed free veinlets which do not extend to the margin but terminate

nate with a thickened apex just within it, involucre continuous on the lower § of the margin of the pinnules not extending to the apex. *Ilk. Sp. Fil.* ii. 225;—*Pteris tripartita* Sw. *Syn. Fil. p.* p. 100 and 293;—*Pteris seroiolata*. *Pair. Ettcycl v. p.* 723 j—*Pt. revoluta*. *Ay. It, p.* 73. *Pt. intermedia*. *BL En. Fil. Jav, p.* 211;—*Pt. longipes*. *Don. Prod. Fl. Nep, p.* 15 1—*Pt. uniseriata*. *Poir. Encycl Bot. Suppl. iv. p.* 60S ;—*Pt. linearis*. *Poir. I c. ».* p. 273 j—*WaU. Cat. it.* 105 ;—*Pt. margmata, P-ory.* *Votj. 2. p.* 192 ;—*Willd. Sp, PL v.* 399 ;—*Pt. connexa*. *Sm. Fil. Philip in Boot 'Journ. Bot, iii.* 405 ;—*Pt. sub-podata*;—*WaU. Cat. n.* 10 *juvenilis*.

Ceylon. (C. P. 1327.)

PLATE No. CCXX,

2. *Litobrochia axtrita*, (Blume.) Caudex long creeping, subterraneous, stipes and rachis castaneous, glossy fronds, ample submembranaceous, distant ovate, long stipitate, glaucous beneath, tripinnate, pinna; all sessile, subadnate mostly opposite horizontal, **pinnule*** opposite sessile, lanceolate obtuse, more or less deeply lobed and pinnatifid. Segments ovate or oblong, (sterile ones subserrate) or triangular, lowest one often remote and forming auricles OR the rachis, superior ones confluent, veins all anastomosing, areoles next the costa **find** *costules the largest and most elongated, involucre continuous or interrupted membranaceous entire at the edge.* *Hook. Sp; Fil.* ii 231/—*P. H3 y*—*Pt. Bnmoniaua Endl. Prod. Fl. Norfolk, p.* 12.

This species only differs from *L. vespertiionis* Labill, (*L. incim*, Thunb) by the anastomosing of the veins being always constant. Sir W. Hooker keeps them distinct, but Dr. Hooker unites the two in his "Florae Nova* Zelandire."

Ceylon. (C. P. 1326.)

PLATE No. CCKXI.

La 3 j. *Receptacles short, transverse, or arcuate on the sides, tub-parallel with the midrib or margin.*

SORI INDUSIATE—WOODWAEDIE.

DOODIA. (*li. Brown.*)

(*Woodwardia, Sfelten.*)

Sori oblong or sub-lunulate, in one or more series, arranged transversely with the veins forming areoles which are superficial, not sunk. *Involucre* membranaceous, of the same form as the sori, opening towards the costa and lying parallel with it. *Veins* uniform, the lower ones arcuately anastomosing, forming elongated costal areoles (one or more series), the marginal venules free.

Fronds pinnate or pinnatifid. Segments or pinnae sharply serrated, rhizoma sub-globose.

1. *Doodia dives*. (Kunze.) Rhizome obliquely ascending, pilaceous, radicose clothed with black fibre, stipes angled brown, very paleaceous near the base, fronds coriaceous, glabrous ovato-oblong, long caudate at the apex pinnate, at the base with some of the lower pinnae auricled, pinnatifid above, pinnae) and segments patently divergent, oblong margins pungently serrated, pinnae or segments of the fertile fronds often distant, sori in 1 or 2 series on each side of the costa of the pinnae and segments, and also on the wings of the rachis, lunate often more or less confluent, *Hook, Sp. Fil.* iii. 73.

Ceylon. (C. P. 976.)

PLATE No. CCXXII.

MENISCIEE.

MENISCIDIUM. See page 19.

1. *Menisidium, Thwaitesii* (Hook.) Caudex creeping more or less scaly, and furnished with wiry roots, stipes angled, very long 6 inches to 1 foot, and with the rachis puberulous, fronds deltoid, 6-8 inches long, 4 inches broad at the base, pinnate, pinnatifid at the apex, pinnae alternate or opposite, lanceolate rounded at the base, obtuse or acute or caudate at the apex, crenato-lobate, lower ones finely serrate, costa and veins puberulous especially beneath; sori linear, oblong, becoming confluent.

Mr. Thwaites informs me that Sir W. Hooker thinks that this may be only a variety of *Uouiopteris prolifera*.

Ceylon. (C. P. 3115.)

PLATE No. CCXXIII.

AsPLfcNIUM. (See page 43).

1. *A splenium elongatum*. (Sw.) Caudex a small thick rhizome sparsely scaly, stipites *G-S* inches long, cespitose, and as well as the compressed rachis pale-brownish-green and sub-furfuraceous with small lacerated deciduous scales, fronds pale-green 8 to 12 inches long, Tiblong, suddenly acuminate, coriaceous-membranaceous opaque pinnate, pinnae 1-2 inches long, petioled horizontally-patent, gradually smaller, upwards approximate (in general), oblong quite straight or sub-falcate, very obtuse, strongly serrated, the base truncato-cuneate oblique, superior base distinctly auricled, inferior sub-excised, terminal pinnae narrow elongated, acuminate pinnatifido-serrate, sometimes twice or thrice as long as the rest, veins simple oblique, sori copious on almost every vein, short-linear intermediate between the margin and the costa, involucre narrow-linear, very firm.—*Hook Sp. Fil* iii. 117. *Sw. Syn. Fil* p. 79. *Kze. Bot. Zeit.* vi. p. 174. *Metten. Asplen.* p. 112. *A. caudatum*. *Cav. Demonstr.* p. 265, n. 632. *A. productum*. *Pr. Reliq. Hoeii* i. p. 42. t 8. l. 1. (excellent).—*Var. acuminatum*; segments acuminate. *A. Doreyi*, *Kze. Annal Pterid.* p. 23. *Moore Ind. Fil.* p. 126.

Ceylon. (Q P. No. 1078.)

PLATE No. CCXXIV.

2. *A splenium laserpitifolium*. (Lam.) Caudex rather stout, sub-repent clothed at the extremity with copious satiny ferruginous subulate scales, stipites aggregate 3-4 inches to a foot long, lurid-brown, fronds a span to 2-3 feet long, ovato-lanceolate finely acuminate, membranaceous often delicate green, 3-4 pinnate, the surface opaque, primary pinnae 3 inches to a span long, petiolate, from a broad base, broad-lanceolate finely acuminate into an incised cauda, secondary pinnae 1-3 inches long, ultimate pinnules and segments small for the size of the fronds, 3-5 lines long, cuneate undivided or deeply pinnatifid or 3-lobed, the lobes or segments generally narrow-cuneate, sometimes broad, incised or toothed at the apex, veins flabelliform, nearly erect parallel, sori linear, rather short, 2-4 on a pinnule or segment, often exactly opposite to each other and opening face to face, involucre membranaceous.—*Hook Sp. Fil* iii. 171. *Lam. Encycl.* p. 310. *Sw. Syn. Fil* p. 65. *Willd. Sp. Pl.* v. p. 347. *Bl. Enum. Fil. Jav.* p. 188. *Brack. Fil U. S. Expl. Exp.* p. 166. *Metten. Asplen.* p. 160. *Moore Ind. Fil.* p. 140. *Aspl. riparium*. *Brack. Fil. U. S. Expl. Exp.* p. 162, (not Liebm.) *A. robustum*, *Bl. En. Fil. Jav.* p. 189, (in *Herb. Hook.*) *A. tri-pinnatum*. *Roxb. Crypt.* p. 300, (fide Moore.) *Tarachia*, *Pr. A. patens*. *Klfi. Enum. Fil.* p. 175. *Ilooh It. Am. Bot. of Beech. Voy.* p. 274 (not 106J) *Metten. Asplen.* p. 159. *Moore, Ind. Fil.* p. 152. *Diplazium*. *Presl. Fée.*

Ceylon. (C. P. 3801.)

Very nearly allied to *A. nitidum*.

PLATE No. CCXXV.

3. *Asplenium spathulinum*. (J. Sm.) Stipites 6 inches and more high, quite smooth and naked lurid-brown, fronds 1-2 feet long, broad, or ovato-lanceolate, acuminate coriaceous, dark brown when dry and very opaque, quite free from scales, bi-pinnate in the perfect state, pinnate at the very apex, sometimes pinnate with pinnae from an unequally cuneate and auricled base entire, and others deeply pinnatifid at their base or sub-pinnate, pinnae lanceolate broad at their base, pinnules or lobes obovate, the former tapering at the more or less oblique cuneate base, so as to be spatulate always, more or less serrated towards the apex, ultimate ones more or less confluent into an acuminate serrated apex, intermediate ones frequently decurrent so as to form a winged rachis, veins erecto-patent, flabellate conspicuous and with the long linear sori giving a striated appearance to the pinnules, involucre membranaceous narrow-linear. *Sp. Fil* iii. 170. *J. Sm. in Hook. Journ. of Bot.* iii. p. 408, (name only). *Moore, Ind. Fil.* p. 139. *A. nitidum*, *Metten. Asplen.* p. 162. *Aspl. institutum*. *Brack. Fil. U. S. Expl. Exp.* 161. *U 22. l. 2. Metten. Asplen.* p. 159.

Ceylon. (C. P. 2905.)

Nearly allied to *A. nitidum*.

PLATE No. CCXXVI.

DIPLAZIUM. (See page 53).

1. *JHplanum lanceum*. (Thunb.) Caudex long-repent, rooting sparingly scaly, stipites distant 4 inches to a span long, slender, thickened at the base, and papaceous with black scales, fronds chartaceous, firm opaque longer than the stipes, rarely an inch wide, lanceolate attenuated and acuminate at each extremity entire, sometimes a little ropand, costa slender prominent beneath, very horizontal, fascicled, the superior and sometimes the inferior branch only fertile. Sori linear distant remote from the costa, often diplazioid-linear.

Sp. Fil. iii. m.-Tk*nb. *FL Jap.* p. 333. *It. Plant Jap. Ike.* II. i. 1S.-Sw. *Syn. FU.* p. U. *Hill. Sp. PL.* v. p. 303. *Ind. Jap.* p. 34. *Hue.* ix. p. 34. *Diplaz. Jum. I'r.* Kl.—Aspl. sub-smuatum. *Boott.* d. *Gre. Ic. Fil.* t. 27. *Aspl. crassifolium* A. *indum.* Wall. *M. & in Hook. Herb.* *Sol. pinnatifid*; a *dubiui.* *l'>i, Prodi:* p. 9.

Ceylon. (C. P. 1335.)

PLATE No. CCXXVII.

2. *Diplazium Zeylanicum.* (Hook.) *Caudex* teres, repent subterraneous naked black, stipites remote solitary, 1 inch long, paleaceous with lax dark subulato-lanceolate scales, fronds sub-coriaceo-membranaceous, a span to a foot long, 1-2 inches broad, lanceolate acuminate, deeply pinnatifid in the middle, pinnate at the apex, lobes and pinnules linear-oblong obtuse, veins pinnate, entire or forked, sori linear, involucre with the superior basal one principally elliptical.—*Ind. Jap. Sp. Fil.* iii. 237. *Hook. Bot. Cent. of Ferns,* t. 1S.

Ceylon. (C. P. 1249) Elevation, 4,000 feet.

PLATE No. CCXXViii.

3. *Diplazium decurven.* (Bedd.) *Caudex* erect, fronds ample glabrous, coriaceous-membranaceous, bipinnate with the pinnules more or less pinnatifid, primary pinnae distant, fertile lanceolate acuminate, 10 to 18 inches long, pinnules numerous, petiole or *Aecium* 1 to 3 inches long, linear lanceolate more or less pinnatifid, segments obtuse crenate. Veins pinnate simple, rather distinct. Sori curved, one double one to each segment and 1-5 single ones. *Ind. Jap. Sp. Fil.* iii. p. 253, note under *£*. *Polypodioides.* *Diplazium*; *polypodioides* var. (3. v). *Sp. dist 1 Thwaitti En. Cry. Pl.*

Ceylon. (O. V. 3332.)

PLATE No. CCXXIX.

i. *Diplazium Sch&vlu-ii.* (Hatten.) *IUCHIA* and fronda glabrous, or very slightly nerved beneath, fronds simply pinnate with the pinnules 3-inohea long, and deeply pinnatifid, or ample bi-pinnate, petiole lanceolate acuminate (5-8 inches long), pinnules decussate from a bifid base and funning a narrow wing on the rachis, more or less pinnatifid, often half way down to the costa, segments obtuse falcate entire or crenate, veins pinnate simple, sori slightly curved, one double and several single ones to each lobe, *Ind. Jap. Sp. Fil.* i. 3100J. *Diplazium dilatatum.* *Hook. Sp. FU.* iii, 233—in part as referred to *Ceylon C. P., No. 1059.*

The figure represent? portions of both the pinnate and bi-pinnate forms, in the former some of the lobes of the pinnules have the sori *spiculoid.*

PLATE No. CCXXX.

NOTE—' *Diplazium Thivahau*' (A. By.) (C. P. 13-13), appear to be the same as "*D. Lasiopteris*," (Kunze) Plate CLX. *Lasiopteris* and *Thivahau* are both always simply pinnate, and the pubescence is the same, the pinnules in my specimens of *Thivahau* are more approximated than in *Lasiopteris*, and the pinnules are more obtuse and less falcate, but they can hardly be more than varieties.

ANTROPHYUM: M. (See page 17:.)

PLATE No. CCXXXI is a figure of *Antrophyum reticulatum* (Kaulf.) from Ceylon, Fig. LII. of this work is the *Antrophyum plantaginifolium* (Cat.) and not *reticulatum*, and the name must be corrected accordingly. The two species are nearly allied and perhaps not really distinct; the following are the distinguishing characters:

1. *Antrophyum plantaginifolium.* (C. P.) Fronds broad, falcato-lanceolate receptacles deeply immersed, sub-glabrous. Plate LII. Nilgi) — Ceylon

2. *Antrophyum reticulatum.* (Kaulf.) Fronds narrow-lanceolate, receptacles immersed hairy. Plate CCXXXI—Ceylon (C. P. 1305.)

GYMNOGRAMMEE.

(a) *Veins free.*• • • *Sori linear forked distinct.*GYMNOGRAMMA. *Desvaux. Berl. Mag. v. 304.*

(*Gymnopteris, Bernhardtii in part*;—*Neurogranima, Presl*;—*Ceterach, Presl. in part*;—*Calomelanos, Presl*;—*Anogramma, Link*;—*Ceropteris, Link*;—*Hecistopteris, J. Smith*;—*Stenogramma, Klohsch.*;—*Chrysodia, Fée*;—*Argyria, Fée*;—*Trismeria, Fée*;—*Comogramma, Fée*;—*Pleurosorus, Fée*;—*Eriosorus, Fée*;—*Dicranodium, Newman*;—*Asplenii sp.*;—*Acrostichi sp.*;—*Hemionitidis sp.*;—*Grammitidis sp.*;—*Scolopendrii sp.*;—*Polypodii sp.*;—*Osmundae sp. Auctorum*;—*Cryptogrammatis sp., Hook. et. Grev.*—*Phyllitis sp.; Necker.J*

Sori non-indusiate, linear, sometimes elongated, simple or forked, *i.e.*, bi-partite, oblique, often at length confluent; *the receptacles* elongate above or continued below the forks of the veins. *Veins* simple or forked from a central costa, or the costa sometimes indistinct, *venules* free.

Fronds lobed pinnate or bi-pinnate, herbaceous or sub-nienibranceous, often farinosely ceraceous, sometimes lanate beneath, rhizome short erect, sometimes annual.

This genus differs from *Grammitis*, in having forked sori. (Moore).

1. *Gymnogramma Javanica.* (Blume.) Fronds 1-2 feet high (of which the stipe is 8-10 inches) pinnate, pinnae 24 pair with an odd one, lanceolate with a longish acumination pungently serrate, lower pinnae sometimes auricled, glabrous above, puberulous beneath, veins forked, terminating with a thickened apex, just within the margin. Sori simple or forked, not reaching the margin. *Blume. Gymnogramma serrulata. Blume*;—*G. faicata. J. Sm.*;—*Diplazium falcatum. Don.*;—*Dipl. fraxineum. Don.*;—*Grammitis caudata. Wall*

Ceylon. (C. P. 326L)

PLATE No. CCXXXII.

• • • *Sori oblong, lying in the folded cucullate lobes.*CALYMMODON. *Presl. Tent Pter. 203.*

(*Plectopteris Fée*;—*Grammitidis sp., Auct. l*—*Polypodii sp., Auct.*;—*Xiphopteridis sp., Auct.*)

Sori non-indusiate, oblong (sub-globose) solitary; the receptacles seated at the thickened apices of the simple vein which occupies each lobe, the margin of the lobe being longitudinally folded sub-cucullately over the sorus, in the manner of a spurious involucre. *Veins* simple.

Fronds small, fasciculate, thin, somewhat rigid, pinnatifid, the lower barren lobes longer, the fertile folded longitudinally. Rhizome short erect. Wall plants with a tendency towards polypodioid structure. (Moore.)

1. *Calymmodon cucullatus:* (Presl.) Caudex very small, ascending, fibroso-radicant, stipites densely caespitose, 1-2-3 lines long, fronds membranaceous, 1-5 inches long, linear lanceolate acuminate, deeply nearly to the costa, pinnatifid segments, 1-2 lines long, ovato-oblong, recurvo-patent, obtuse entire, those of the upper half of the frond broader fertile, costa and sometimes the frond deciduously piloso-setose.—*Hook Sp. Fil. iv. 176.* *Polypodium cucullatum. Hook I c. Metten. Poly. p. 33.* *Fees. et. Bl. Nov. Acad. ii. p. 121, t. 12, f 3.* *Plectopteris gracilis. Fée. Gen. p. 230. t. 19. B.*

Ceylon, Rhaboda. (C. P. 1282.).

PLATE No. CCXXXIII.

(b) *Veins connivently anastomosing below.*STEGNOGHAMMA. *Bl En. Fil Jav. 172.*(Syneuron, *J. Smith*;—*Gymnogrammatis sp. Bl.*—)

Sori non-indusiate, linear or oblong oblique parallel, the *receptacles* simple elongated naked. *Veins* simple from a central costa the lower or more opposite pairs angularly anastomosing.

Fronde herbaceous, pinnate or pinnato-pinnatifid. Rhizome thickish* decumbent or erect and sub-arborescent. (Moore.)

1- *Sugnogramma aspMoides*. (Hook) Fronds hairy on w i a sides, especially the veins, ovato lanceolate acuminate, ^ pinnate-lanceolate, lobato-pinn* Veins 5 or 6 pair, 3 lower united, with an excurrent sp* at the base 3-4 inches long, rarely ,, incll ,viJej , : longo iriousYdnreaeHiigto tl: siana, those hi tiie bl 10 ft* v. 150.-7,7. Ftf, Jav. p. 172-m^ptem Stog,

is species, it is not in Mr. Thwaites' List.

POLYPODIES.

PoLYPODiujr. (See page 54)

1. *Polypodium*

acuminate pro wz. gloss v. c^m stant, densely paleaceous at the base with ovate cot and .ore long, 6 inches to 1 foot and more broad, Z" SCTaCeoUS o^A w i l i d l Iatto of t,ull continue up tho rachi, • M, ^ple, S| S -re or less deeply pi nnatifid, (varieties beta and gamma) * ^ e o ^ o b l o a g Luceolate, pinnated with the ^ IlcarJY enti: (normal lines between the costa and margin—Hook. Sp. Fil. iv. 233. » «< dorsal upon the vci Ji fa / or »»

Ceylon (C. P. 3276, 3286), a very variable species.

PLATS No. CCXXXIV.—Normal form.

PLATE No CCXXW. I^d Variety beta macroca with the pinnae pinnatifid Jrtl r-) 1/2 of the way down, to the rachis, and often furnished with a large auricle at the superior base. Son very large.

PLATE No OCXXXV. P Variety gamma pinnatifidum. Pinnae pinnatifid almost to the rachis, leaving ^ a broad wing aio,ig the rachis, lower pinnae somewhat pinnate.

PLATE No. CCXXXV. D. Variety delta bi-pinnatum. Pinnae, sub-bi-pinnate. (C. P. 3286) a species dist. 1 Thwaites En.

2 p ^ (Blume.) Caudex creeping, furnished with ^ l r r e s s e d a c l e s a n d I T « i y roots, stipea 8 to JG im hes long and togel. al rachises slightly asperous, fronds sub-coriaceous, guberaloua beneatli with minute yelmv hairs. hi-tri-pinnatifid, i to r pair of pinnae often bi-pinnatifid, upper ones pinnatifid, plummules oblong obtuWj Spinuloso-serKite, veins pinnate, veinl reaching to the margin. Sori medial on the veinlets.—Bl. Fil. Jav. p. 194. t. 91. Sp. Fil. iv. 257.

Ceylon. (C. P. 3H3.)

PLATE No. CCXXXVI.

3. *Polypodium Zeylanicum*. (Mett.) Caudex creeping, as thick at a duck's quill, looting, branchetl, clothed ivitli i phagaceous scales, scattered but approximate, 1/2-1 inch long, black p atently hi^pitl, froiidfl 0"10 inches long, \ \ of an inch w<lt sub-membranaceous, BubeUei W lanceolate repando-dentate, especially in the upper half glabroua or sub-ciliate, ad with the remains of ^ barv bA:th« on the surfac, sharply acuminate, below g atlmijly atteatftted into the stipe.!, costa rather slcmkr, »»gii"j (<UIMMKH on bearing v e J r d l t t ant, moderately patent, once forked near or above the middle not extending to the margin, uppei branch distant from each other.—Hook. Sp. Fil. iv. 169. MetUn, Poltgod. p. 38. Graauntia ^eyjoaci, Fic. Gen. Fil. p. 234.

Ceylon. (O. P. 307 t.)

PLATE No. CCXXXVII.

4. *Polypodium decorum*. (Brack.) Caudex rather thick, creeping densely ferruginous-squamose, stipites approximate, sub-terminal on the caudex, 2-4 lines long, 1/2-1 inch t T arrow-lanceolate much and almost caudato-acuminate, the base very gradually attenuated into the short stipes deeply and nearly to the rachis pinnatifid, segments horizontally patent, narrow-oblong obtuse, quite

entire, below gradually becoming shorter and broader and forming shallow elongated lobed wings at the base, costa glabrous or pilosulous, costule and veins quite sunk and inconspicuous, sori oblong, 5-8-10 in two rows parallel with the costa and between the costa and the margin partially sunk in a hairy cavity (but with no raised border) at length confluent.—*Hook. Sp. Fil.* iv. 179. *Brack. Fil. U. St. Expl. Exp.* p. 7. t. 2. l. 2. (excellent.) *P. nutans. J. Sm. in Hook. Journ. Bot.* iii. p. 394, and *Metten., Polyp.* 12, II, (excl. syn. "*Ll. Fil. Jav.* p. 182. t. 86. A.") *P. Serra. Wall. Gat.* 313/2.

Ceylon. I have lately detected this species on the mountains near Courtalluni (Tinnevely.)

PLATE No. CCXXXVIII. A.

5. *Polypodium glandulosum.* (Hook.) Caudex small, indistinct, clinging to the bark of trees by copious rootlike fibres, the rest of the plant all over piloso-glandulose most so beneath, stipites tufted 1-3 lines long, fronds 2-4 inches long, $\frac{1}{2}$ inch broad, linear obtuse, scarcely attenuated at either extremity, rather firm-membranaceous, sub-succulent, deeply nearly to the rachis pinnatifid, segments ovate, sub-acute, horizontally patent, decurrent at the base, lowermost ones free, all of them serrato-pinnatifid, costule, and rather distant, few and oblique simple veins indistinct, sori few globose.—*Hook. Sp. Fil.* iv. 193.

Ceylon. (C. P. 1289.)

PLATE No. CCXXXVIII. B.

GONIOPTERIS. (See page 57.)

1. *Goniopteris urophylla.* (Wall.) Caudex 1 stipes 2 and more feet long, sometimes very stout, testaceous brown, paleaceous at the base with rather large dark-brown subulate scales, fronds ample firm but not thick, coriaceous rarely membranaceous, glabrous or pilosulous above, and more or less densely pubescent, and sometimes subscabrous or minutely glandulose beneath, 2-3 and more feet long, sub-ovate pinnated, pinna distant, petioled below, 8 inches to 1 $\frac{1}{2}$ foot long, 1 to 2 $\frac{1}{2}$ inches wide from a more or less obtusely and unequally cuneated base, elliptical-oblong finely caudato-acuminate, quite entire or sub-sinuated, more or less grossly obtusely or rarely acutely serrated upwards, terminal pinna, most so, often larger than the rest and long-petioled, veinlets numerous, 15-20 pairs all connivent, save the few in the teeth or serratures, soriferous in the middle, the sori consequently forming 2 series, each between the costules, and the spurious costule, or orbicular or 2-lobed sori are borne at the point of junction of the 2 veinlets, and are then uniserial.—*Sp. Fil.* v. 9. *Wall. Gat.* n. 299 (excl. n. 3.) *Goniopteris. Pr. Phegopteris. Metten. Phegopt.*—*Pol. asperum. Pr. Reliq. Hcenh.* p. 24. t. 3. l. I. *Goniopteris. Pr. Meniscium cuspidatum. Bl. Fil. Jav.* p. 102. t. 45, (excellent, but sori too long and narrow.) *Phegopteris. Metten. Phegopt.* p. 25. *Nephrodium glandulosum. J. Sm. in Hook. Bot. Journ.* iii. p. 411. (according to the reference to *Cuming*, n. 16 not of *Blum.*) *Aspidium repandum. Bl. Fil. Jav.* p. 144 in *Herb. Hook.* (not *Willd.*)—*fl. uniserial*; sori-uniserial. *P. granulosum. Benth. Fl. Honkong* p. 499, (according to the specific character of the locality of *Gol. Urquhart*.) not of *Presl.* *Nephrod. glandulosum. J. Sm. In. Seem Bot. Herald*, p. 428 i

Ceylon. (C. P. 3063.)

PLATE No. CCXXXIX.

0. *Goniopteris lineata.* (Coleb.) Caudex 1 stipes $\frac{1}{2}$ feet and more long, rather stout, scabrous, glossy, and as well as the rachis reddish (rarely stramineous), fronds 1-3 feet long, broad-oblong or lanceolate, coriaceous-membranaceous, pinnated glabrous, pinnae numerous, rather distant patent sessile 5-8 inches long, about $\frac{1}{2}$ an inch broad, (on sterile fronds sometimes exceeding 1 inch) from an obliquely cuneato-truncate sessile base (lower ones rather more attenuated and sub-petiolate), lanceolate or elongato-oblong finely acuminate at the apex, the margin coarsely and sharply sub-mucronato serrated, serratures pointing a little forward, uniform, costa prominent beneath of the same color as the rachis, and stipes generally reddish, veinlets about 6-8 pairs, of which all are connivent except 2-3 short pairs in the teeth of the serratures, sori in 2 series on the middle of the veinlets.—*Sp. Fil.* v. 12.—*Polypodium lineatum. CW, in Herb. Wall.* <n<l *Wall. Cat.* n. 300. *Hook. Ic.* *Polyp. costatum. Wall. Herb.* (not *Goniopteris costata. Brack.*)

Ceylon.

I have not been able to obtain a specimen of this species, as it has not been found by Mr. Thwaites.

NIPHOBOLUS. (Seepage 61.)

1. *Niphobolus Lingua*. (Sw.) Caudex very long, creeping, rather slender, flexuose paleaceous with ferruginous subulate scales, stipites 3-6 inches and more long, remote, always arising from a short very paleaceous branch of the caudex, upper scales longest and spreading, fronds 4-8 inches long, lanceolate or ovate or oblong, obtuse or acuminate, densely and very compactly stellate, and sometimes sub-squamuloso tomentose at length glabrous above. Sori sub-elevated, copious in 4-6 close series between the primary or costular veins, and from 9-20 between the secondary veins. *Hook Sp. Fil* v. 49. *Sw. Syn. Fil* p. 29. *Willd. Sp. Pl.* v. p. 162. *Langsd. et Fisch. Fil.* i. p. 7., l. 5. *Metten. Polyp.* p. 130. *Acrostichum. Th. Ft. Jap.* p. 330, t. 33. *Schk. Fil* p. \t. 1. *Niphobolus. Spr. Kze. Schk. Fil Suppl.* p. 144, t. 63.

Ceylon. (C. P. 1294.)

PLATE No. CCXL.

2. *Niphobolus Gardneri*. (Metten.) Caudex somewhat creeping, the younger portions densely ferrugineo-paleaceous, stipites approximate arising from a scaly branch of the caudex, 2-4 inches long, fronds about a foot long, carnosio-coriaceous lanceolate, obtusely acuminate, gradually attenuated upon the stipes, densely clothed with a very compact firm sub-furfuraceous mass of whitish or ferruginous stellated tomentum, costa and primary veins or costules slightly elevated beneath, venation of *Campyloneurum*, secondary transverse veins more obscure, veinlets generally free and soriferous, sori superficial (not sunk) in about four series, parallel with the costules and 10-12 transverse series between the costa and the margin.—Var. *a subferruginea*, *Hook Sp. Fil* v. 51. *Metten Poly pod.* p. 129. *Niphobolus Gardneri. Kze. J. Sm. Oat. Cult. Ferns*, p. 12. *Hook Fil Exot.* t. 68. *N. acrostichoides. J. Sm. Cat Kew. Gard. Ferns*, p. 2. *N. costatus, J. Sm. Cat. Kew. Ferns*, p. 61 (not *Polyp. acrostichoides*, Forst.)

Ceylon. (C. P. 988.)

PLATE No. CCXLI.

NOTE—*Pleopeltis Sp. (G. P. 1296)* is referred by Sir W. Hooker, to *P. nigrescens* (Blume) I have a specimen now before me, and it is certainly the same as the plant figured in Plate No. CLXXVI of this work, specimens of which are referred by Sir W. Hooker to *P. longissima* (Blume.) Mettenius unites the two species of Blume, and if they are distinct, I expect that Sir W. Hooker has made a mistake in referring the South Indian and Ceylon specimens to different species, as mine is certainly the same as the Ceylon plant.

ASPIDIIE.

SAGENIA. (Vide page 27.)

1. *Sagenia subtriphylla*. (Hook.) Caudex creeping, and as well as the base of the stipites moderately scaly, stipites a span to 1½ foot or more long, generally brownish, fronds glabrous or pubescent, sub-coriaceo-membranaceous when young, entire or 3-lobed, cordate acuminate, in maturity 3-foliate or pinnate with 5-7 pinnae, terminal pinna large, sub-rhomboid, variously pinnatifid, lower lobes the longest, intermediate ones sessile or petiolate, oblong more or less acuminate, lowest pair distant, large semi-ovate more or less acuminate, and pinnatifid, lowest segments (especially at the inferior base) generally very much elongated, patent or deflexed, or not unfrequently (unless I am mistaken in the limits of species), the lowest pinnae are pinnate, and even sub-bi-pinnate, all costate, veins uniformly anastomosing with areoles, having free, simple or forked veinlets. Sori scattered, all compital (on back of the anastomosing veins), involucre cordiform. *Hook Sp. Fil* iv. 52. *Polypodium subtriphyllum. Hook and Am. Bot. Beech. Toy.*, p. 256, t. 50. *Aspidium trifoliatum. Hook in Floral Hongkong. Kew. Gard. Misc.* ix. p. 341. *Benth. Fl. Hongkong*, p. 450. (*Excl. Syn. of A. variolosum, Wall.*) *Eat. in C. Wright. Herb. of U. St. Pacifi Expl. Exped. (in Herb. Hook)* *Drynaria latifolia. Brack. Fil. U. St. Expl. Exped.* p. 50.

Ceylon. (C. P. 1300.)

PLATE No. CCXLII.

2. *Sagenia gigantea. var. minor*. (Hook.) This species is very similar to the normal form of *S. gigantea*, described and figured in a former number of this work, vide page 27 and Plate LXXX, it is, however, a much smaller variety, the fronds are more deeply lobed and more delicate in texture, and it may perhaps be a distinct species.

Ceylon. (C. P. 1358.)

PLATE No. CCXLIII.

3. *Sagenia Thwaitesii*. (Bedd.) Caudex stout, ascending, stipes rachis and costa beneath ebeneous glossy, fronds 2-3 feet long, oblong or ovate, firm, coriaceo-membranaceous, pinnate or below bi-tri-pinnate, the apex pinnatifid, pinnae nearly opposite, lower ones petioled, upper ones sessile, oblong acuminate, variously lobed, and pinnatifid often unequally, segments acuminate or obtuse, entire or obtusely lobed, margins ciliated, veins and costa on the upper side slightly rufo-pubescent, glabrous beneath, veins forming long & costal areoles along the rachis of the pinnae from which proceed several free or anastomosing veinlets, veins from the costa of the segments forming small costal areoles (from which proceed free veinlets), or free, simple, forked or pinnate, the superior veinlets terminating with a sorus far within the margin, all the veinlets terminating with a thickened apex within the margin, involucre reniform.—*Sagenia cicutaria*. Var. ?.—an species dist. *Thwaites* ¹ *En. part v.*

Nearly allied to *Sagenia coadunata* of this work, though very similar to that Fern in form and general aspect, the venation is more like that of *S. gigantea*.

Ceylon. (C. P. 3331). Badulla, near Ondaatche ; Hinidon Pattoo, not uncommon.

PLATE No. CCXLIV.

4. *Sagenia pteropus-minor*. (Bedd.) Stipes of the sterile fronds short, clothed at the base with dark brown linear scales, more or less winged towards the apex, fronds 8-12 inches long, sub-coriaceous, tri-partite or sub-pinnatifid, lower segments 2 to 4 inches long with a large basal lobe, upper portion more or less pinnatifid and irregularly, fertile fronds on a much longer stipe very much contracted, pinnatifid with the lower segments bi-lobed, primary veins pinnate with the veinlets in between forming numerous pretty regular areoles, within which are free included re-curved forked venules. Sori in two rows between the primary veins, generally on free veinlets, or sometimes at the joining of two anastomosing veinlets.—*Sagenia pteropus*, variety minor. *Thwaites*.

Ceylon. (C. P. 3808.) Paradenia.

This may be only a dwarf variety of "*Sagenia pteropus*," but it seems rather to deserve the rank of a distinct species. Mr. Thwaites says that it grows intermixed with "*Sagenia pteropus*," normal form and "*Gymnopteris quercifolia*" and suggests that it may be a hybrid between the two.

PLATE No. CCXLV.

LASTREA. (See page 33.)

1. *Lastrea calcarata*. (Bedd.) Caudex short, tufted rooting, stipites scaleless, 3-8 inches long, fronds 8-18 inches long, coriaceo-membranaceous, rigid oblongo-lanceolate pinnate, perfectly glabrous except on the rachis, pinnae alternate or sub-opposite—10-14 pair 1 and 1 inch long, attenuated and entire at the base, above more or less pinnatifid, but never more than 1/2 down to the costa, veins pinnate with thickened apices, terminating just within the margin. Sori, one on each vein a little above the centre, involucre reniform, glabrous A. (*Lastrea falciloba*. Var. *ft. Hook. Sp. Fit. iv., p. 108.*

Nearly allied to *L. falciloba*, (Plate CL. of this work), but sufficiently distinct to entitle it to the rank of a species. Sir W. Hooker's two species "*L. falciloba*" and "*calcarata*," seem to be one and the same ; in fact, the same number of the Ceylon Catalogue, (C. P. 1363), is referred to both. I have retained the name of the latter for this species.

Ceylon. (C. P. 3050.)

PLATE No. CCXLVI.

2. *Lastrea concinna*. (Thwaites.) Caudex short, stipites scaly at the base, fronds lanceolate or tri-angular—lanceolate glabrous shining with the stipes about 2 feet long, pinnae lanceolate acuminate, pinnules trapezoido lanceolate, crenato-lobate, lobes sparingly denticulate, veins simple, forked, or pinnate, terminating with a thickened apex within the margin, superior veinlet soriferous at its apex—¹¹ involucre small, reniform glabrous. *Thwaites En. Gey. PL*

Ceylon. Singhe Rajah Forests. (C. P. 3798.)

Nearly allied to "*Lastrea deparioides*," *Hook.* (Plate CIV. of this work); and Mr. Thwaites suggests that it may be a form of that species, without intermediate forms, however it would hardly be safe to unite them,

PLATE No. CCXLVII.

3. *Lastrea deltoidea*. (Bedd.) Caudex erect, fronds about 1 foot long, glabrous, deltoid-ovate, bi-pinnate with the pinnules deeply pinnatifid, pinnae lanceolate acuminate, the 2 or 3 lower pair 4 to 5 inches long, getting gradually smaller towards the apex, pinnules narrow lanceolate 1/2 to 1/4 inch long, deeply pinnatifid, segments obtuse, crenate, and spinuloso-dentate, the primary vein of the pinnules axuose, veinlets pinnate, terminating with a thickened apex just within the margin, one to four of the veinlets soriferous at their apex involucre reniform glabrous. *Lastrea sparsa* var. *lata*. (Moore.) *Certe species distincta. Thwaites En.*

Nearly allied to *Lastrea sparsa*, (Plate CIII. of this work,) but its very broad deltoid form seems sufficiently to distinguish it.

Ceylon. (C. P. 1368, 1369, 3383.)

PLATE No. CCXLVIII.

4. *Lastrea Blumei*. (Hook.) Stipes very shaggy with long linear rufous scales, main and partial rachises rufo-pubescent and copiously furnished with rufous scales, fronds very large, tri-pinnate with the pinnules, pinnatifid to nearly the base, pinnules obtuse, entire or inciso-serrate, sparingly hairy above and pubescent on the costa on both sides, veins pinnate, extending to the margin, soriferous about their centre, involucre fimbriate. *Aspidium intermedium. Bl. En. Fil. Jav. p. 161, (not of others.) J. N. (Lastrea) Blumei. Hook. Sp. Fil. iv. p. 135. in part, (not C. P. 3042, which is Lastrea faruginea. (Mihi.)*

Ceylon. (C. P. 3059.)

PLATE No. CCXLIX.

PLATE No. CCL. is a figure of *Lastrea flaccida*, Hooker, from Ceylon, (C. P. 3802.) Plate No. XCIX. of this work is the *Lastrea tenericaulis* (Hooker), and the name should be accordingly altered; if really distinct, the two species are very nearly allied, *tenericaulis* only differing from *flaccida* in being more compound, and I have specimens which seem to connect the two.

NOTE.—*Polystichum U-aristatum*. (Blume.) *G. P. 3275* is I believe only one of the numerous varieties of *P. aculeatum*. (Sw.) *Polystichum anomalum*, (Hook. et. Grev.) *C. P. 3504* is very curious in having its fructification on the upper side of the frond, it does not seem otherwise to differ from some forms of *P. aculeatum*, and is probably an abnormal form of that species.

NEPHROLEPIS. (See page 32.)

1. *Nephrolepis obliterated*. (Hook.) Caudex very long filiform, here and there sub-squamoso-tomentose rooting with few short fibres, stipites scattered short 1-2 inches long and as well as the rachis dark-brown sub-pubescent, fronds 3-14 inches long, oblong or linear-oblong, membranaceous, invariably black when dry, pinnate, pinnae from 1-1 1/2 inches long, horizontally patent, rather distant dimidiato-oblong, obtuse or acute, rarely acuminate, obliquely cuneate at the base, sessile, straight or sub-falcate, superior base truncate and parallel with the rachis, frequently with a sharp uricle, the margin entire or crenate or lobato-dentate especially on the fertile pinnae, costa slender flexuose veinlets forked, upper branch bearing sori at the apex, a little distance from the margin, involucre small cordato reniform, soon obliterated. *Hook. Sp. Fil. iv. p. 154. Nephrodium oblitteratum. Brown. Prodr. Fl. Nov. Boll. p. 148. Aspid. undulatum. Sw. Syn. Fil. p. 154. Excl. Syn. Cav. Jide Willd.) Willd. Sp. Plate V. p. 223? Nephrod. sub-pectinatum. Bl. En. Fil. Vav. p. 145. N. trichomanoides. J. Svi. in Hook. Bot. Journ. iii. p. 413, (name only.) N. repens. Brack. Fil. U. S. Expl. Exp. p. 209.*

Ceylon. (C. P. 1094 and 1376.)

PLATE No. CCLI.

CYSTOPTERIDÆ.

ACROPHORTIS. (See page 3.)

1. *Aerophanes affinis*. (Moore.) Caudex creeping, thick, clothed with long narrow subulate scales, fronds ample, tall, ovato-lanceolate, membranaceous; 3-4 pinnate or supra-decompound, primary pinnae petiolate, ovato-lanceolate: acuminate, secondary petiolate oblong-ovate, pinnules ovate, deeply pinnatifid, the segments ovate acute, sub-falcate, entire or generally (the lrbk ones) with a tooth on the inner margin involucre small hemispherical or sub-reniform placed near the centre of a segment below the summit of the tooth, veins slender, black. *Hook. Sp. Fil. I page 158. Leucostegia affinis. J. Sm. En. Fil. Pl. Upp. I. c. (name only.)*

Ceylon. (C. P. 1384.) Very like *A. pulcher* (Dav. charophylla, Wall.) but with a very different caudex,

PLATE No. CCLII,

DAVALLIEI.

HUMATA. (See page 4.)

I. *Humata vaiua* (Blume.) Caudex creeping, paleaceous, stipes elongated, paleaceous with lanceolate chaffy scales, fronds bipinnate, pinnules lanceolate, lowermost ones at the base again pinnate, inferior scales, fructification broadly ovate obtuse chaffy appressed sub-peltate than long. *Hook Sp. Fil. i. page 156.*

Ceylon. (C. P. 3068.)

PLATE No. CCLIII.

MICKOLEPIA. (See page 5.)

I. *Mickolepia* (Blume) Caudex creeping, paleaceous, stipes elongated, paleaceous with lanceolate chaffy scales, fronds bipinnate, pinnules lanceolate, lowermost ones at the base again pinnate, inferior scales, fructification broadly ovate obtuse chaffy appressed sub-peltate than long. *Hook Sp. Fil. i. page 156.*

Ceylon. (C. P. 3827.) Oova district in the Central Province.

PLATE No. CCLIV.

MICROLEPIA (*continued*).

2. *Microlepia strigosa*. (Moore.) Fronds tall, lanceolate, bi-pinnate, stipes elongated, rachis and veins pubescent-hispid, primary pinnae petiolate, lanceolate acuminate, secondary (or pinnules) mostly petiolulate, sub-dimidiato-ovate, obtuse pinnatifid, chiefly on the upper edge, lower lobes obovate deep, the rest short, all of them angulato-dentate, veins pinnated, furnished with a few long scattered hairs both above and beneath (the remaining surface of the frond beneath being sometimes furnished with numerous small hairs, or sometimes glabrous as is the upper surface), involucre hairy, small half cup-shaped. *Hook.* *Dicksonia strigosa*. *Sw.* *Davallia Khasiyana*. *Hook Sp. Fil* i. 173. *Microlepia cristata*. *l. Sm. En. Fil. Philipp.*

Ceylon. (C. P. 1386.)

Chokampatty Hills (Tinnevely district) abundant, at an elevation of 5,000 feet, (only lately detected in the Madras Presidency.)

PLATE No. CCLV.

3. *Microlepia hirta*. (Kaulf.) Tall, fronds erect, rigid ovato-lanceolate, much and gradually acuminate, rather glossy, tri-pinnate, pinnules approximate, rhomboid-lanceolate, sub-dimidiolate, acute decurrent, upper ones coadunate, all of them inciso-pinnatifid, segments acute, sori small on the inner margin in the sinus of a lobe, involucre half cup-shaped, veins prominent and hairy, especially beneath, rachis hispid-tomentose. *Hook.* *Davallia hirta*. *Kaulf. En. Fil.* p. 223. *Dicksonia Kaulfussiana*. *Gaud, in Freyc. Yoy. Bot.* p. 368. *Davallia villosa*. *Don.* (*Sprengel.*)

Ceylon. (C. P. 3272.)

Malabar, Manantoddy, and the slopes of the Brumagherries. I have long had this fern in my herbarium, but until I received a specimen of it from Mr. Thwaites as an authentic spec, of *M. hirta*, I had always considered it only as a variety of *At. polypodioides*, (Don.), plate XV of this work. I have given a figure of it in case it should be distinct, but I still suspect it is only a variety of *polypodioides*. I have lately collected on the Courtallum Hills (Tinnevely), what I take to be a third variety: it is very nearly allied to the Ceylon and Malabar *Af. hirta*, but is more delicate—the secondary pinnules are narrower, the involucre are quite glabrous, and the fronds nearly so.

PLATE No. CCLVI.

NOTE.—*Davallia (Microlepia) inwqiiialis*, (Kunze), recorded as a Ceylon fern, is probably the same as *M. hirta*.

PERANEME.E.

(d.) *Veins free.*

** *Involucre sessile.*

DIACALPE. *Blume. Enum. PI Jav.* 2.41.

(*Aspidii* sp. *Wallich* ;—*Physematii* sp. *Kunze* ;—*Cystopteridis* sp. *Presl.* ;—*Cyathea* sp. *MeUenius.*)

Sori involucre globose, the receptacles punctiform, medial on the anterior lower venules. *Involucre* firm, membranaceous, or sub-coriaceous, sessile attached to a small point globose, entire, at length bursting and splitting irregularly from the top. *Veins* simple, forked, or (in the secondary pinnules) pinnate, *venules* simple free.

Fronds decompose, herbaceous. Rhizome short. The chief peculiarity in this genus is the hard globose, entirely closed involucre, which at length bursts open irregularly, and is affixed by a small point of contact. (Moore.)

1. *Diacalpe aspidioides*. (Bl.) 2-4 feet high, stipes long, clothed below with very large, broad opaque, brown, membranaceous scales ; fronds tri-pinnate, primary pinnae often nearly sessile ; main and partial rachis frequently beset with copious short setose scales*, specially beneath, sometimes with long crinite deciduous scales which also appear on the veins above, pinnules sub-membranaceous, °Wong-cuneate, pinnatifido-lobate, more or less decurrent, so that the rachis and ultimate pinnae are generally winged, veins dark colored, > reaching to the margin.

Ceylon. (C. P. 3282.)

PLATE No. CCLVII.

KZ.) *Son punctiform. iL-c, &c.*

(c.j) *Sori involucrate, i. e., with inferior iudutitt.*

(b.) *Special indusium, more or less adherent to, and connivant with (the margin of the frond, forming an entire or 2-valved cup / tori, therefore, within a marginal eup,*

(TRIBE 1, § 20,) DICKSONIEJE.

(&.) *Indusium cup-shaped, reflexed.*

DptssT^OTLL *Bernhavdi. Schrad. Journ. 1800, ii. 124., i. 1., 13.*

(Dikkaonia, *Kauluu. Presl*;—*Sitobolium, Dmaux*;—*Patania, Pml.*;—*Silolobium, J. Sm.*,—*Adectum. Link*;—*Depari*)
sp. *fiwter*, —folypodii. sp. J w t;—*Cyatheas, sp. Jwf.*;—*Tricliomanes, Aud.*;—*Nephradii, sp. And.*)

Son involucreately-indusiate, globose, marginal reflexed, the receptacles small punctiform terminal; Indusium, eupalioform or lateriform, sub-membranaceous, the special and accessory valves nearly equal, and coalescing into an almost entire, rarely sub-bilabial reflexed cup. Veins pinnate from a central costa, venule simple or forked free.

Fronds herbaceous, bi-pinnate or decomposed, the sori exerted within the cup-shaped involucrifern indusia, and reflexed. *Rafinesquina* creeping. This genus differs from *Dicksonia* in a cup-shaped entire, instead of a 2-valved indusium. (Moore.)

1. *Dennstedtia deltoidea*, (Moore.) Stipes 6-8 inches long, a little rough, glossy brown, fronds deltoid-ovate, 1 foot long. *Muaanpinnate, pinnaries* oblong-cuneate, *pinnatifid*, the segments linear obtuse few on a winged rachis, sori terminal Upon the shorter *veins*, raeluses (the main one zigzag costate, and frond (in a slight degree) hairy. *Hook. Divallia deltoidea. Hovl Sp. Fil. I SO.*

Ceylon. (C. V. 1397.)

PLATE No. CCLVIII

NOTE.—Jfr. Moore enumerates two other species from Ceylon, viz., *D. Jilaccida* and *scabra*. Mr. Thwaites says he does not know them unless they are forms of the above, nor does he know anything of *Dicksonia Zeylanica*, (Sw.), unless it is also the same *form*.

CYATHEA. (See page 19.)

Cyathea muata. (Hook, et Grev.) Caudex 1 inch in diameter, fronds simple, lanceolate, very much elongated, sinuate at the margin, veins pinnate, veinlets soriferous near the middle, involucre globose or slightly depressed, bursting very irregularly at the top, as to become eup-shaped with a very uneven margin, receptacle globose. *Hook. Sp. Fil. i. 15.*

Ceylon. (C. P. 3052.)

PLATE No. CCLIX.

2. *Cyathea HeoUri*, (Thw.) Caudex elongate, about 1/2 inch in diameter, stipites sparingly muricated at the base and firm¹¹ edged with rather rigid setose acuminated scales, frond? 3 feet or more long, narrow, lanceolate acuminate, *pinnate*, pinnatifid at the apex^e, *pinnate* lanceolate, sub-entire or crenately lobate, and broadly truncate at the base, shortly petiolate, sori sessile, inferior gradual smaller, costa beneath sparingly paleaceous, veins pinnate, involucre globose, bursting irregularly. *The. En. Pl. Cylim, part V.*

Ceylon; Singhe-Rajan Forest. (C. P. 3722)

PLATE No. CCLX.

3. *Cyathea Walkeri*. (Hook.) Unarmed, stipes and main rachis mahogany coloured-fronds bi-pinnate, pinnae thick, *imbricate* very coriaceous, deeply pinnatifid, pinnate below, segments and ultimate pinnules (the latter contracted at the base) oblong, very obtuse. *entire* or slightly crenate, often scaly, (scales deciduous) on the costa beneath, veins copious, sunk, forked at the very base, often again¹ about half way up, sori occupying the lowest fork close to, almost upon the costa, involucre large, opaque, bursting, as it were, on the superior side, only reflexed upon the costa, and partially covering the auras in the form of a broad bifid hood. *Hook. Sp. FU, »• S**

Ampbicosmia Walkerae. Moore. Mr. Moore places this plant in the genus *Amphicosmia*, distinguished from *Cyathea* by the being half cup-shaped; but Mr. Thwaites, who has noticed living specimens, informs me that the involucre is very variable, and is between *Gyathea* and true *Ahophila*.

Ceylon. (C. P. 1398, 1399, and 3053.)

PLATE Xo. CCLXI.

TRICHOMANES. (See page 2.)

1. *Tnckotmanes proUfenun*. (Bluine.) Caudex creeping, downy much entangled, stipes elongated bearing fronds which are proliferous from the axils, and which are subreniforra or cordate, deeply divided palmate or almost digitate, the segments linear and often again divided obtuse, involucre sub-cylindrical and quite sunk, the mouth more or less spreading, obscurely 2-lipped, receptacles esserted.

Ceylon. (C. P. 3329.)

J iiavc lately found this species abundant on the Western slopes of the Nilgiris, 3,000 feet elevation.

PLATE No. CCLXII.

2. *Triehmanet fffaitco-fuscum*, (Hook.) Fronds rather tall, oblongo-lanceolate, bi-pinnatifid, glauco-fuscous when dry, primary divisions, broad lanceolate, the segments all acute, linear simple or forked, involucre superaxillary on short segments, partially sunk, short, cylindrical attenuated at the base, the mouth broad, spreading scarcely 2-lipped, stipes filiform glabrous, indistinctly winged except above. *Hook. Sp.Fil. up.* 128.

Ceylon. (C. P. 3330.)

PLATE No. CCLXIII

at and with the longish stipes hispidulous, fronds A to I inch, cuneato-orbicular palmato-ineisedJ^abrous, segments linear retose/costa central, sori **fcnfSt**, -' «" pocubtorm, sub-bila
*V *Sn. Pl. Ceylon, part V.*

PLATE ^To. CCLXIV.

HYMENOPHYLLUM, (See page 3.)

i. *IlymenopkyUum Tmbridgme*. (Sm.) Procumbent densely matted, fronds smaU, rather tender pinnated, pinna; distichous; ^-vertieal pinnatifid, segments linear simple or bifid, and as well *s the superciliary solitary sub-compressed involucre spinuloso-nate, tke valves semi-orbicular, the very short enneate base sunk, rachis winged above *Booh Sp. JU. t 95* ;-\$,&&. *Fl. Brit. P- mi* ;~H; minimum. *IHCJ, Ft. 8**. *Zeal,p, 91* ;~H. revolutum. *Colcmo in Ta,rnPhJou^^,^^ Kze. PI Crypt.* p. 109 ;~H. Thvinbergii. *MM, HI Schiel, Pl. Ecnc, Qup. UR. 11. H. 24* ;~H. *Holl. P. 102.*

Ceylon. (C. P. 2984.)

1 **hare** lately detected this species on the mountains close to Chokampatty (Tinnevelly), at an elevation of 5,000 feet.

PLATE No. CCLXV.

2 *IlywnophvlUr* Blumeanum t* (Spr.) Caudex creeping, serobiculfte glabrous, stipes terete, fronds elongate, 1mear-lanceolate rachis winged/pinna, rather remote, irregular in size and shape, from narrow-cueeatc to variously digitato-pinnate, veins very prominent, involucre oblong S-valved entire.

Ceylon, (C. P. 1391.)

PLATE NQ. CCLXVL

B, Byne»oph\$Hum p
-aing, sometim g a iittle i
-waived, the valves convex, enti
ual on elongated snb-pala
ated segments, involucre
erose, stipes terete, naked or moderately winged above,—var a; fructifications mostly termi
Fit. p. 140. Willd. Sp. Pl. i. , p. 331. Herb. Fil. cum. Ic. ;—H. abietinum. Kze. Pl. Crypt. Poepp. p. 109 ;—viz. Hook. H. Jal
peas*. 67«» et SfcAfefc in linn
ea, v. p. 619 ;—H. badium, Wall. Cat. n. 172, not Hook. et. Grev. ;—H. riccinolium. Ktisch. in Herb.
liff. Berol an Jaca. ?

Ceylon, (C. P. 1279, 1395.)

PLATE No, CCLXVII.

ScHrz^EA. (See page 21.)

I. *Sehi*, *ilaio*, {
at the apex, crest
3-14 pai•ted to
Ceylon. (CP. 3,105. >

digitate fertile crest
le of the costa.)

PI-ATE No. CCLXVIII,

OPHTOGLOSSUIT. (See page 23.)

L *Ophoglossum* *pend* *dm i*. (L.) Sterile fronds linear-laiiceolata, longer than the filia, t
« mui oroiia, rein3 reticulated li
i very elongated areole* without free vrinkt*.
Ceylon, (C. P. 1,409.)

PLATE \». CCLXIX.

tiffjtN&A.

GVMKOGRAMMA. (See page 77.)

notjramma Up
tophUa, (Desv.) Hoot a small annual tufted mass of fibm, sthnta, b,fl^ dL^r««fc-. 1 J iw>b*
* Attn r t l
ticia
mar ete, those on t
he shori
as, J, vcim simple o
r forked1, not reachmg to the maTgm, 3on oblong, sim?le or forked.-/««, j r ^ JUL , jJLjfa,,. ffp. Fii. r. ^
&V IFtl.

NUgiris-Mahal |«h«tt Hill%-Sattara Fort walls (Bombay Presidency.)

finding it on tk
w.nd and KotagfaTry, *rj*; *T^T^A^A^S*, Me ^ ^ ^ « ^ ***** *Mm/iN Ms*«« ^
ccjcuze t. fa, lhoi
vv/l lt /tft^ Qjfr TMiiri in urn iT /» j

PLATE No, CCLXX.

LA^THEA. (Seepage 32.)

ea andxlata. (Thw.) Stipe, paleaceoiu, frond, tri^pinnate deltoid, mchi, genieulato-fiexnosc, manse aUernatt W ««*
opposite deflexed deltoid-Eanceo) a e nth thE1r nchis very flexuose, se_condary pinna, alternate In
largest, pinnules rhomJwid•ObloR": (the low ones lobed or pumatifid) mow or U» d«nrm*t, ere nut a to-dentate, mi aolitary or W:
medial on the vein-i, indus UJU rei
urtorm, vetns terminating within the margin uith a thickened apex, V hu, M. S.
Ceylon. (C. P. 3858.) Wattedelle, EWlibokkft, elevation 5,000 feet.

This very distinc! and elegant_speeie_a_has jw t bm, jj covered
have just received l he fiond here figured.

PLATE Ko. CCLXXI.

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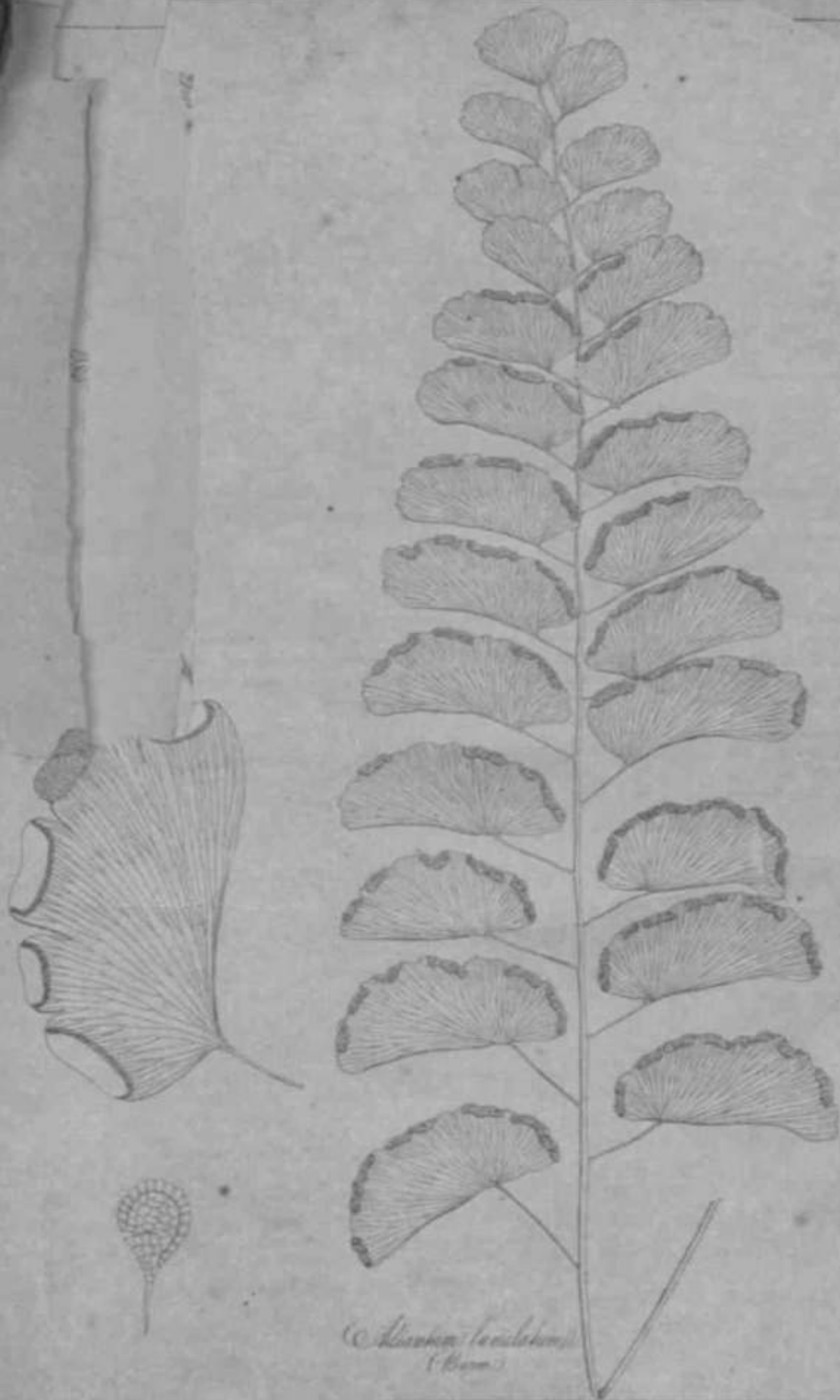
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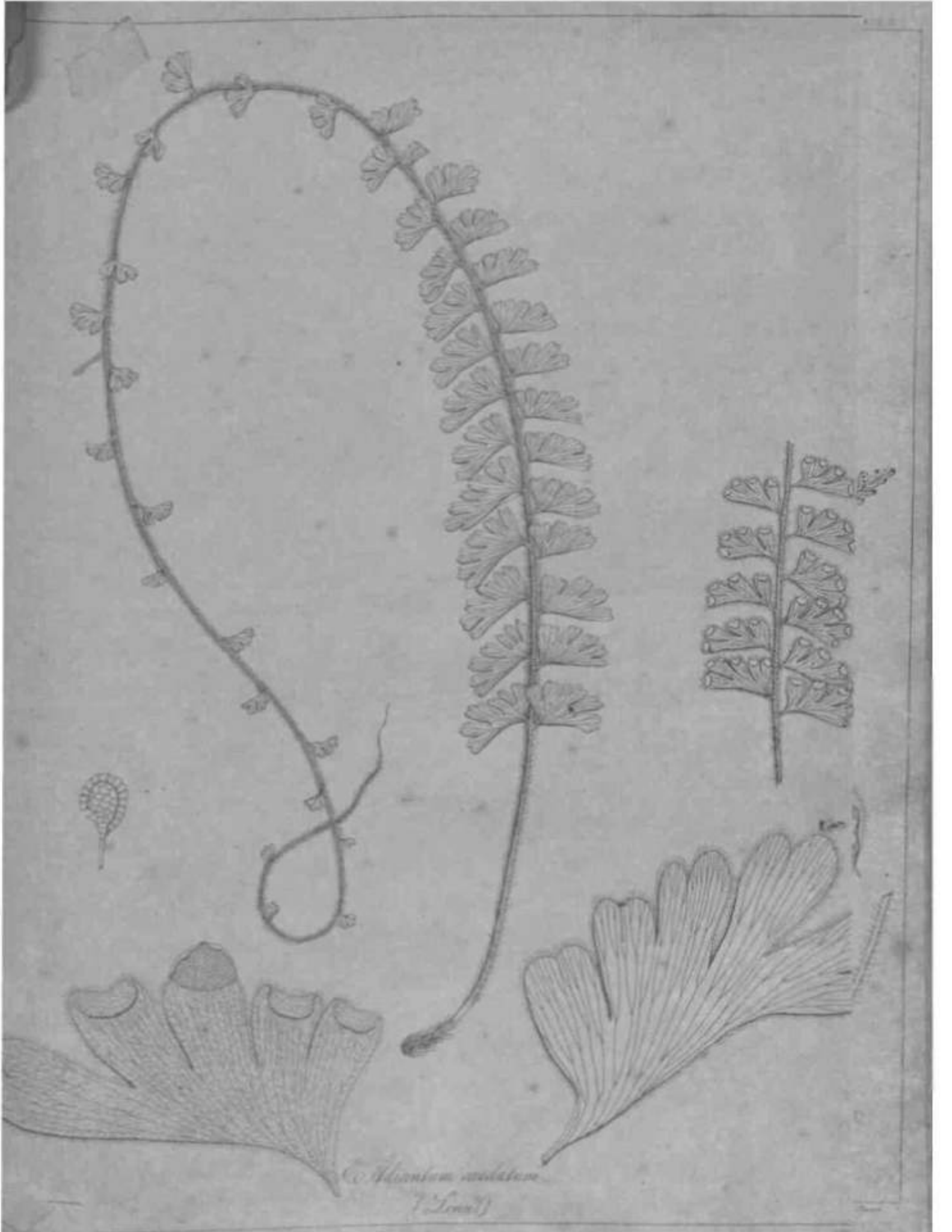
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Adiantum lucidum
(Lam.)



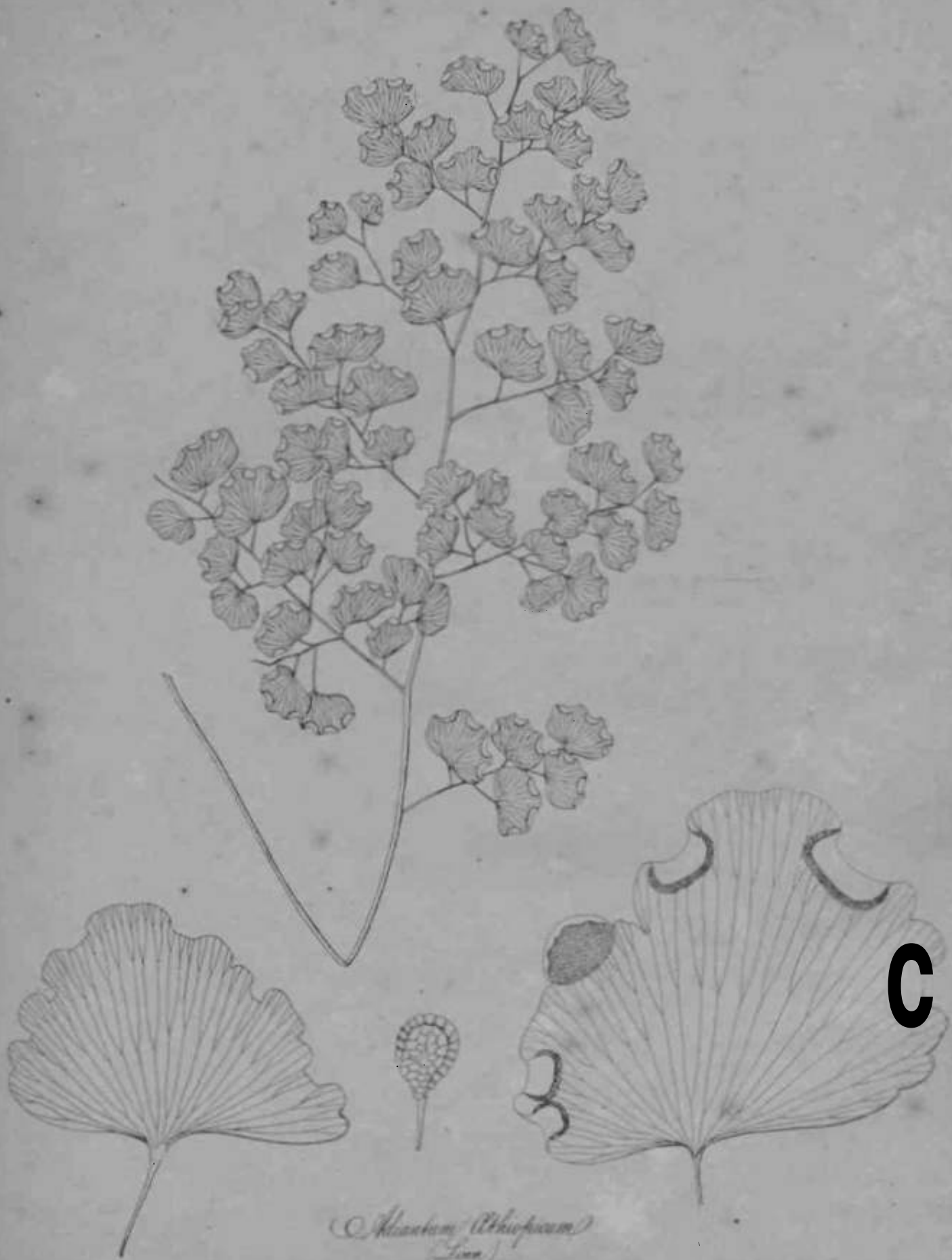
Adiantum undulatum
(Linn.)



Adiantum hypoleucum

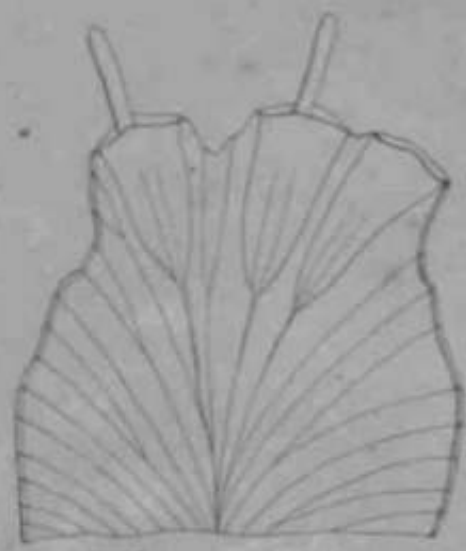
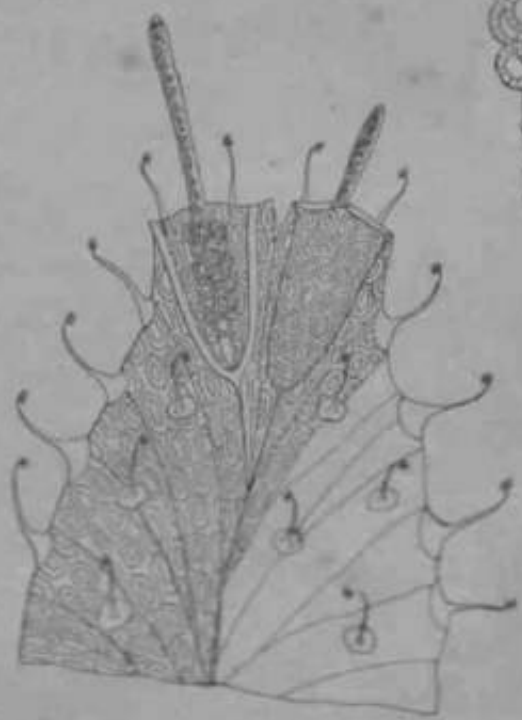
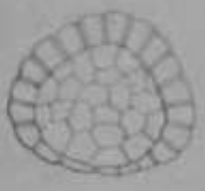


Adiantum Capillus-Veneris
(Lobelia)



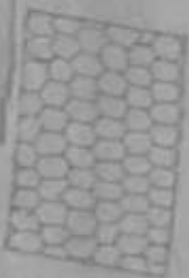
C

Adiantum (Whio)
(Linn.)



/1

Trichomanes vulgatum
R. & S.



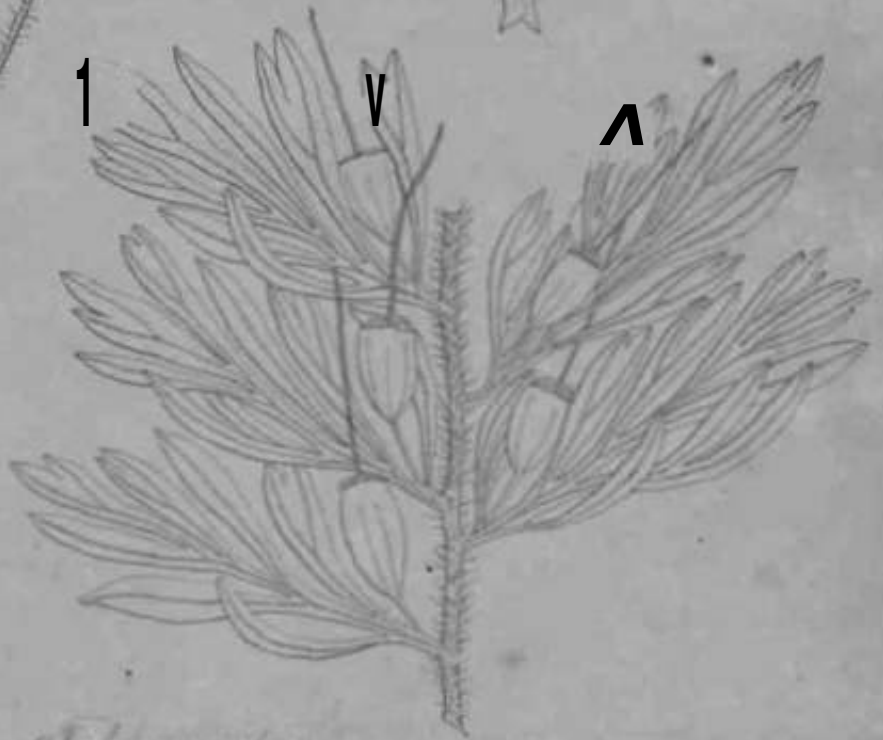
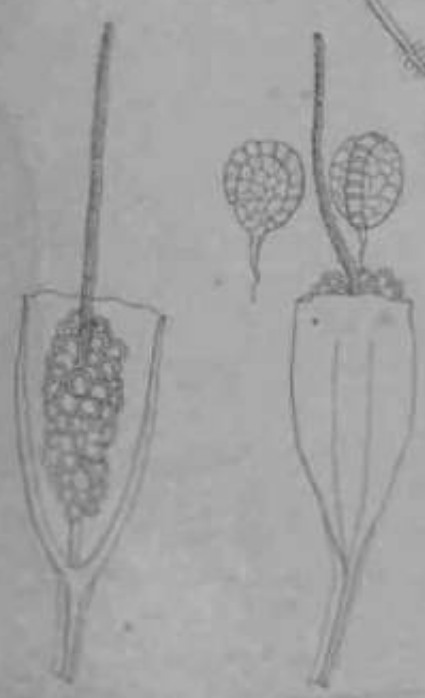
Adiantum



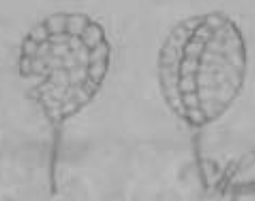
1

v

Λ



Pteris aquilina



A

Thymophyllum aculeatum



Neuridium reticulatum
(L. f.)



wit.

1



Neurium asiaticum
J. Hook.



y.

■

v

Humulus pedunculatus
(L. Schreb.)



Microlepia platyphylla
Blume



Microlepia pinnata?
Woods



Microlepia polyfideloides
Presl



Davallia tenuifolia
Lam.



:-S-

Davallia bullata
Hook.



7

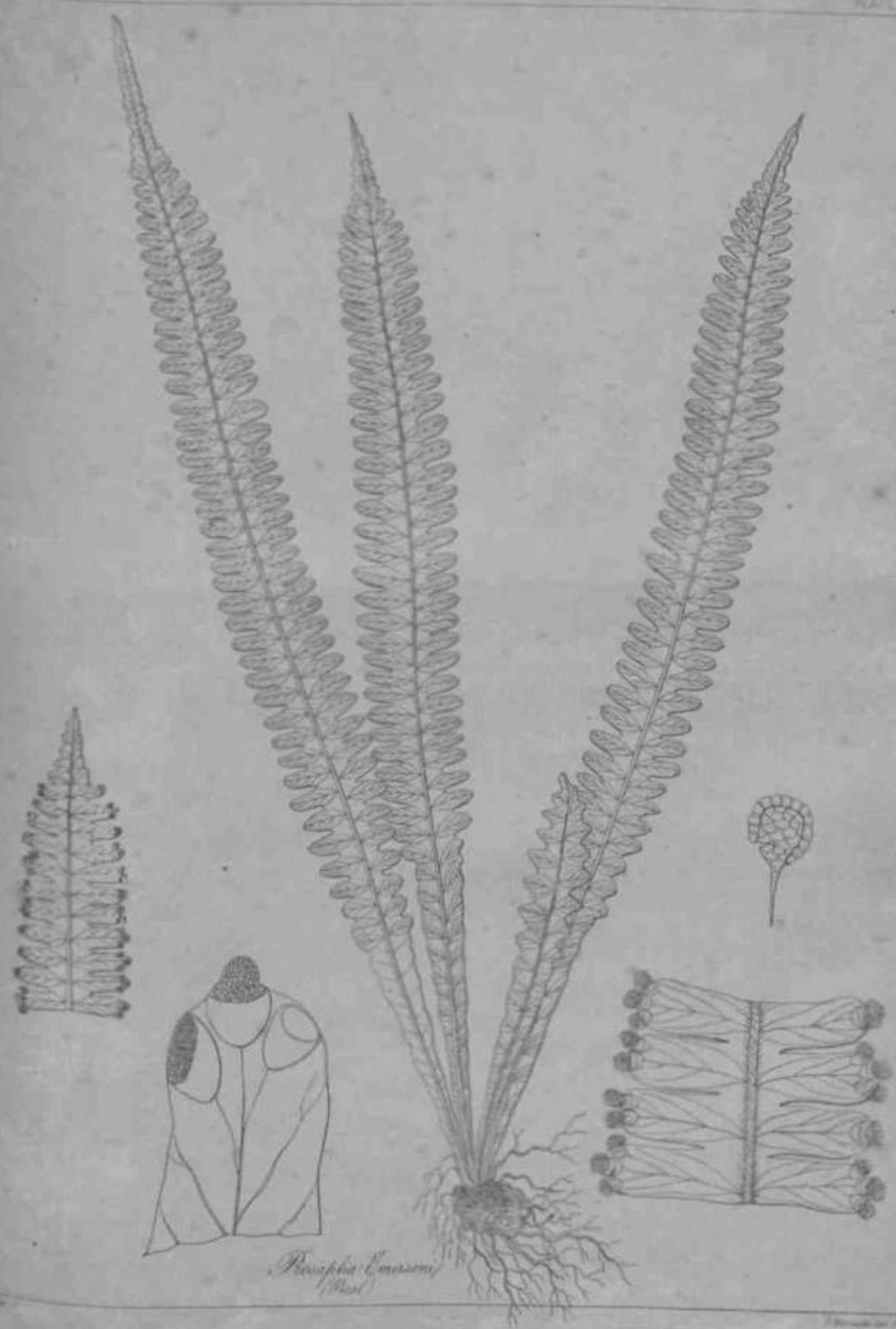
Asplenium elegans
L.

•'•

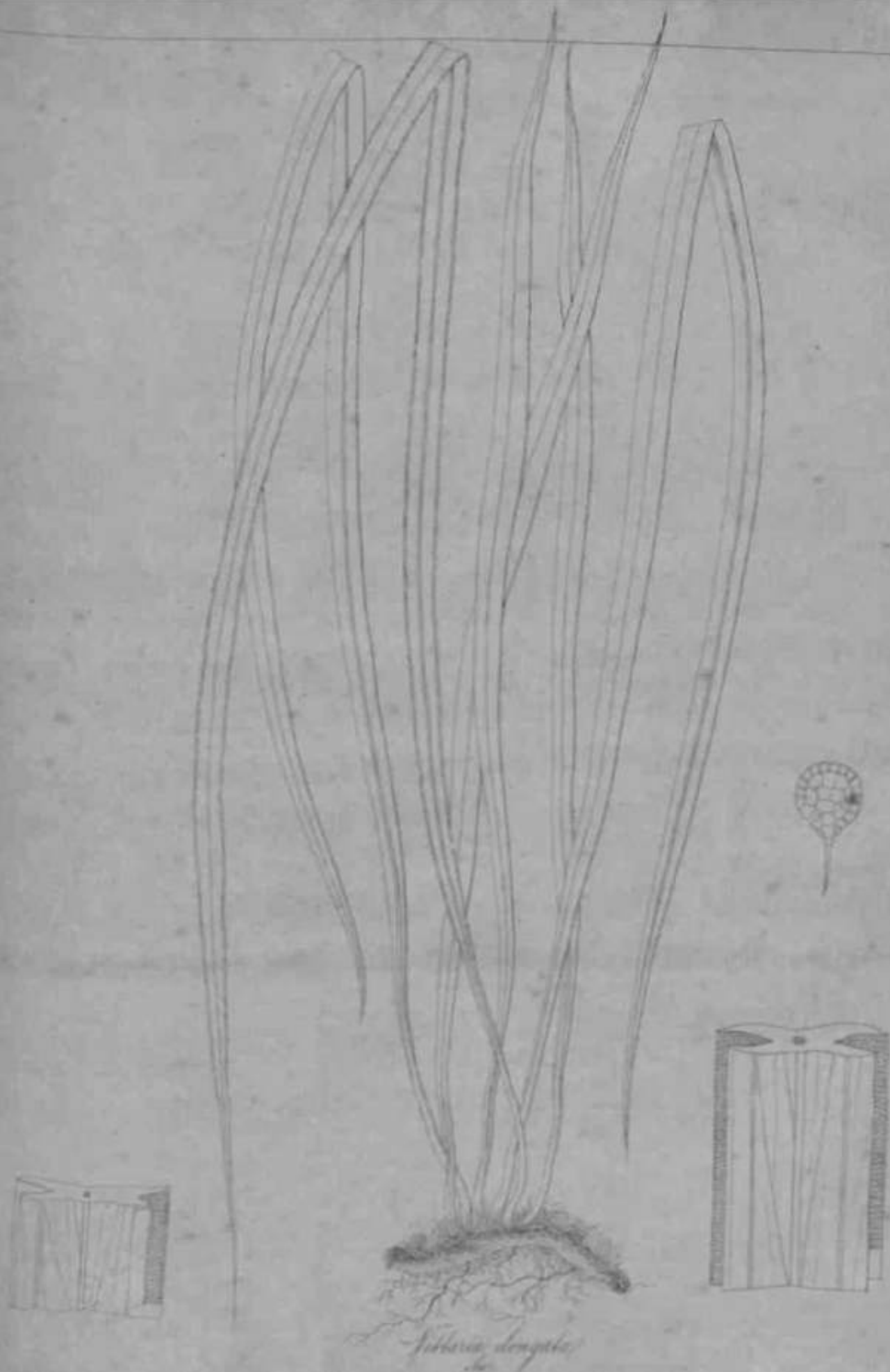
J



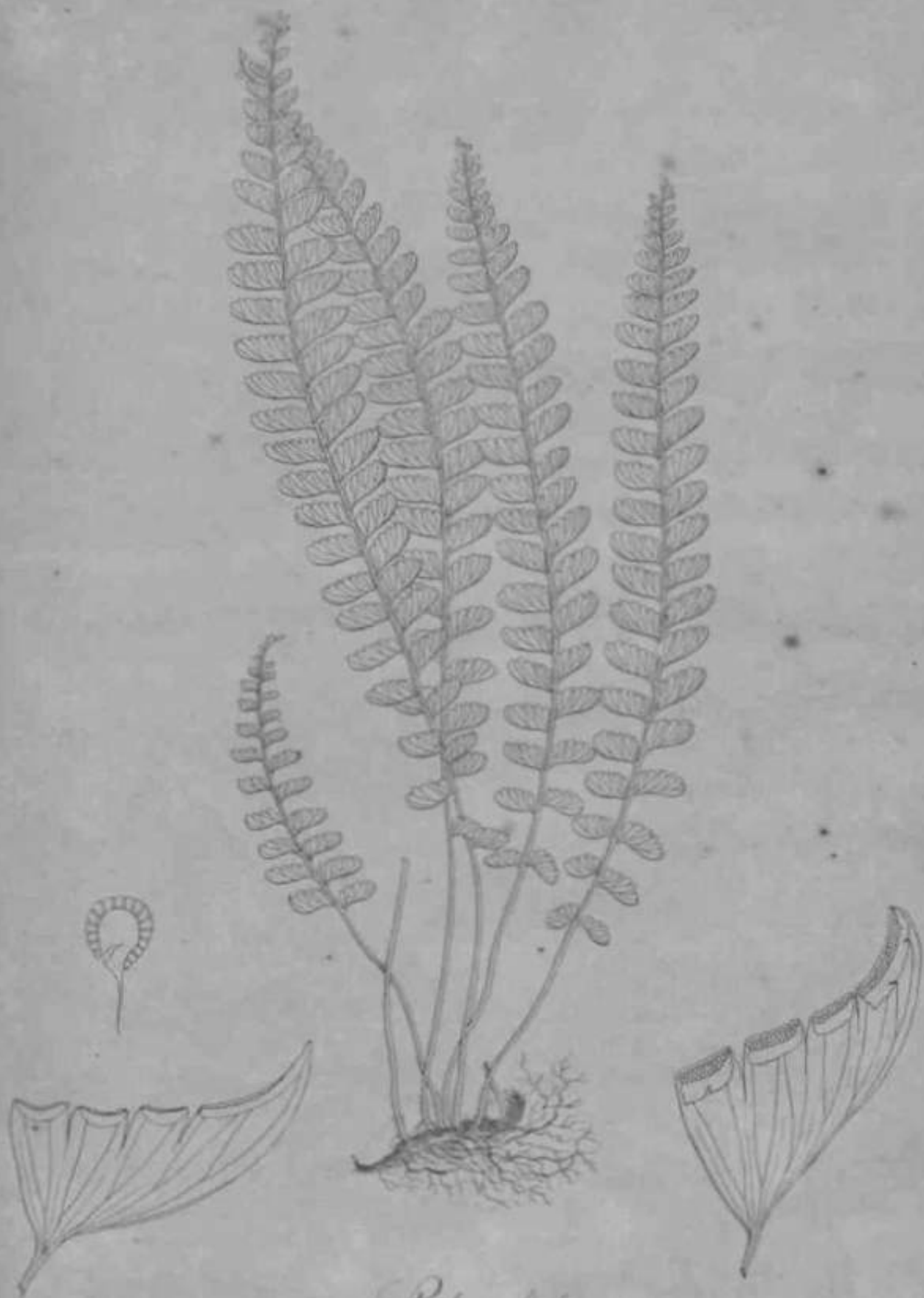
Pteris caudata
H.



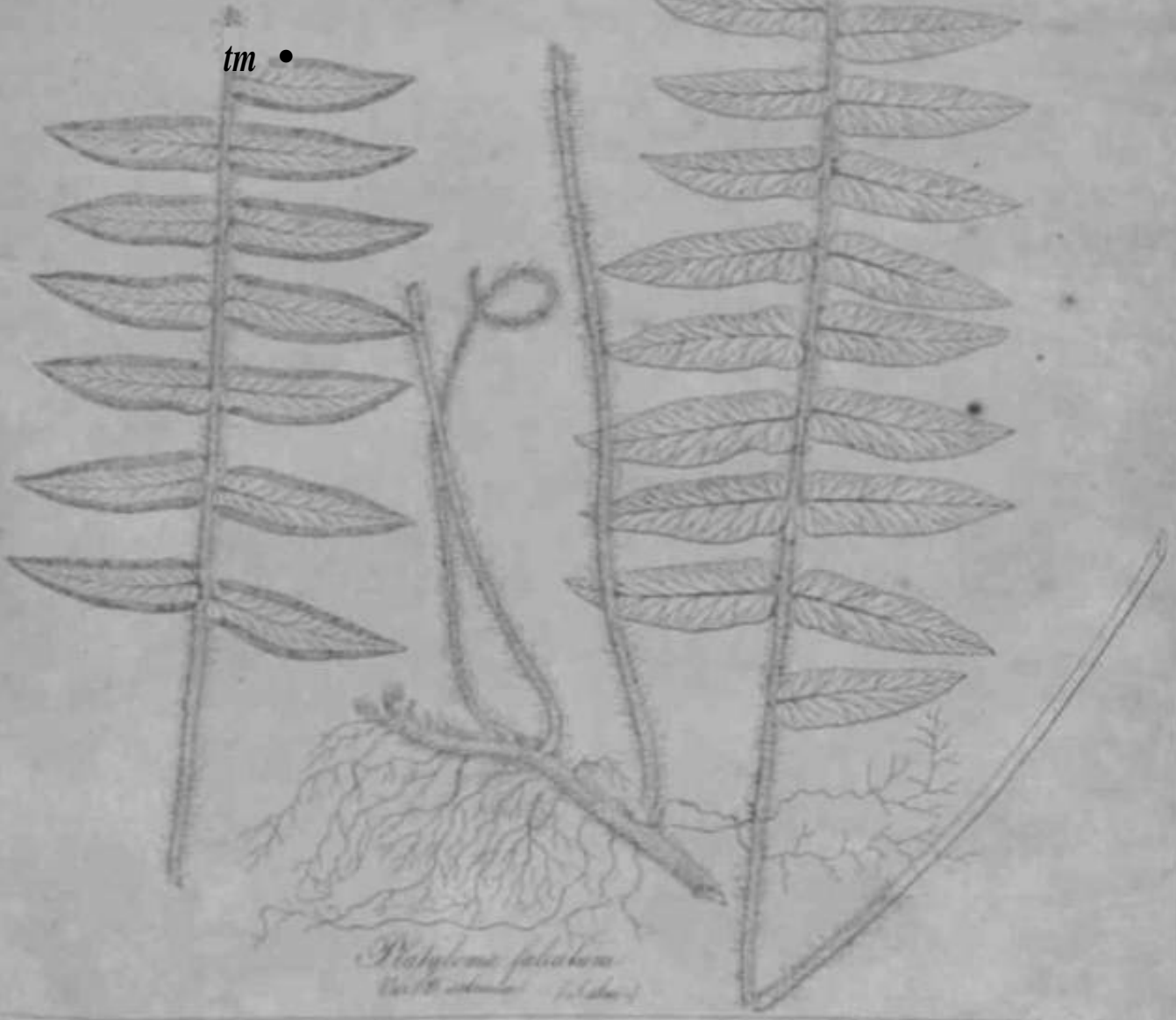
Pteris Emersoni
(Hook)



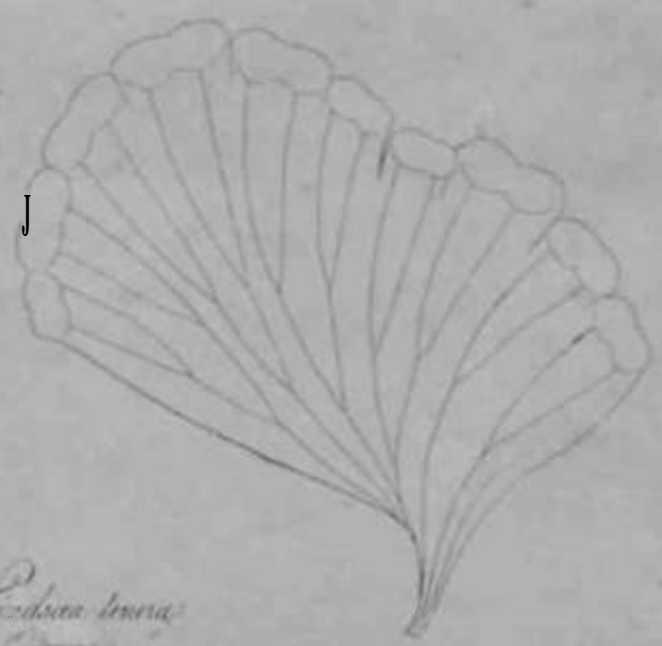
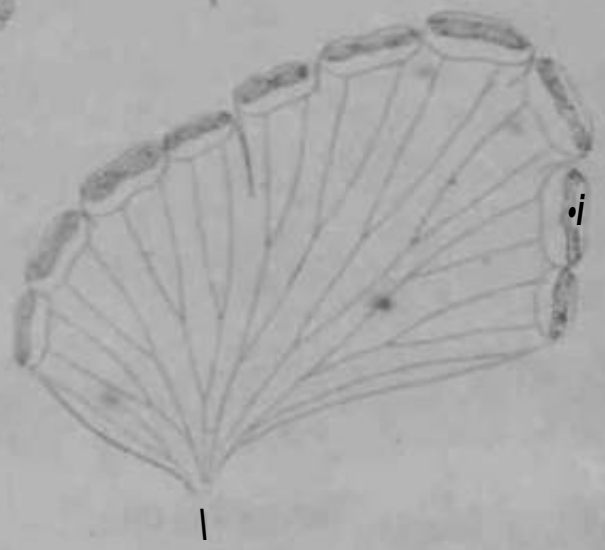
Fieberia longata



Pandanus cultratus
L.



Platyne foliolosa
 (L.) Schum. & Thiers



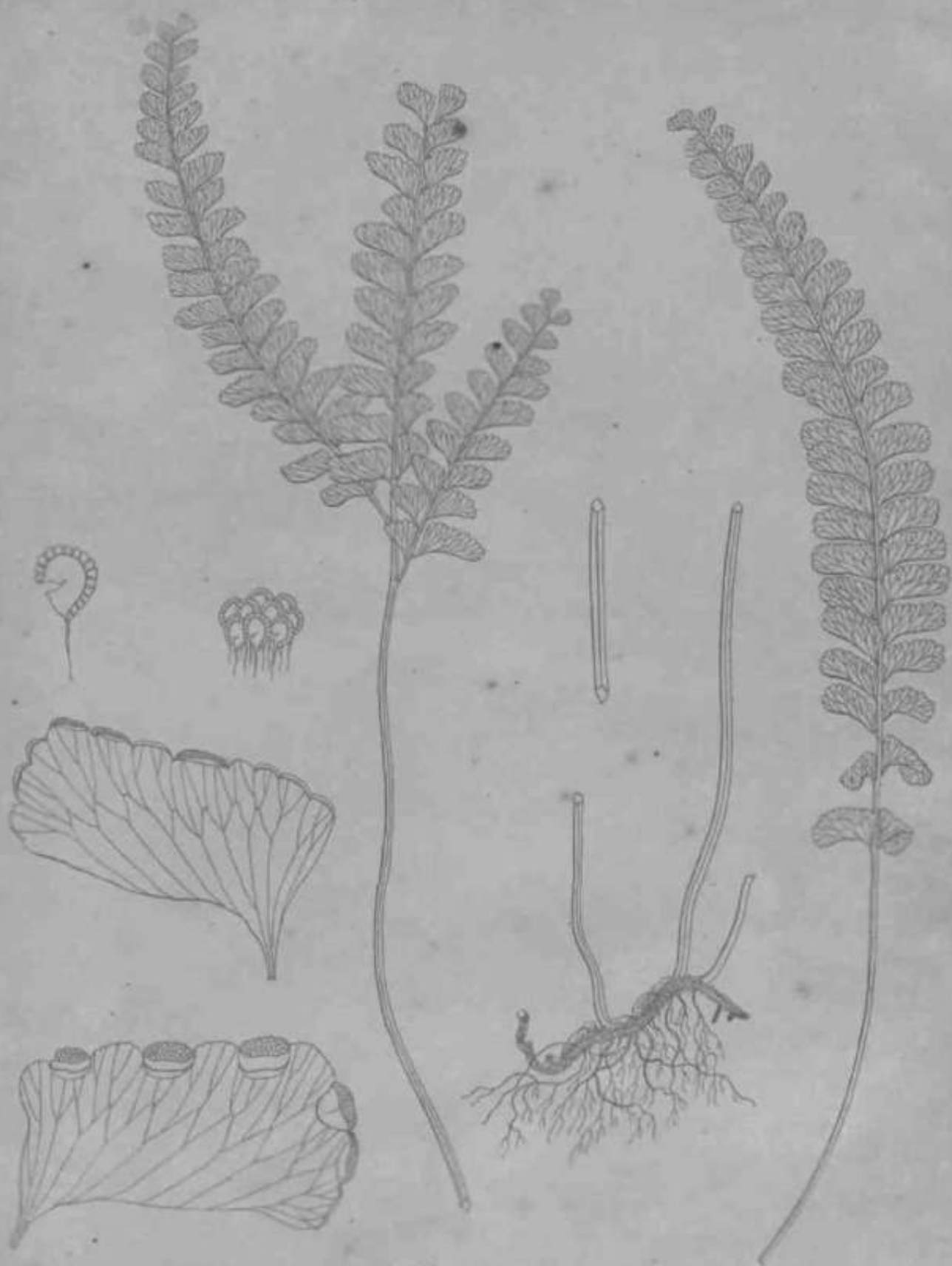
L. linearis
L. (Linn.)



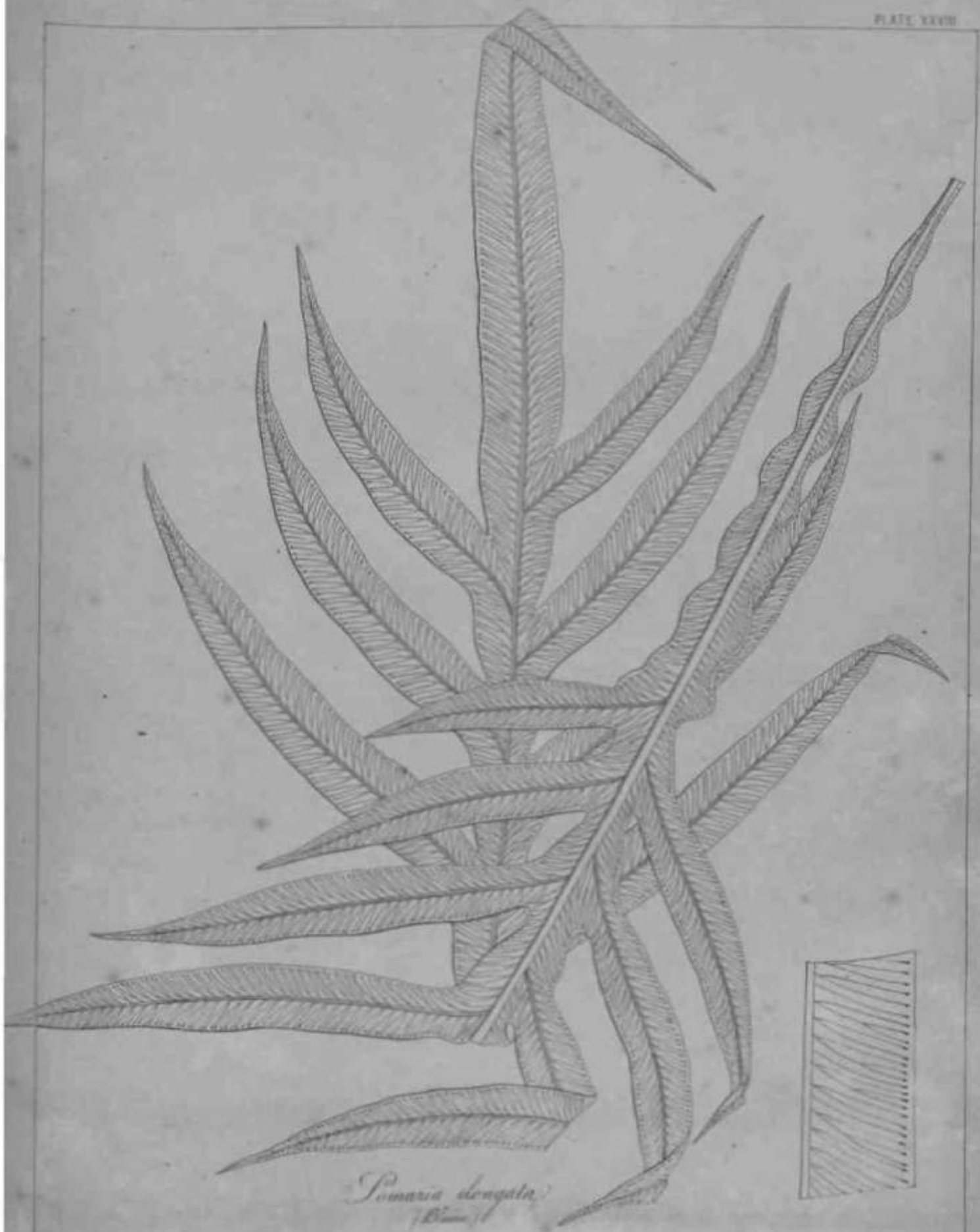
Schizolepis angustifolia
L. Kuhn



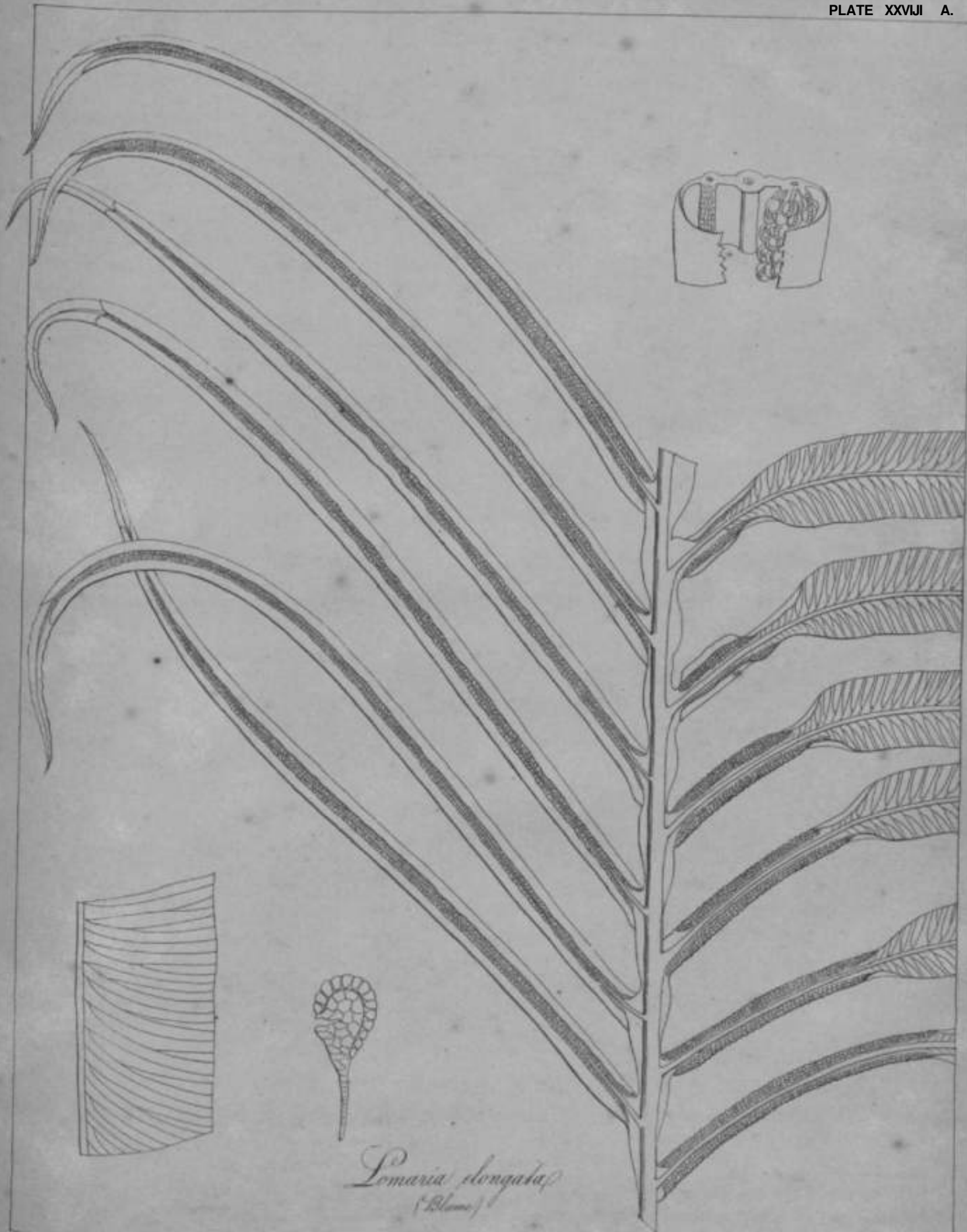
Schizoloma heterophyllum
(L. Sm.)



Schizolema incurvatum
 (Lam.)



Pomaria elongata
(Blume)



Lomaria longata
(Blume)



Blechnum orientale
(Linn.)

Wm. H. Kuhn



Onychium auratum
(Kunt.)



Pteris quadriaurita
(Hb. K.)

lr



Pteris fallax
(Agardh)

W. H. S. del.

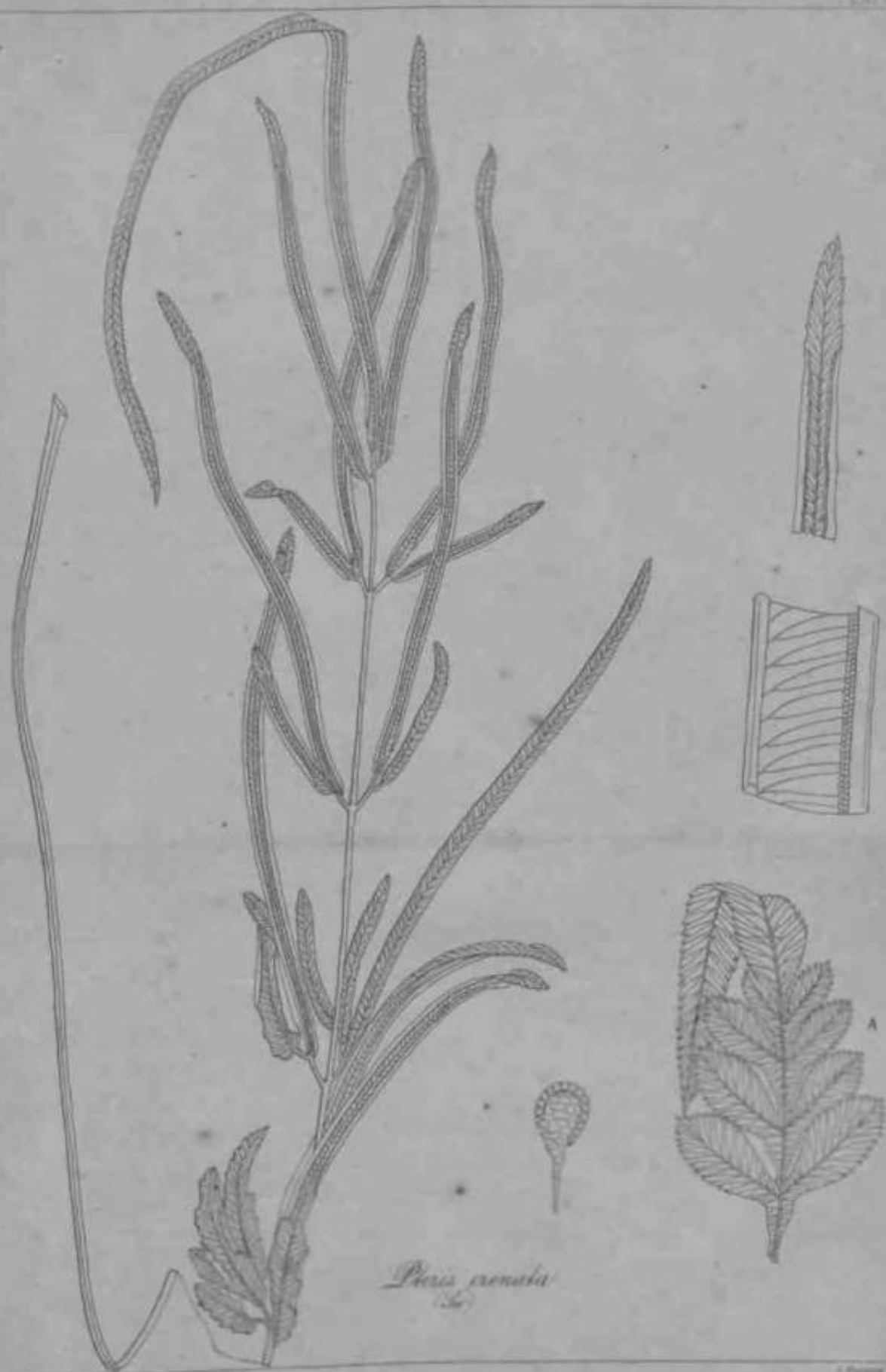
J. H. S. sculp.



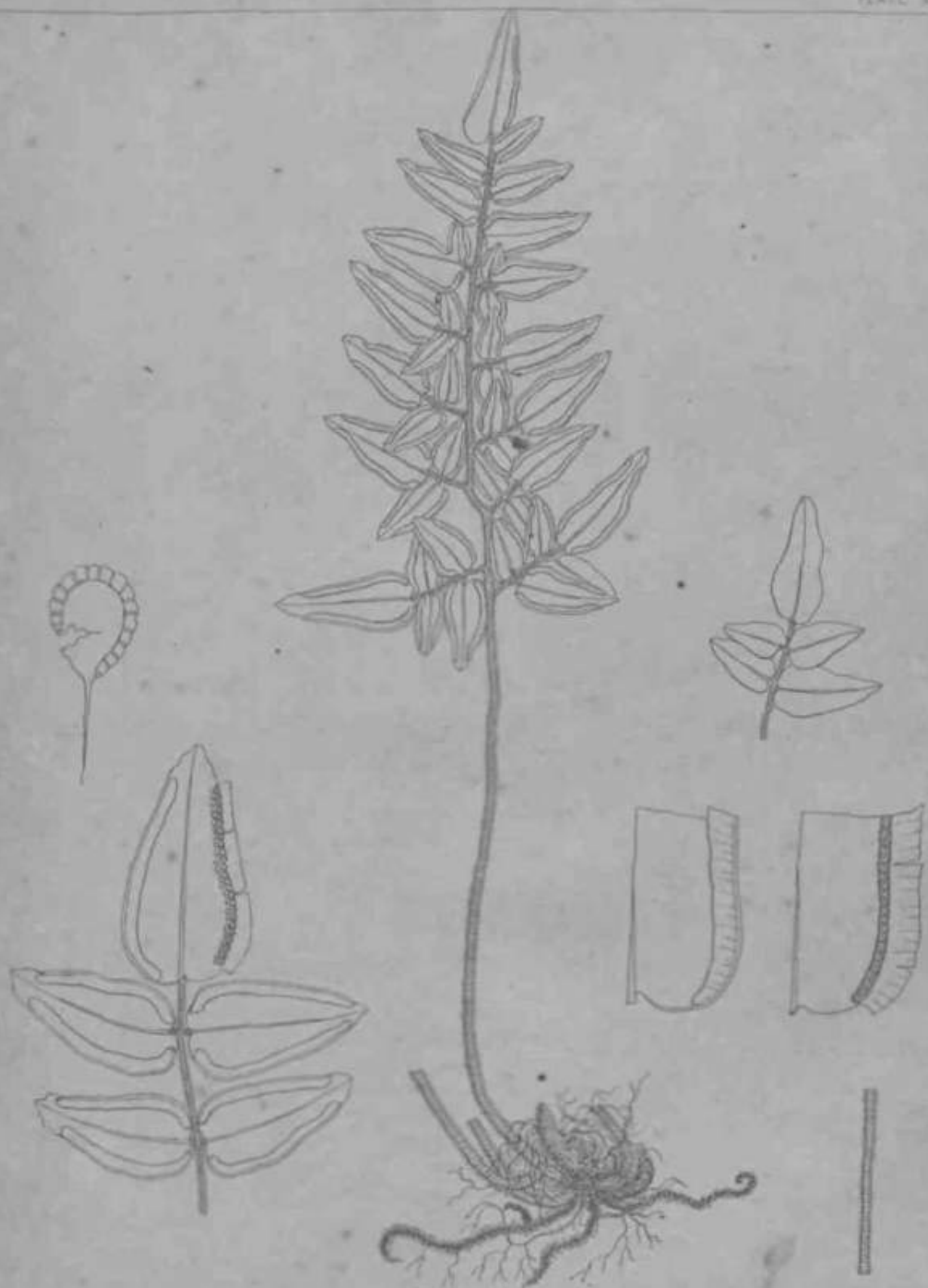
Pteris longifolia
Lamour.



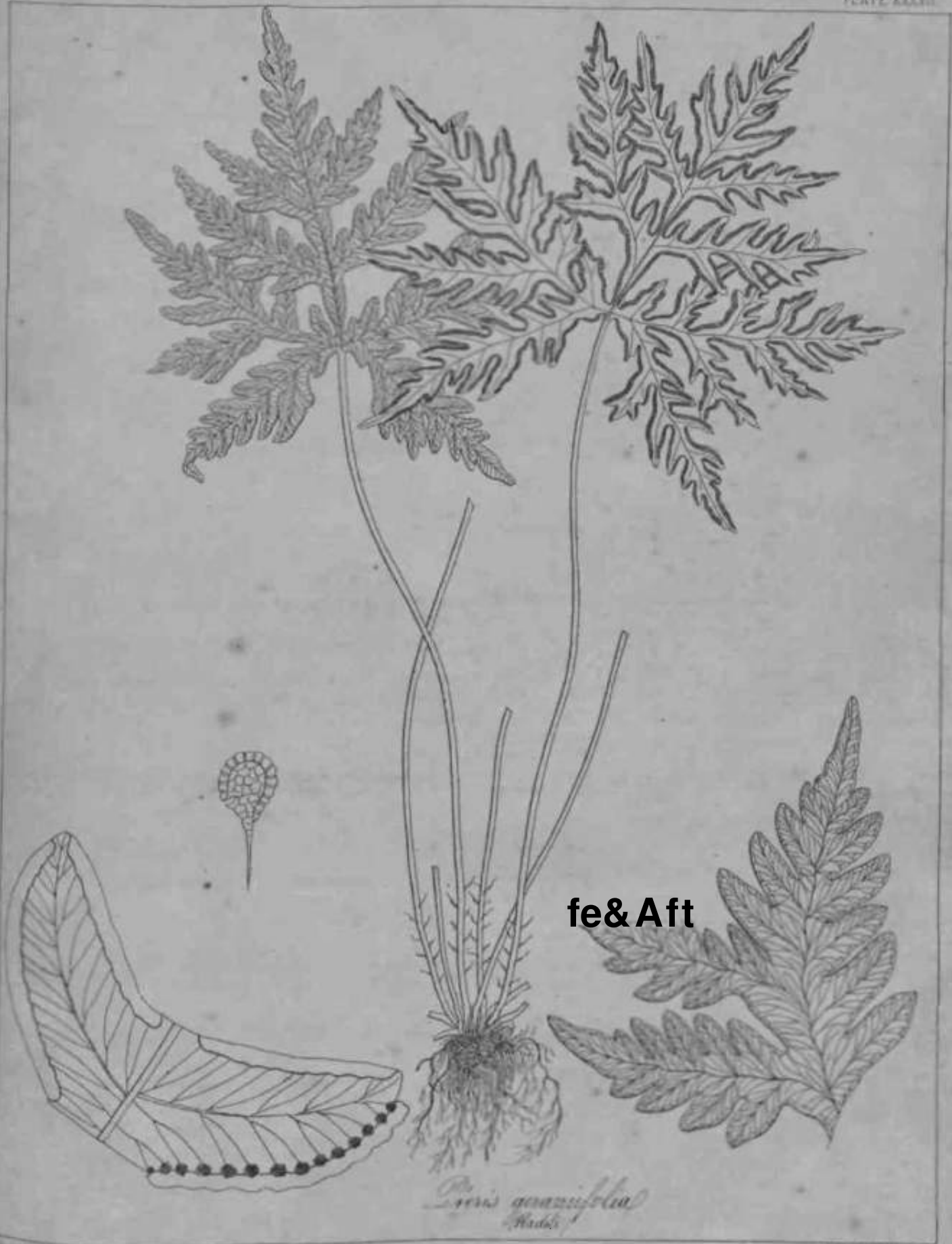
Pteris semipinnata
(Lam.)



Pteris caudata
(L.)



Pteris Puyvini
(Maer)

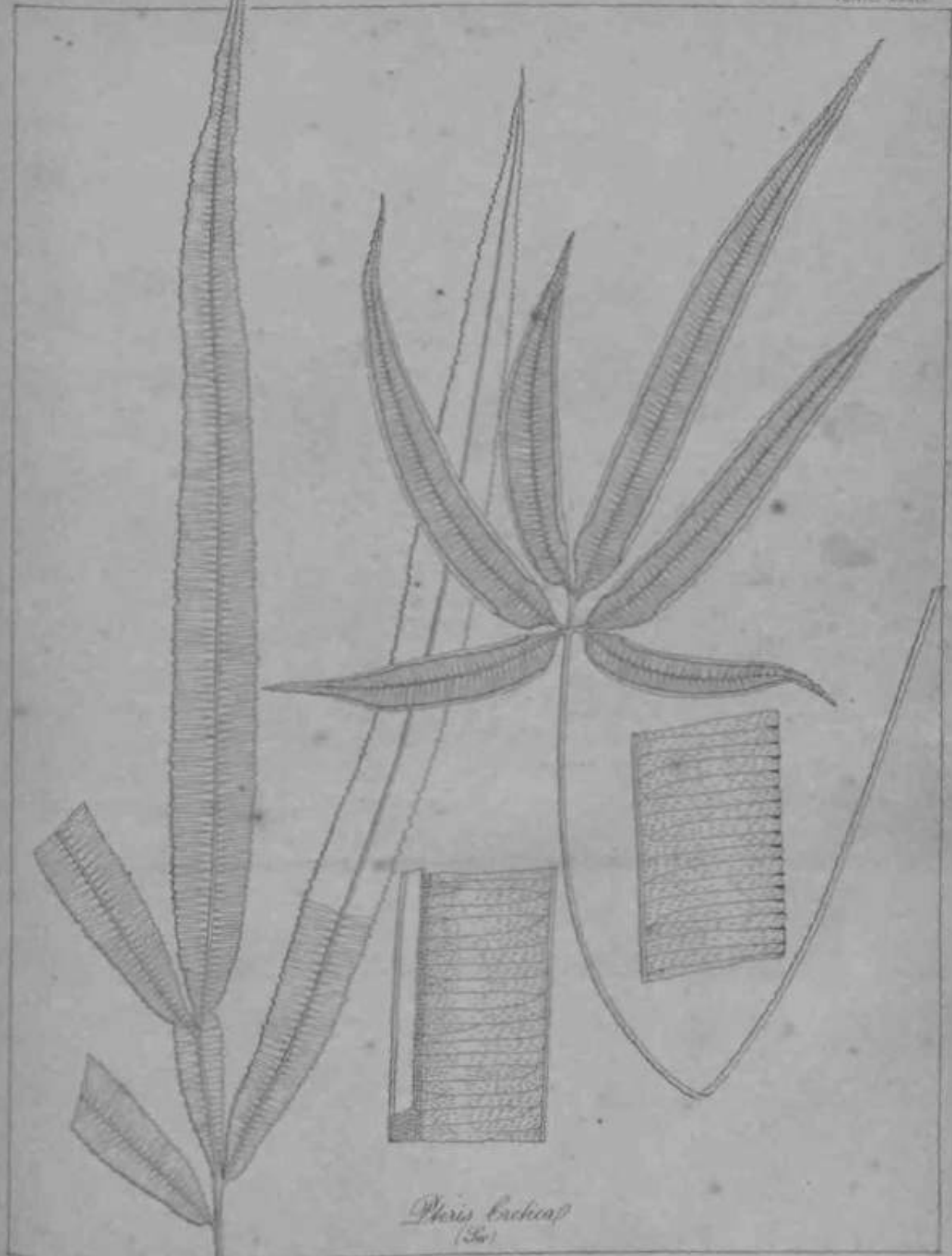


fe& Aft

Pteris granatensis
Raddi



Pteris pellucida
(Barl.)



Pteris Cochica
(Sw.)

4



Pteris Hocheziana?
(Agardh)

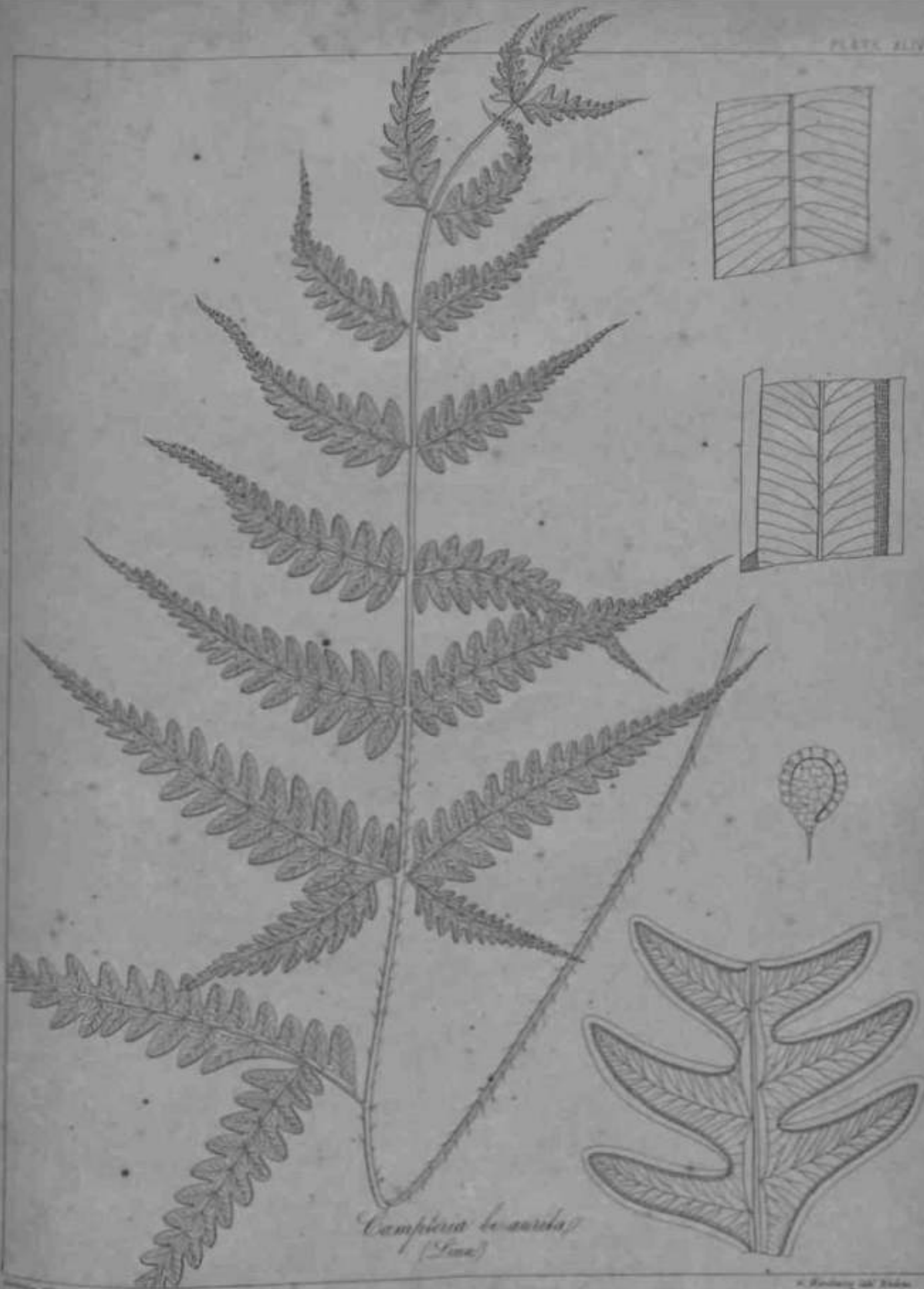


Pteris chloris
(273)



Pteris aquilina
var. *longipinnata*





Campium laevis,
(Linn.)

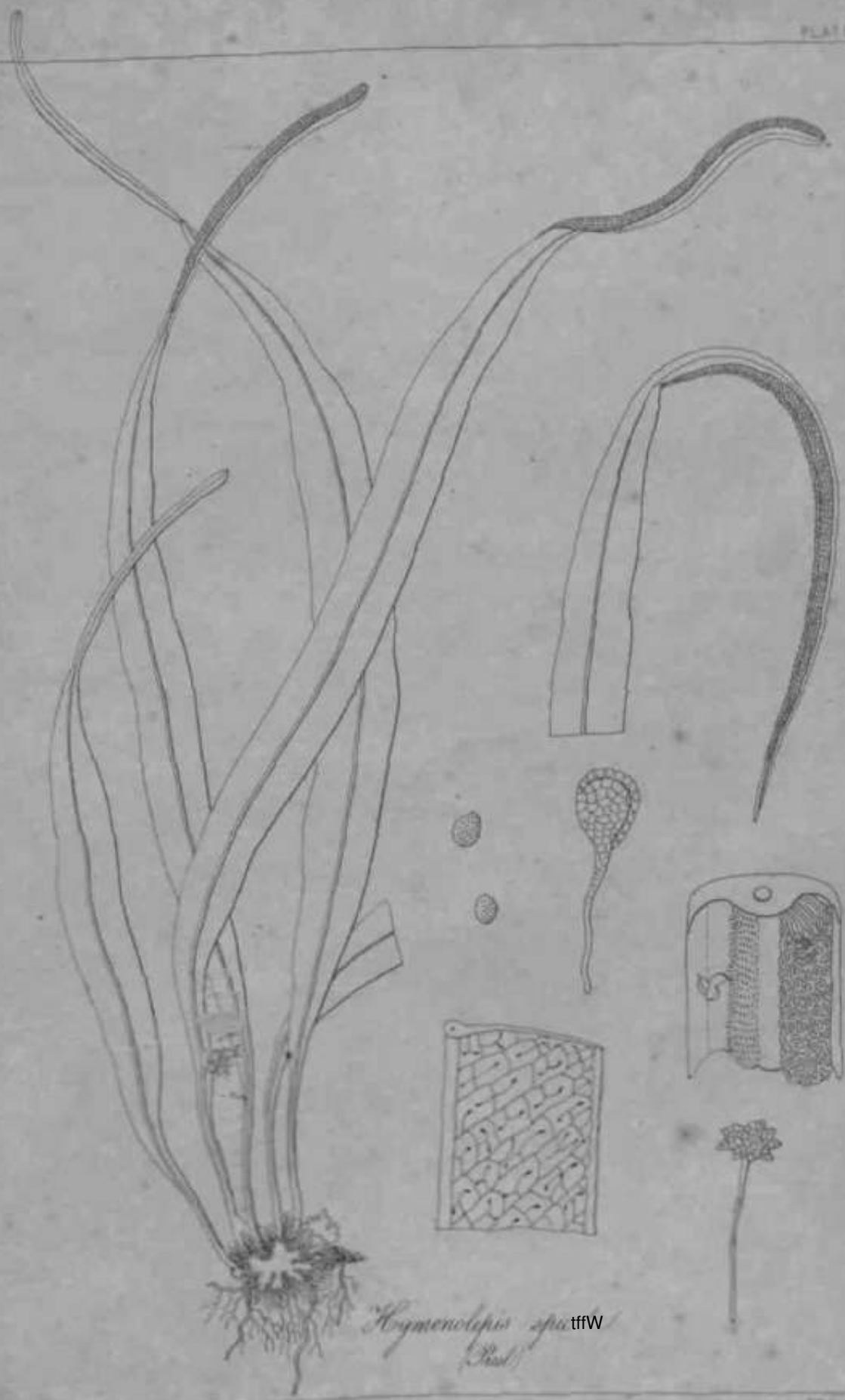


i

J

Campylodictyon tim/tfatensis

852



Hymenolepis spachii tffw
(Pach.)



Gymnopteris quercifolia
(Rauh)



Cyanocephalus fuscus
Moore

Moore, Bot.

W. H. Burpee Co. Boston



Grammitis setosa
(Pruel)



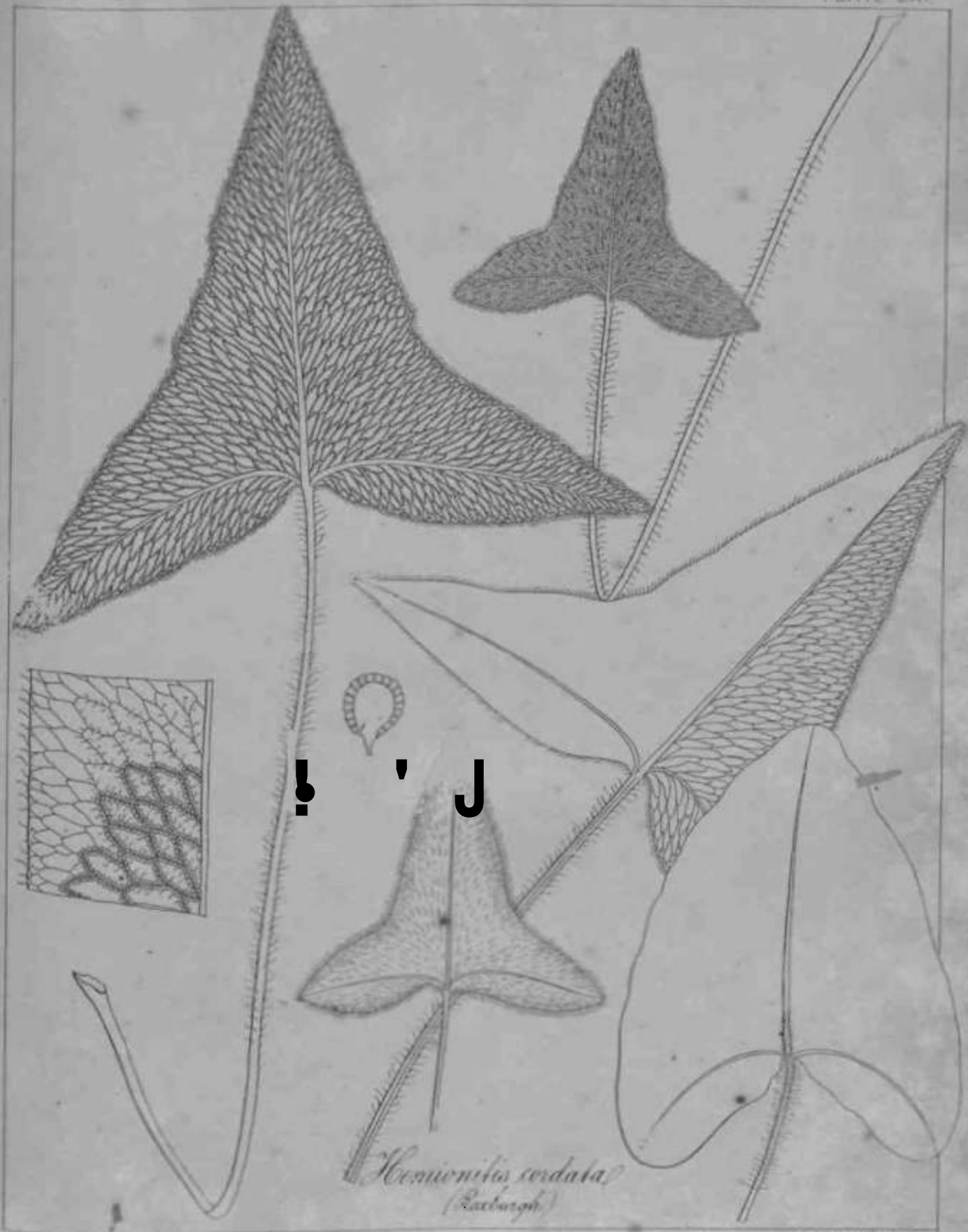
Loxogramma involuta (Presl)



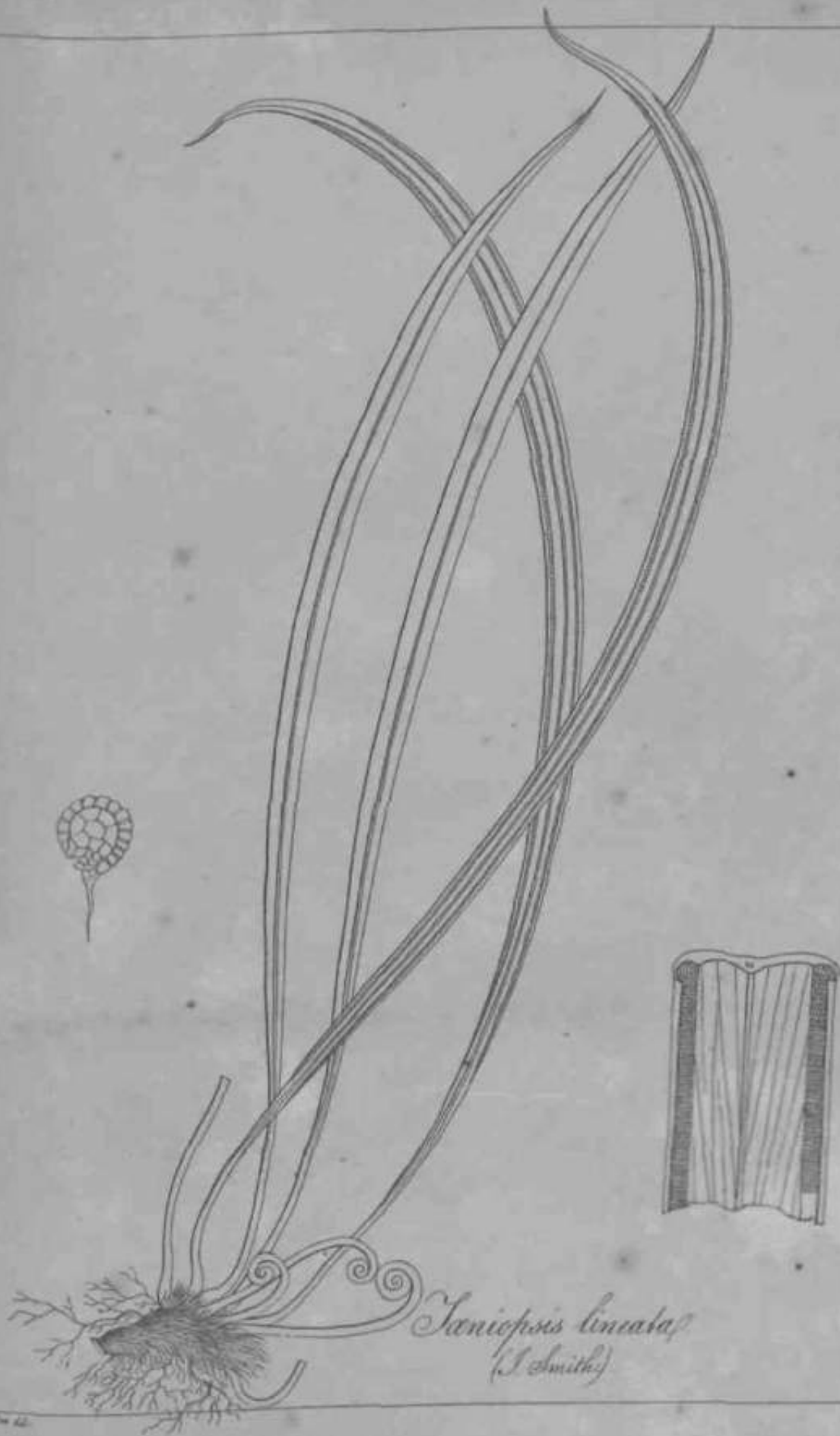
Loxogramma lanceolata
(Pruel.)



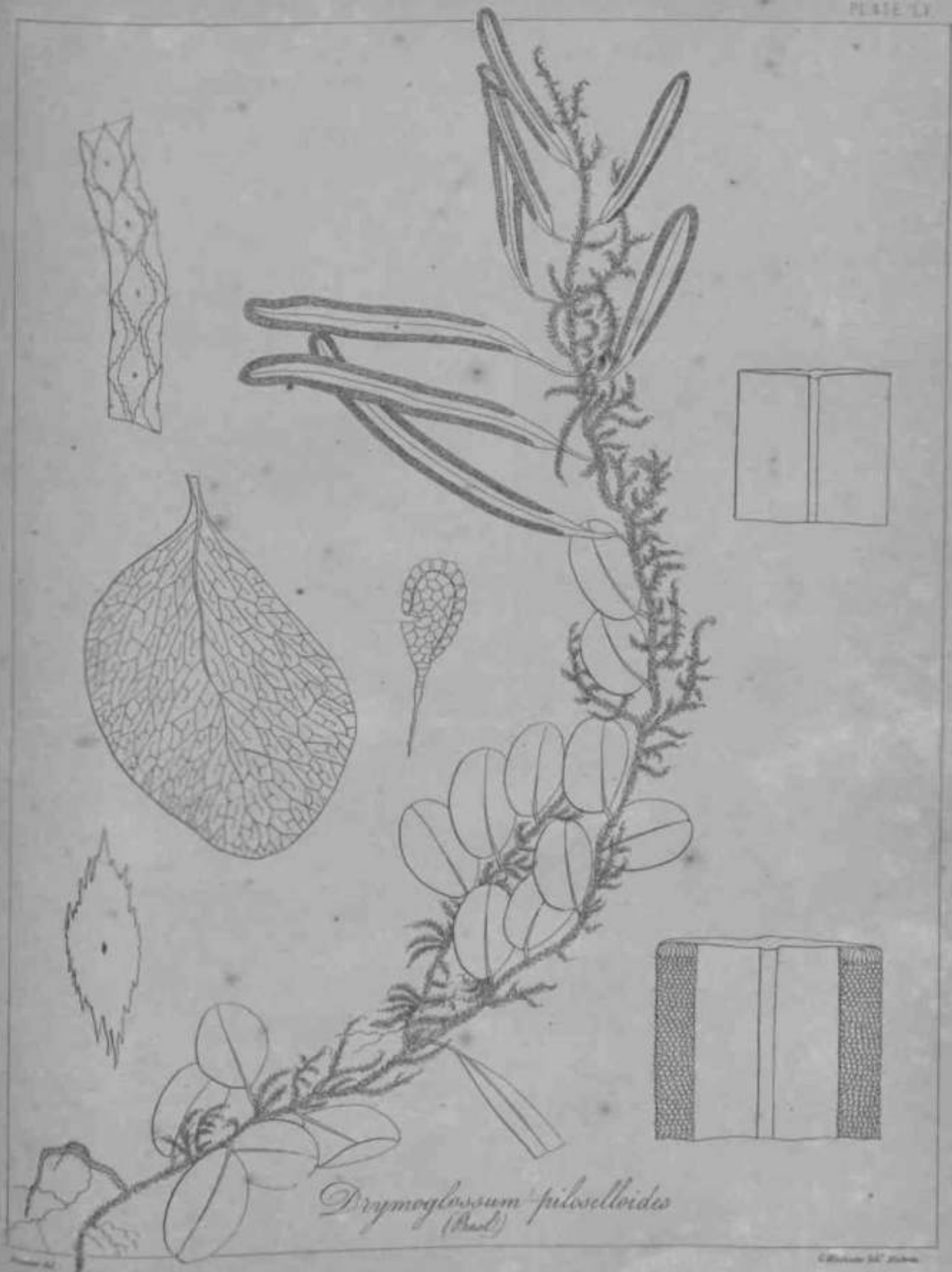
Antrophyum reticulatum Y W
 (Haulfuss)



Hemiornithis cordata
(Roxburgh)



Tonicopsis lineata
(J. Smith)

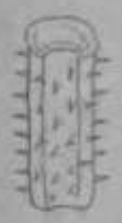


Drymoglossum piloselloides
(Psal.)



Meniscium triphyllum
(Sw.)

C.B.C. (L. p. 12) 2000
 large, very thin segments a
 kind of *Hornstedtia* *Biddonia*
 C.B.C. The segments
 the segments are from
 about 1/2 to 1/3 inch
 1 to 2 c. which
 do not represent the
Biddonia *speciosa* *Wall.*



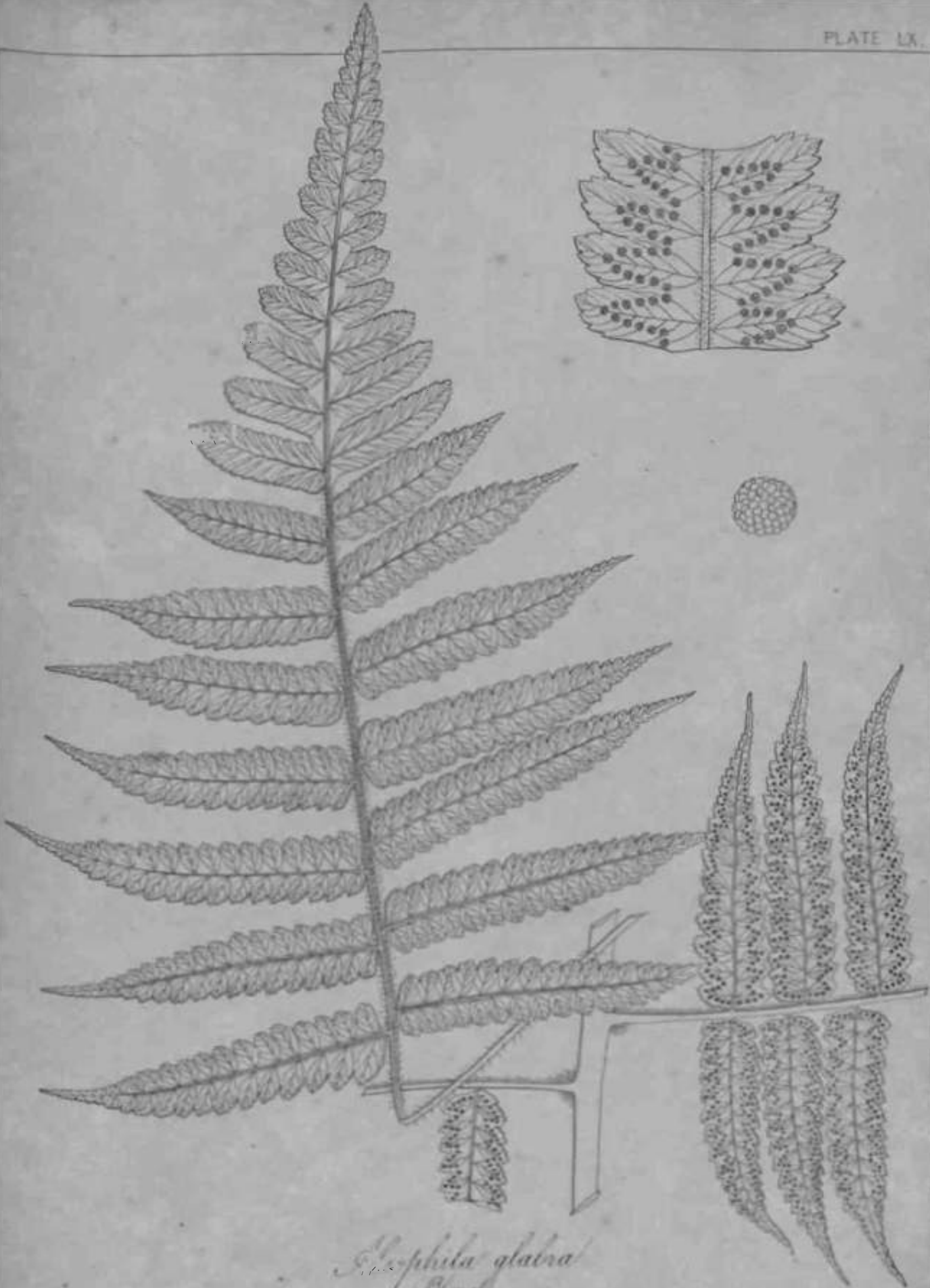
Cyathea spinulosa
 (Wall.)



Adiantum latibrosa
(Wallich)



Adiantum crinitum
(L.) Sw.



Sphenophila glabra
Blanch.



Lygodium scandens **t***
(Sc)

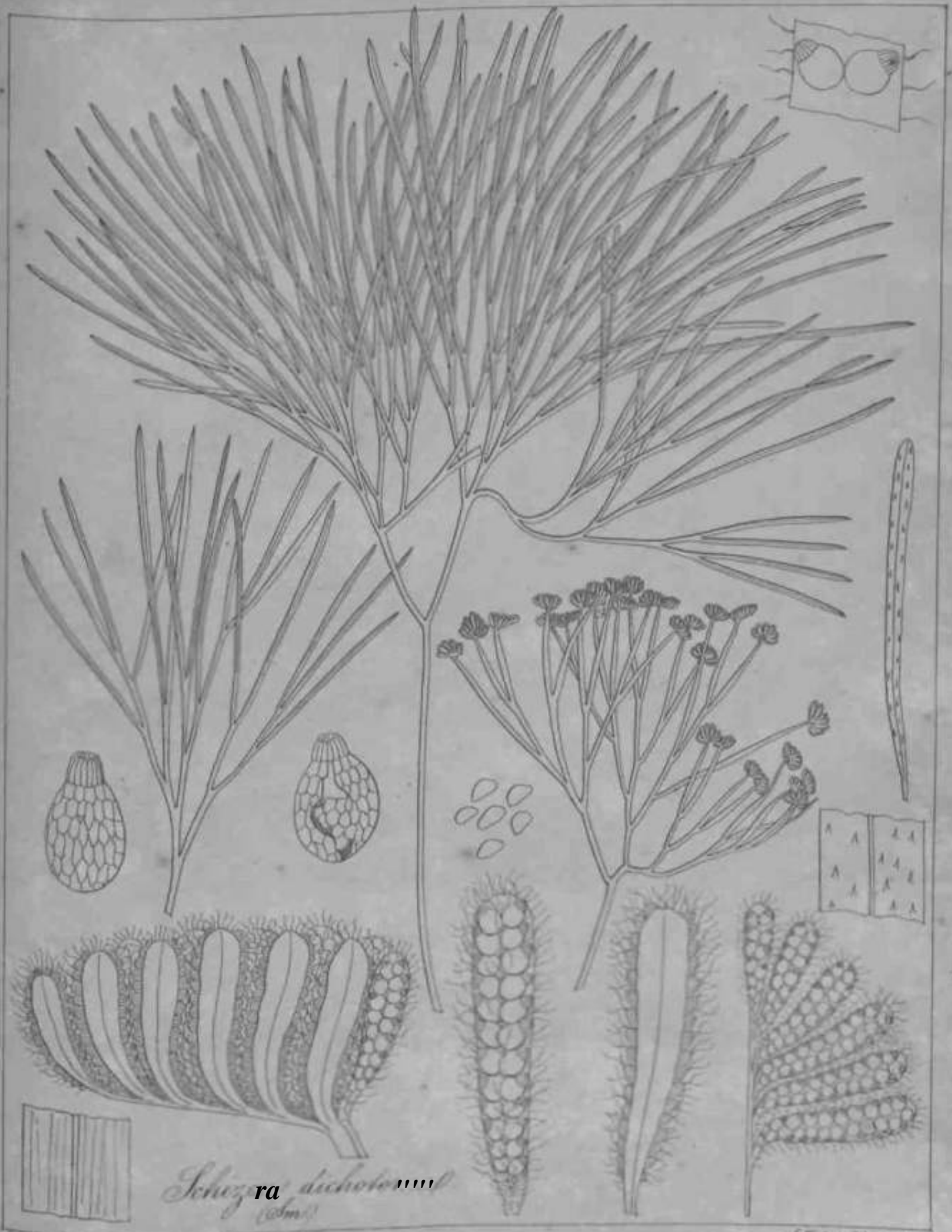


Lygodium dichotomum
(Sw.)



Lycopodium flexuosum Jtt





Schizandra dichotoma
(Am.)



Anemia Wightiana
(Lindl.)

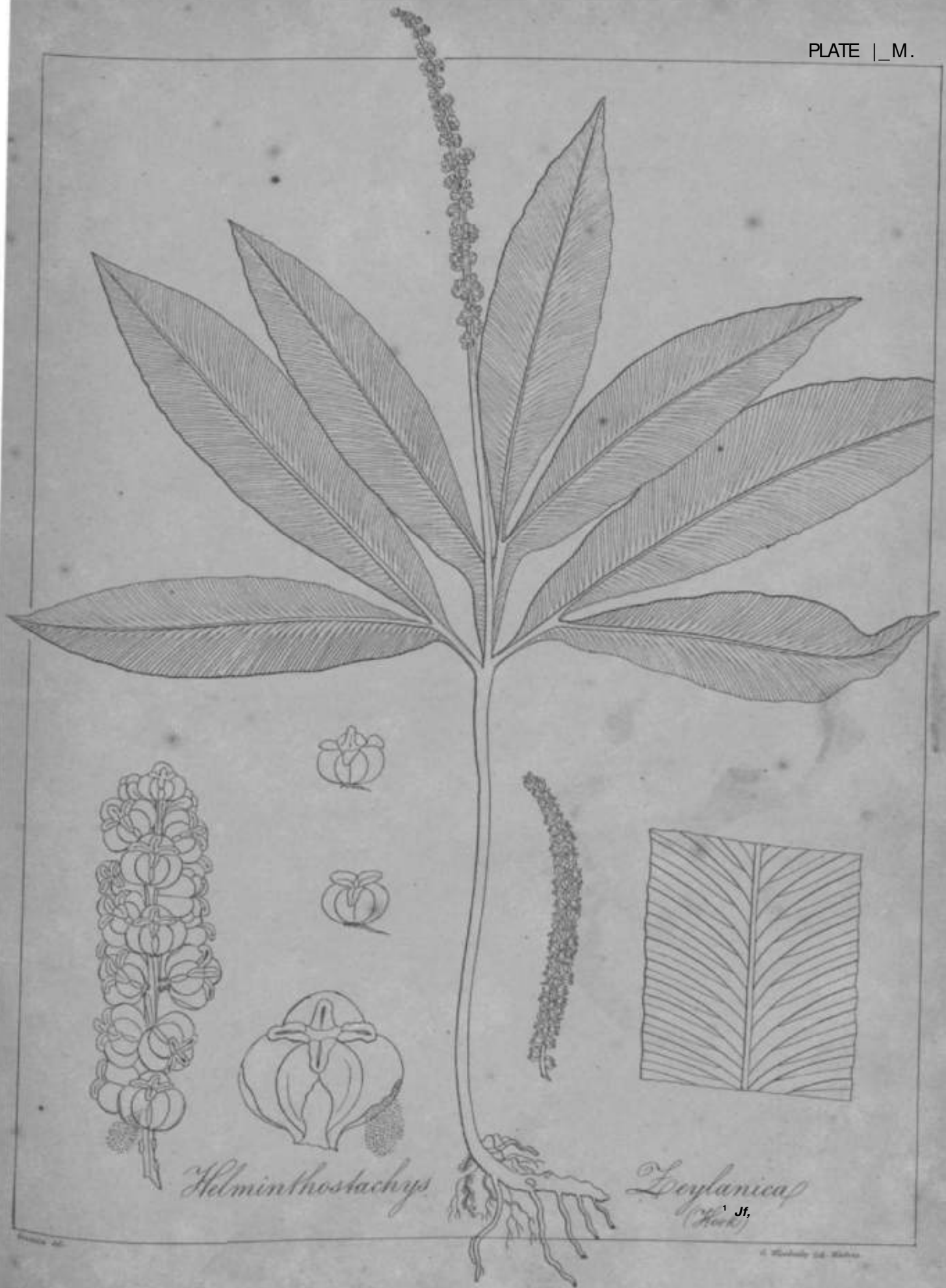


P. lucidum virginicum
lucidosum (Moore)

L



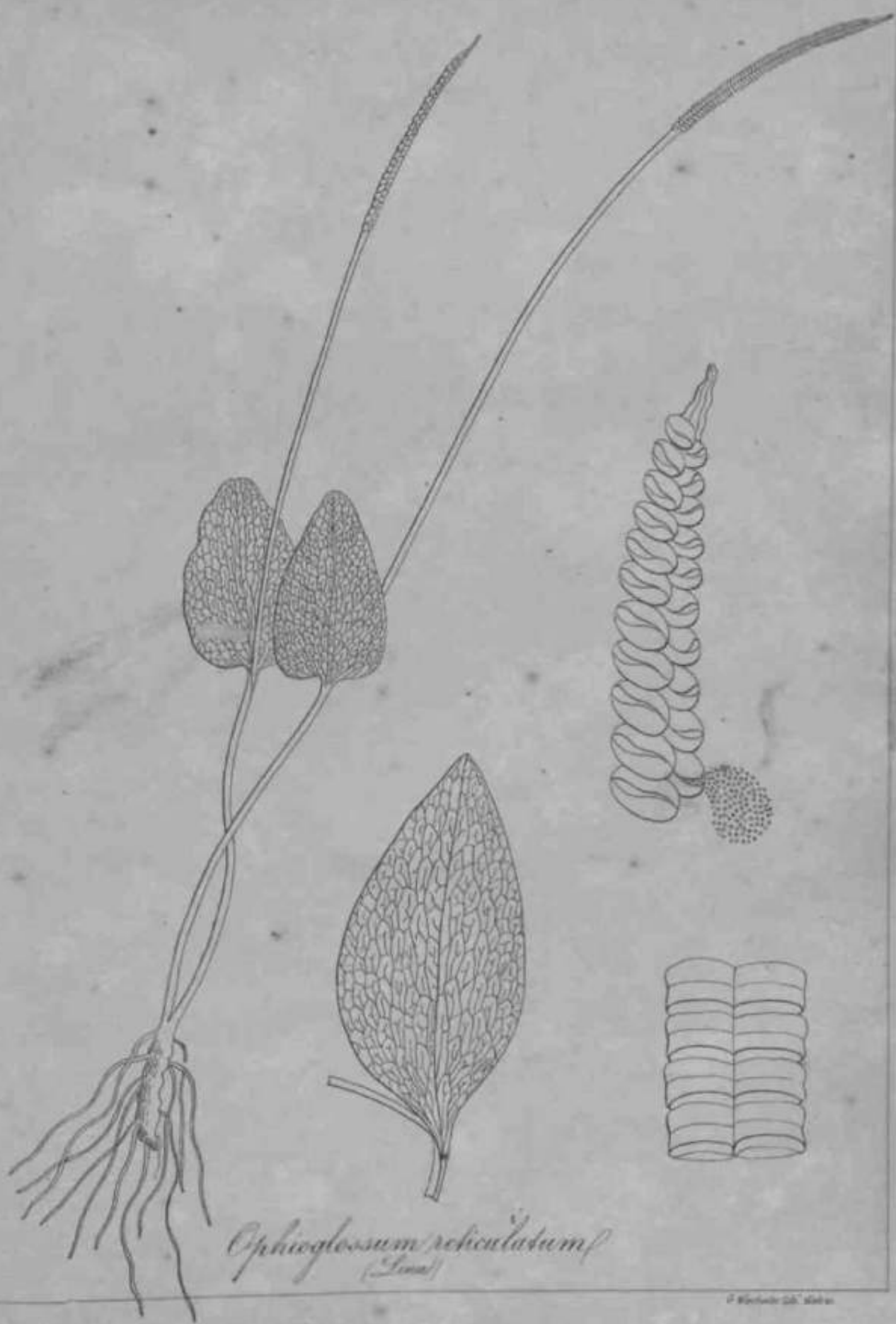
Botrychium subarcticum (Hall)
(Hall)



Helminthostachys

Zoylaniopsis
(Hook.)
Jf.

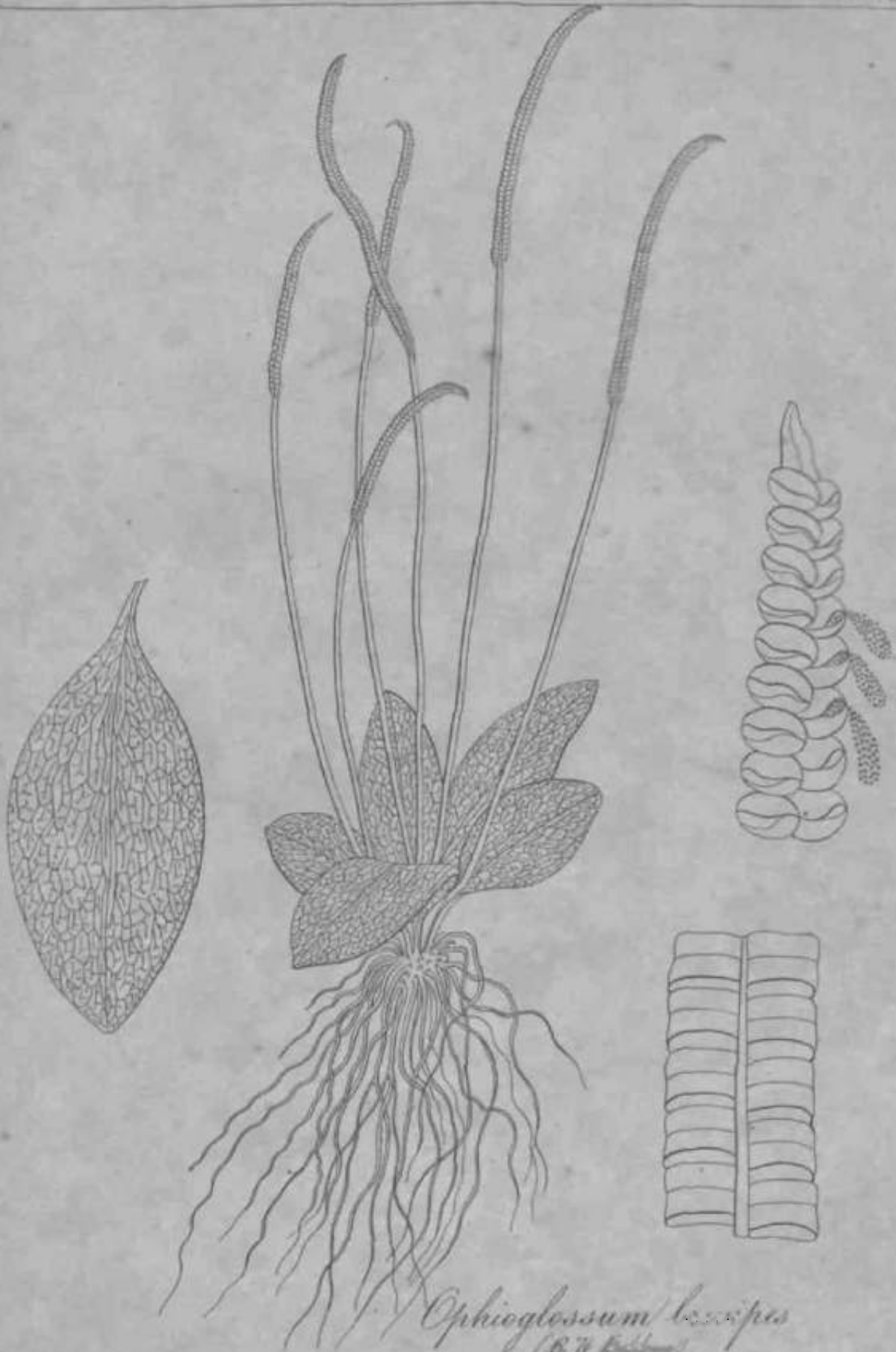
W. H. H. H.



Ophioglossum reticulatum?
(Linn.)



Ophioglossum parvifolium L.
(Linn.)

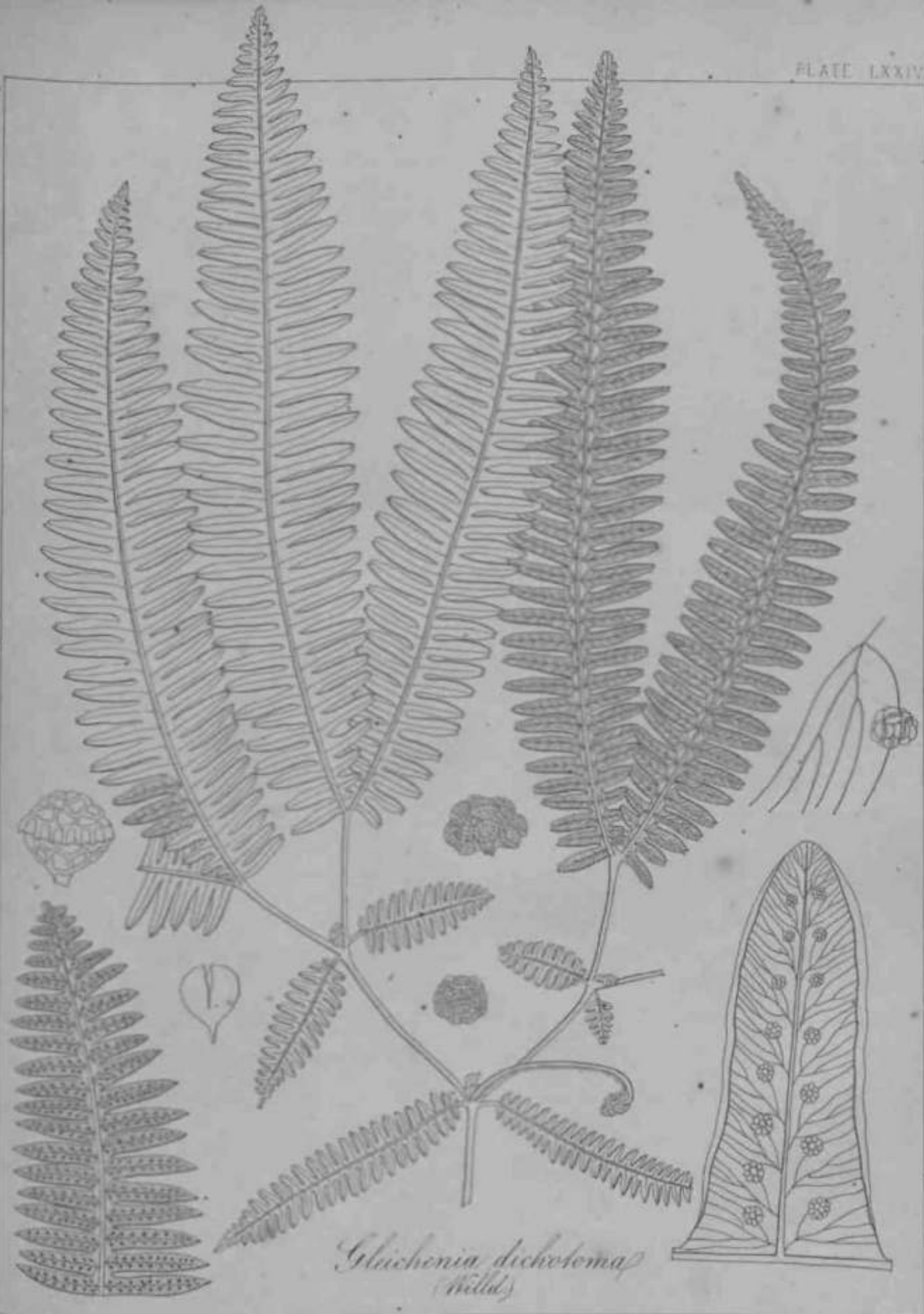


Ophioglossum besseya
(R. W. Robinson)

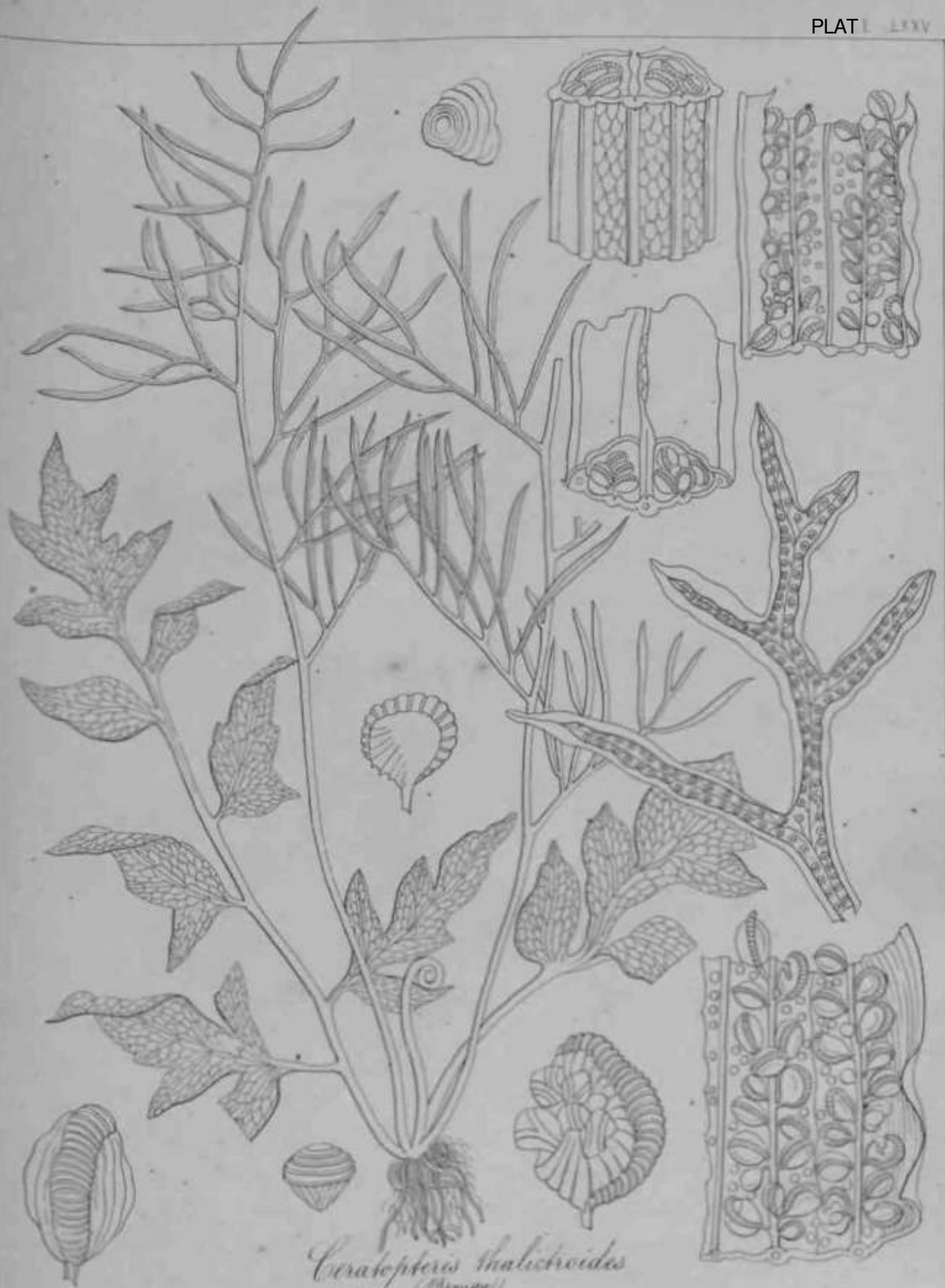
S



Pteranema cyathocoides
(Lam.)



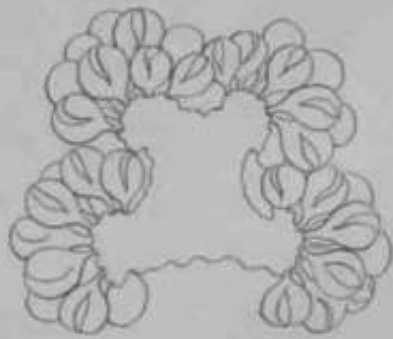
Gleichenia dichotoma
(Hilleb.)



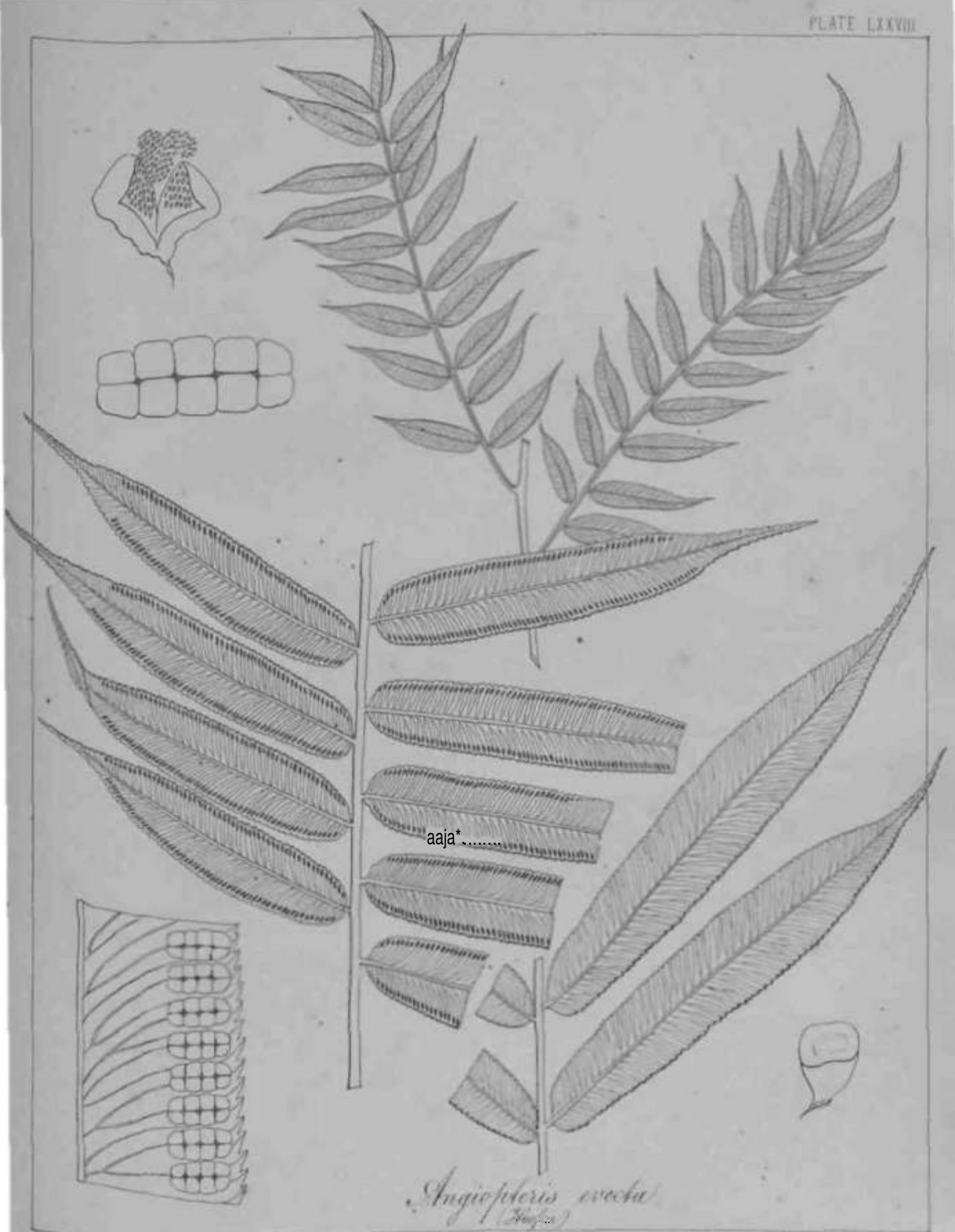
Ceratopteris thalictroides
(Brongn.)



C. regulis
UMft

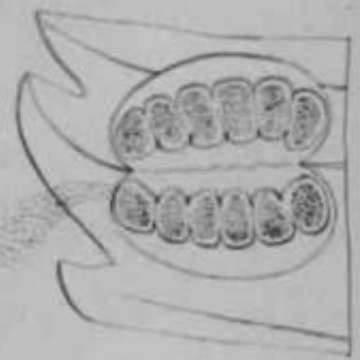
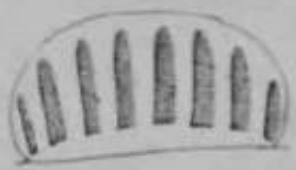
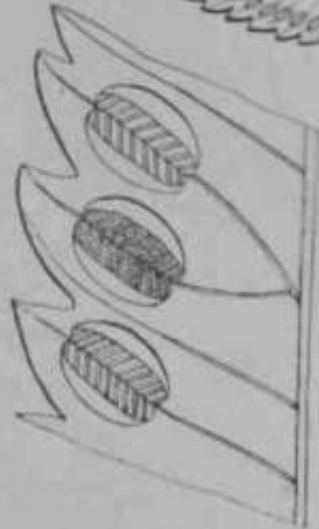
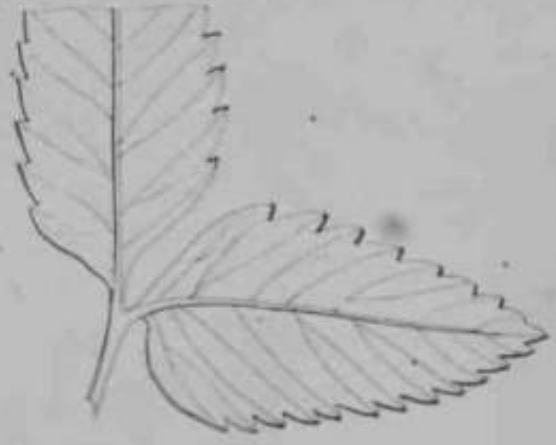


Comunda javanica
(B. 1)

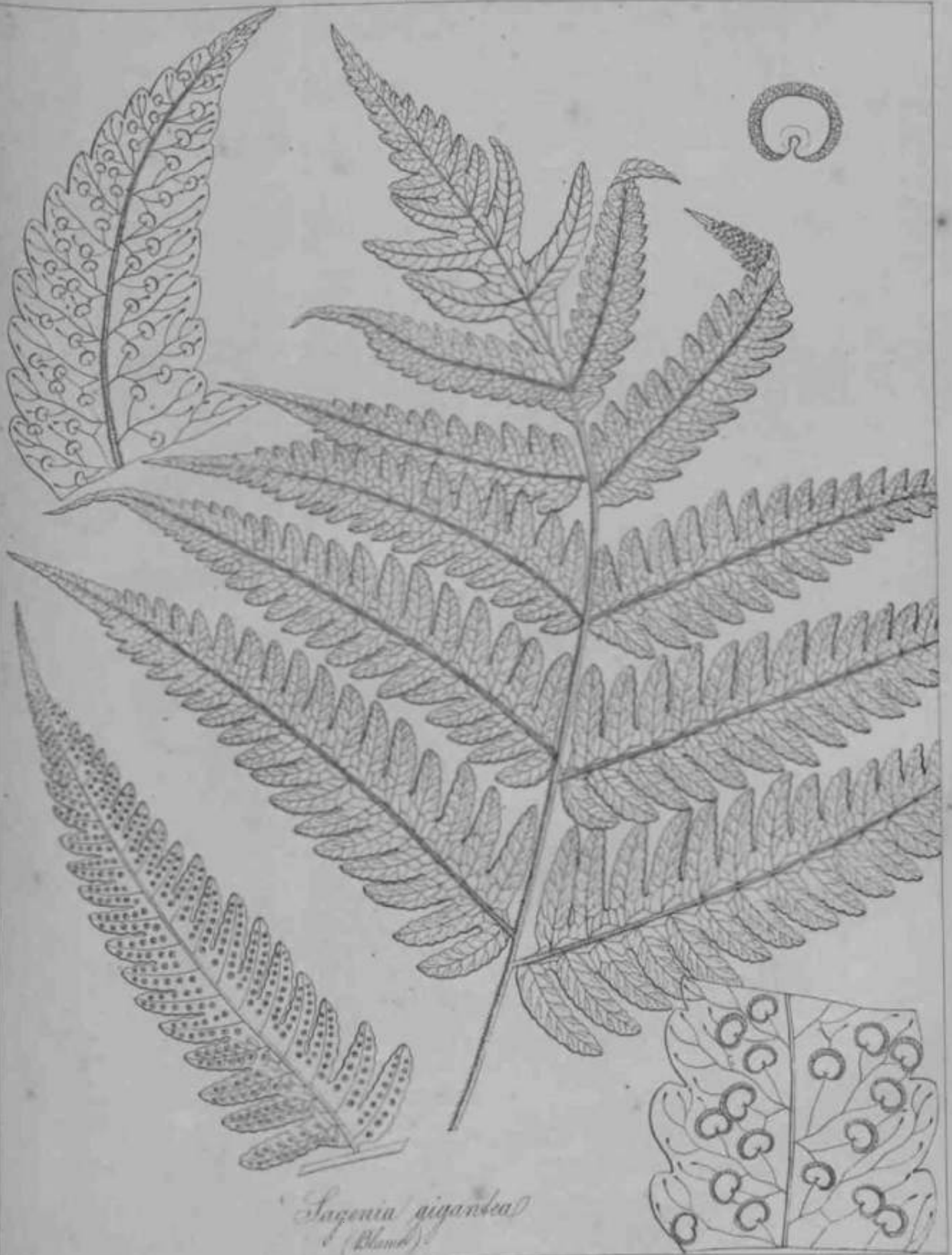


aaja*

Angiopteris erecta
(Linn.)



Marattia fraxinea
(Smith)

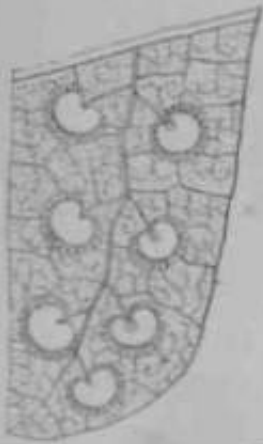


Lagenaria gigantea
(Blanch)

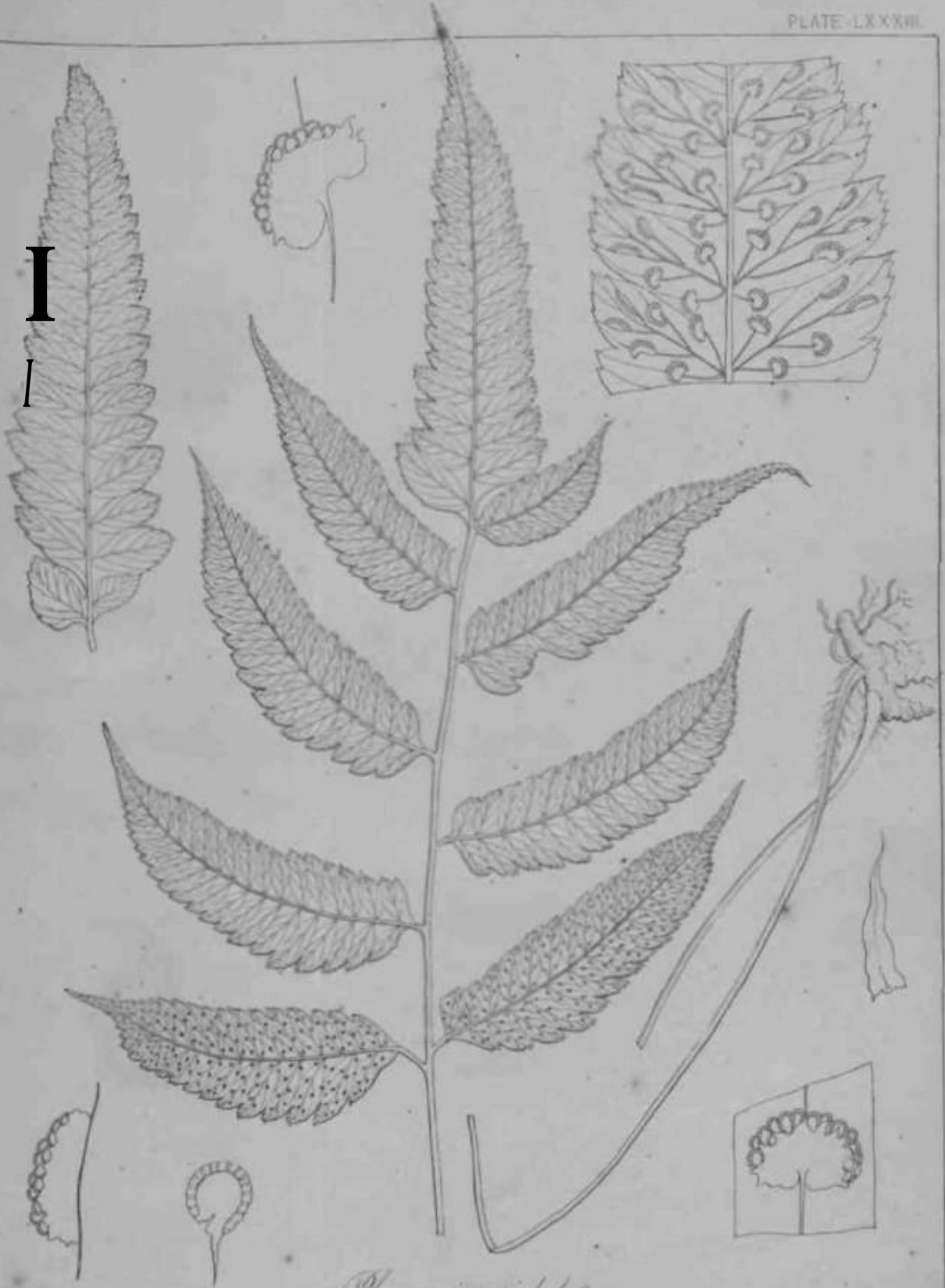


Lygenia coadunata
(Moore)

4



Cymia pteropus
Muhl.



I
I

Pteris aristata
(Fishes)

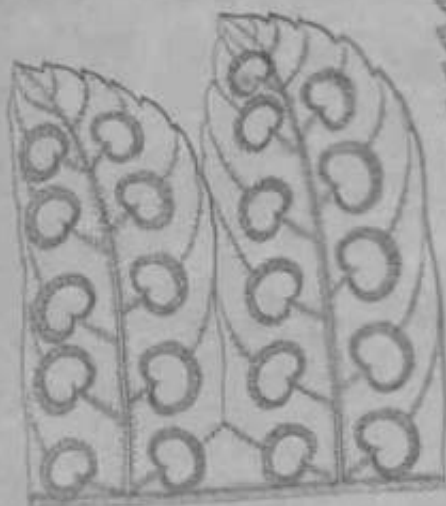
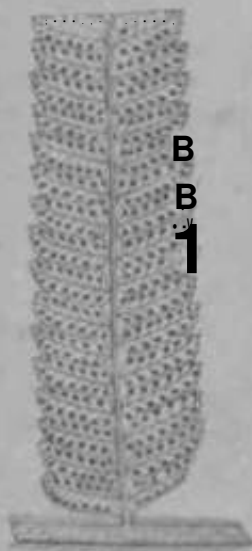


Apteridium melleum
(Dorset)



Adiantum extensum
(Blume)

L. B. Smith del. & sculp.



Nephrodium abruptum?
(Hook.)



Nephrodium arbuscula
(Lam.)



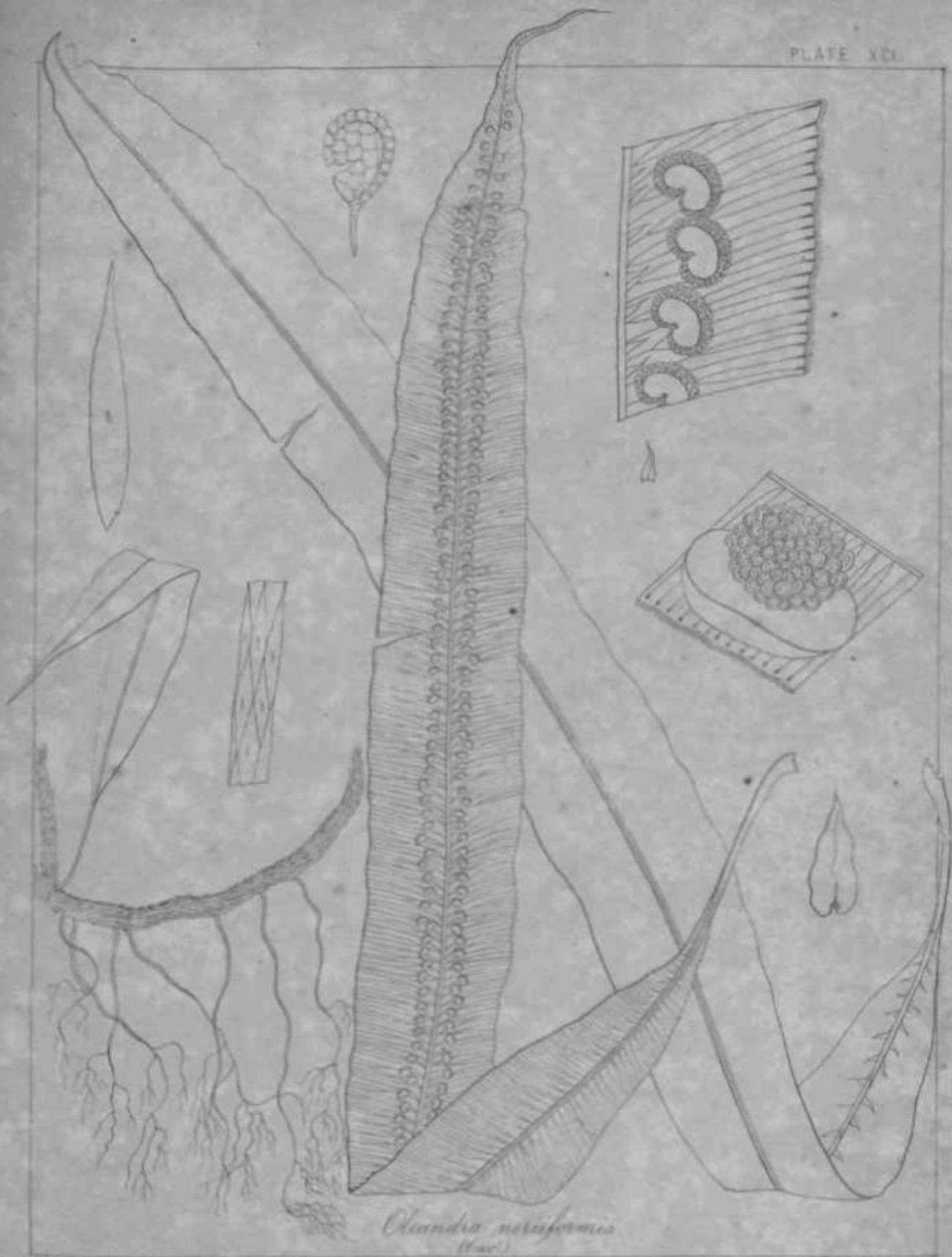
Nephrodium unitum
(Rock)



Nephrodium propinquum
Lb.



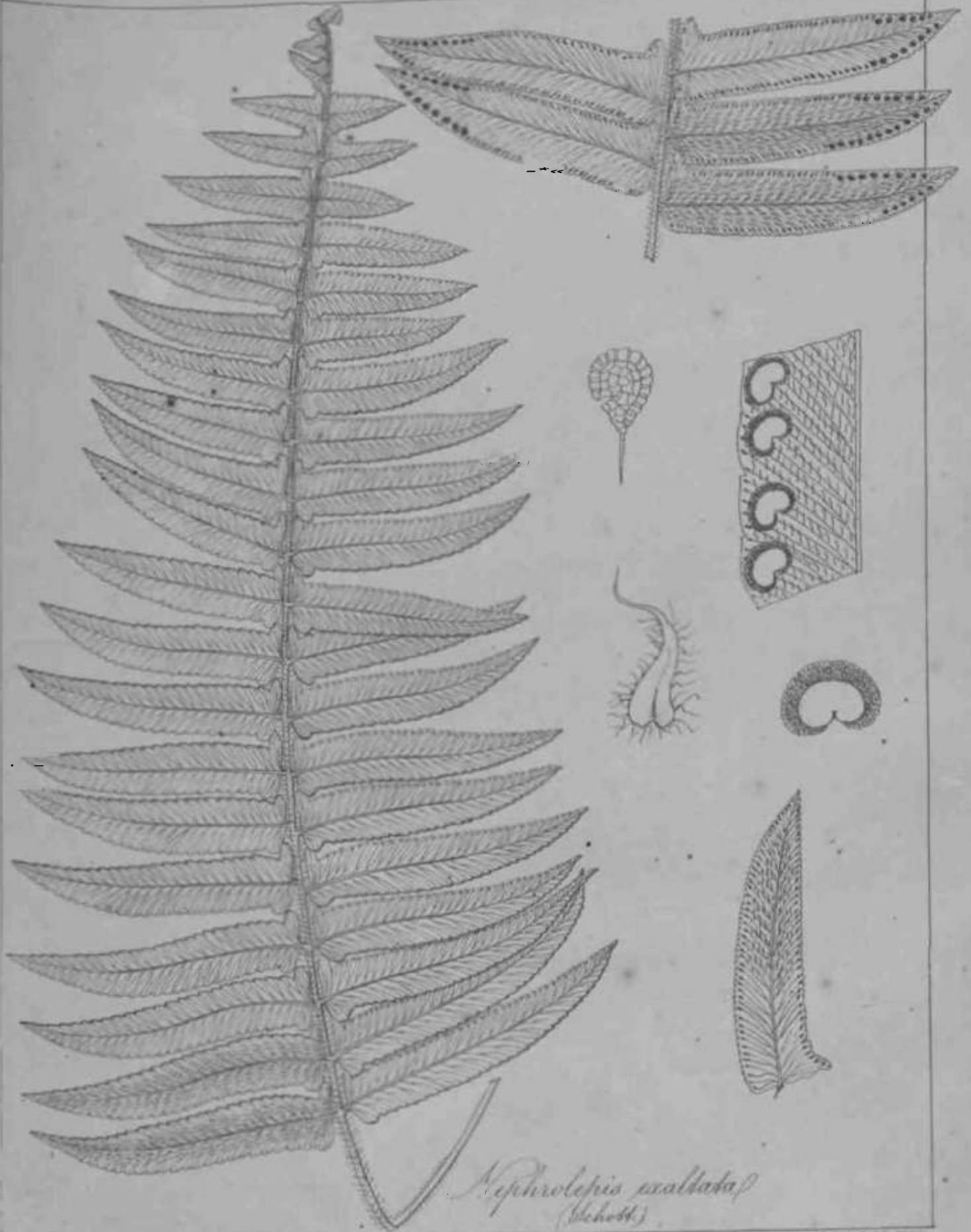
Nephrodium terminans
(L.) Schrank



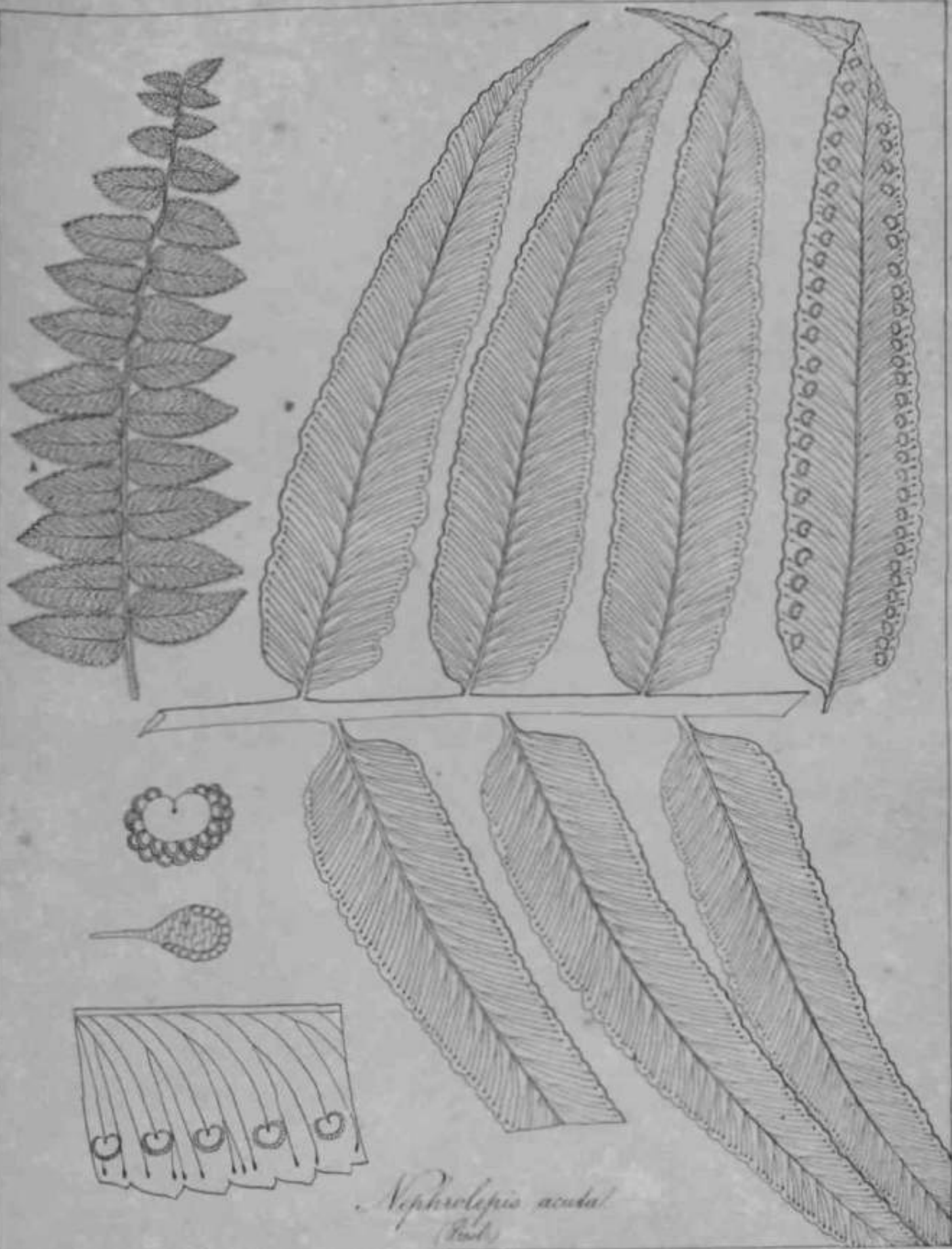
Cladonia verticillata
(Lac.)



Nephrolepis tuberosa

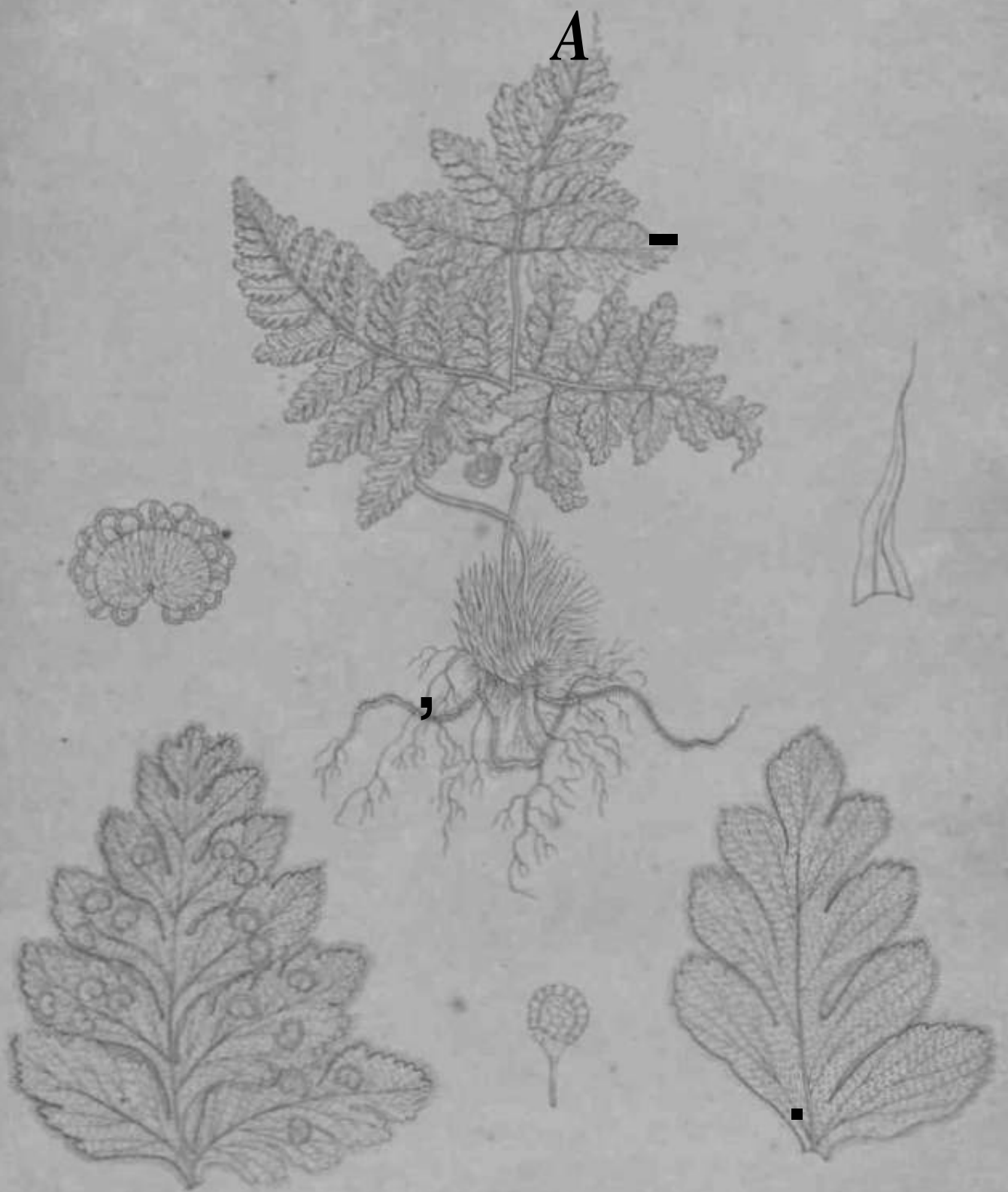


Nephrolepis exaltata,
(Schott.)

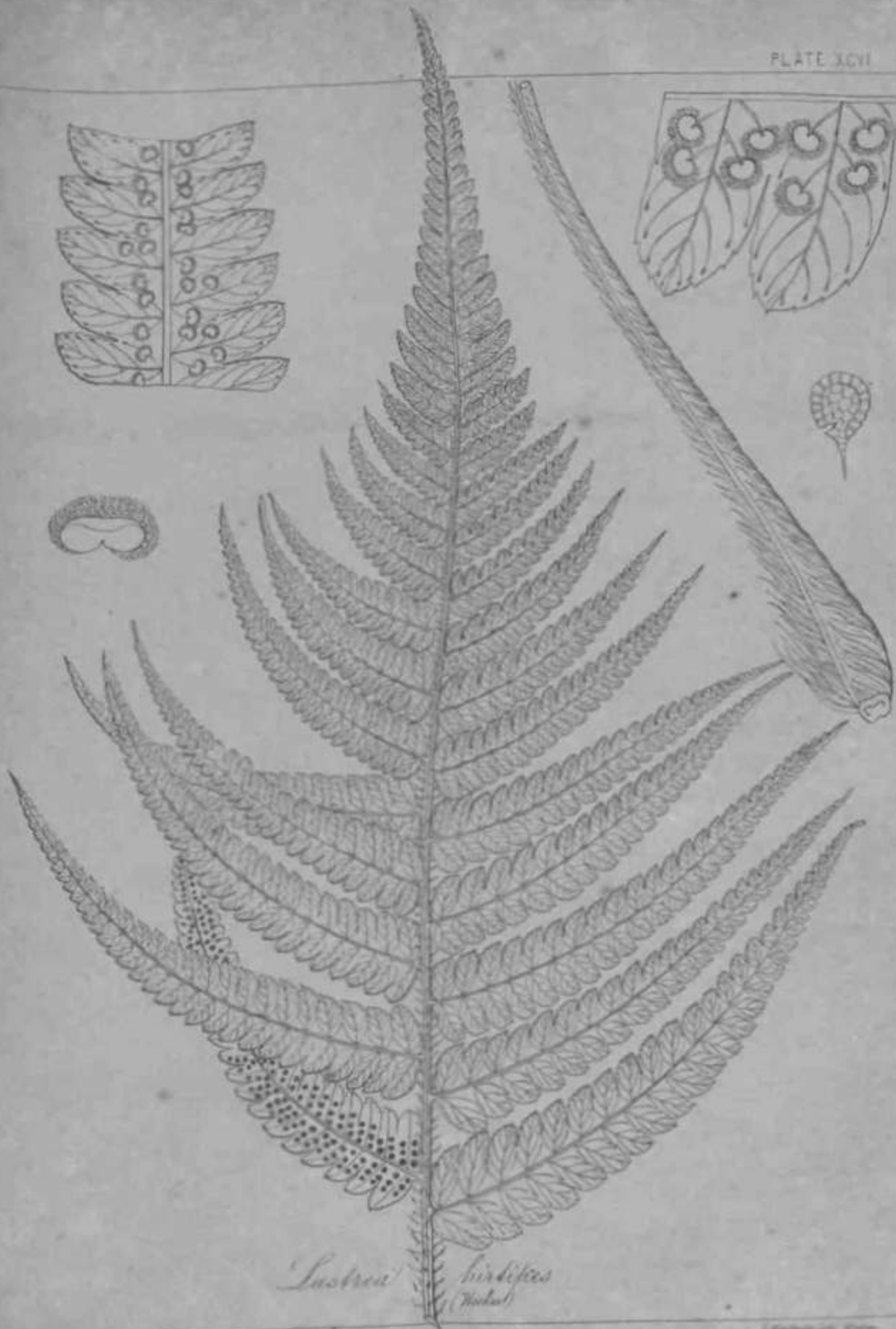


Nephrolepis acuta
(Pursh)

A



Lactuca crucifera
(Linn.)



Lustrum hirsutipes
(Hook.)

Lustrum hirsutipes



Lastrea divisa
(Wallich)



Lastrea recedens
(L. Smith)



J

Lastrea flaccida
(Lacina)

Lastrea setigera *Plumet*



Lathraea fruginea
(Rubiaceae)



Lactuca arctata
(Moss)

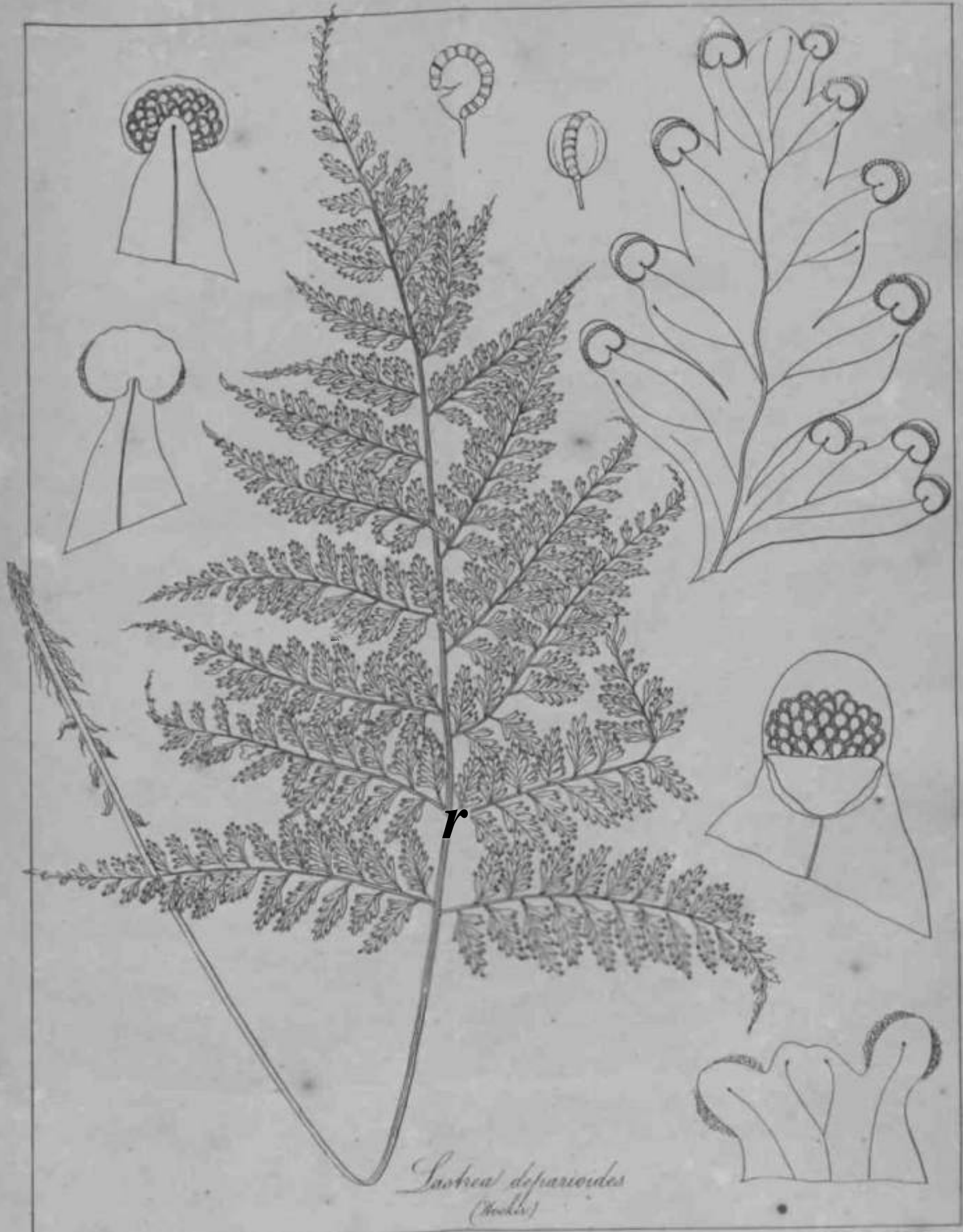


W

Lactuca membranifolia
Pursh.



Lastrea sparsa
(Moss)



r

Lactuca deparioides
(Hooker)



Lactuca laciniata
(Lactuca)



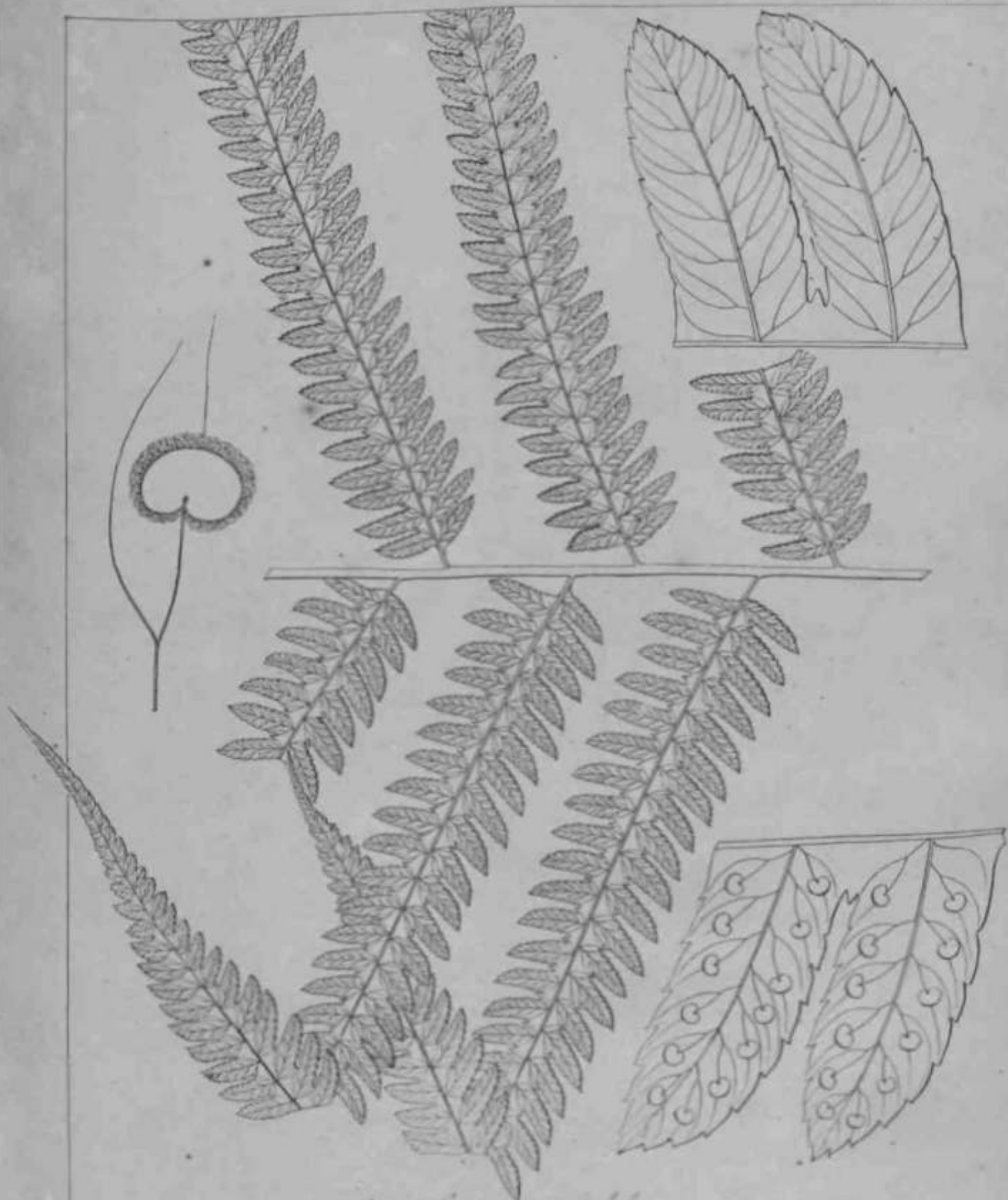
n/n

Lactuca ochtha «1»
(Rango)



A. K I

7 *Pastinaca sativifolia*
 variety *lyellii* (Kuhn)



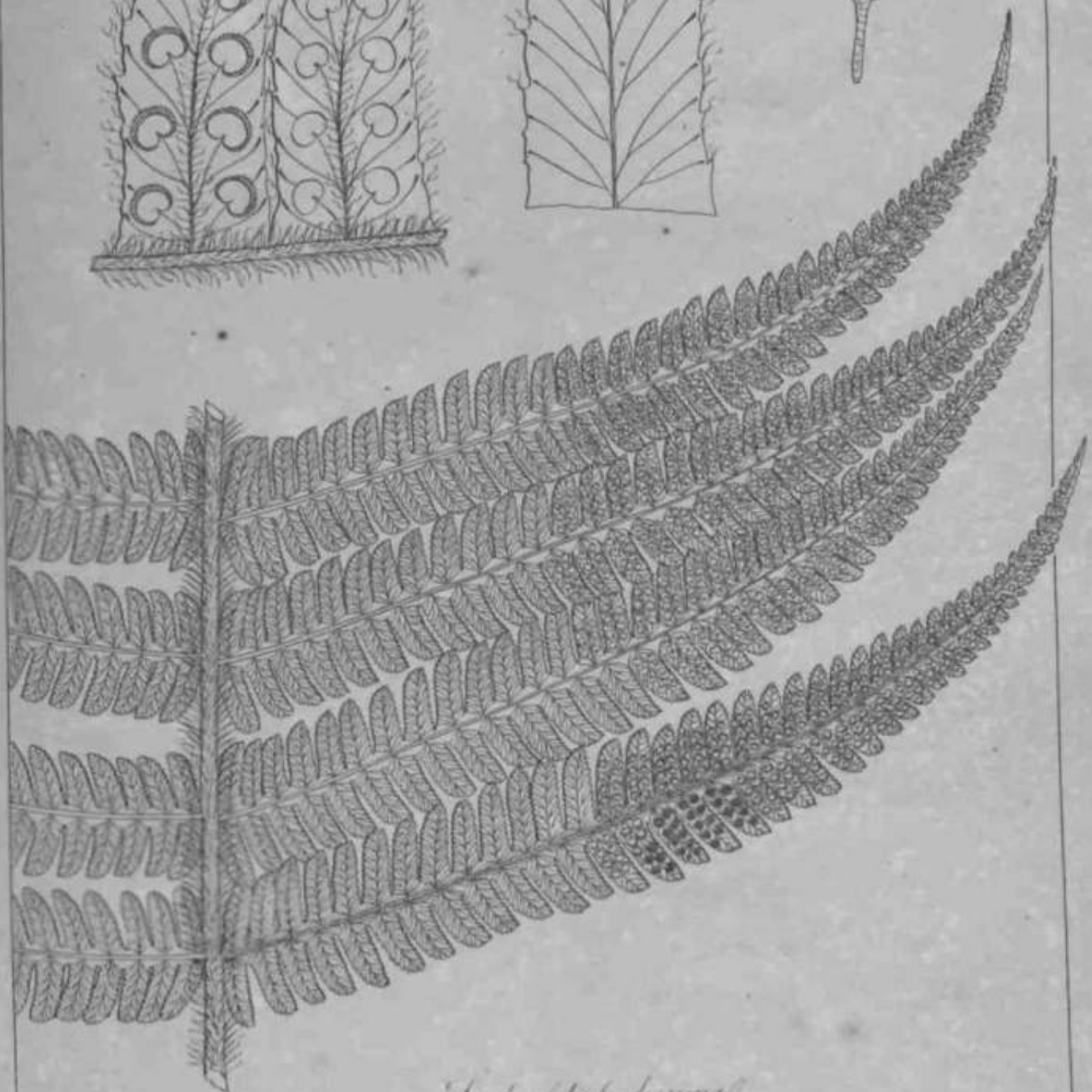
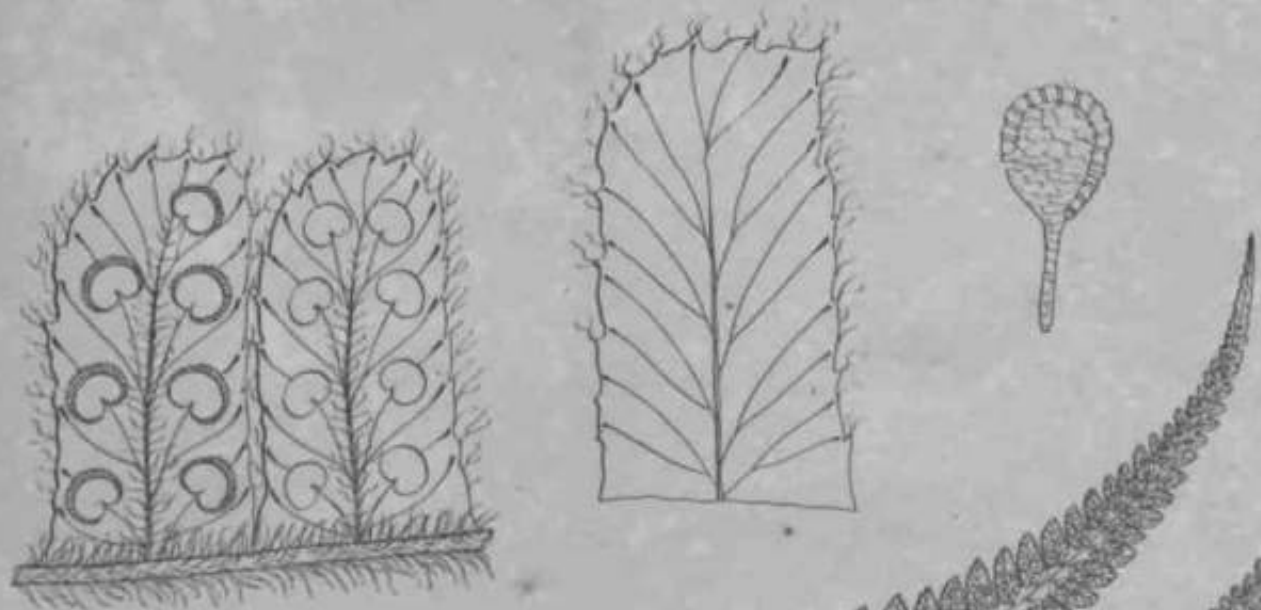
Lasiaca spectabilis
(L. Koch.)



Lathraea amabilis
(Moss)



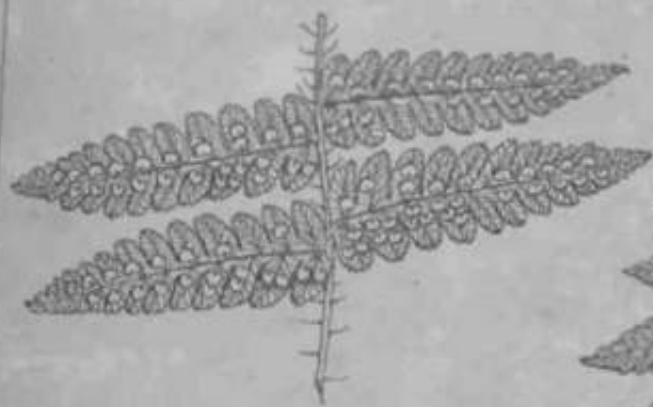
Lastrea gracilascens
(Hooker)



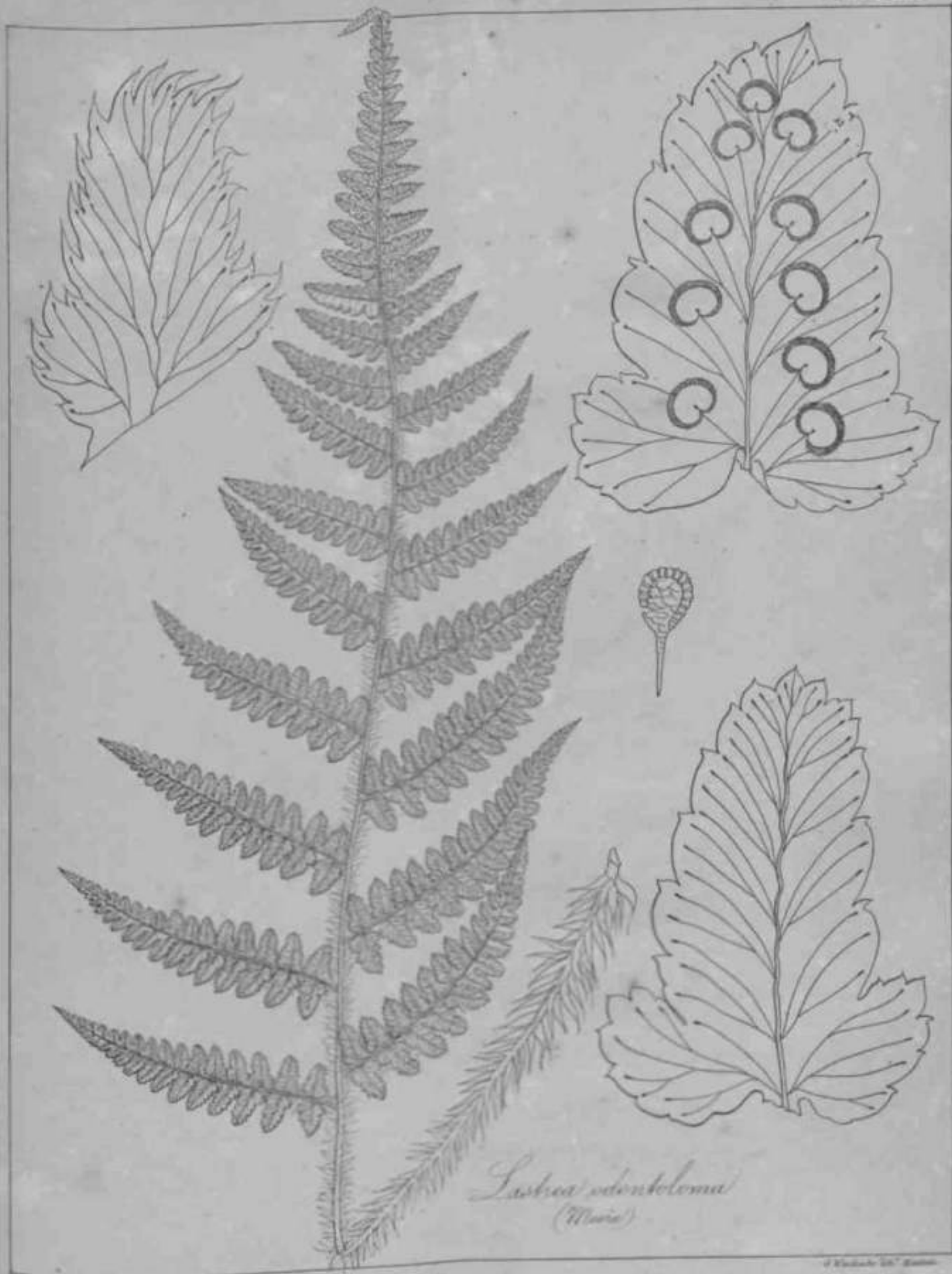
Tachia patentissima?
(Presl)



Lushrea elongata
(Hook.)



Lashea intermedia
(R. W. Peckham)

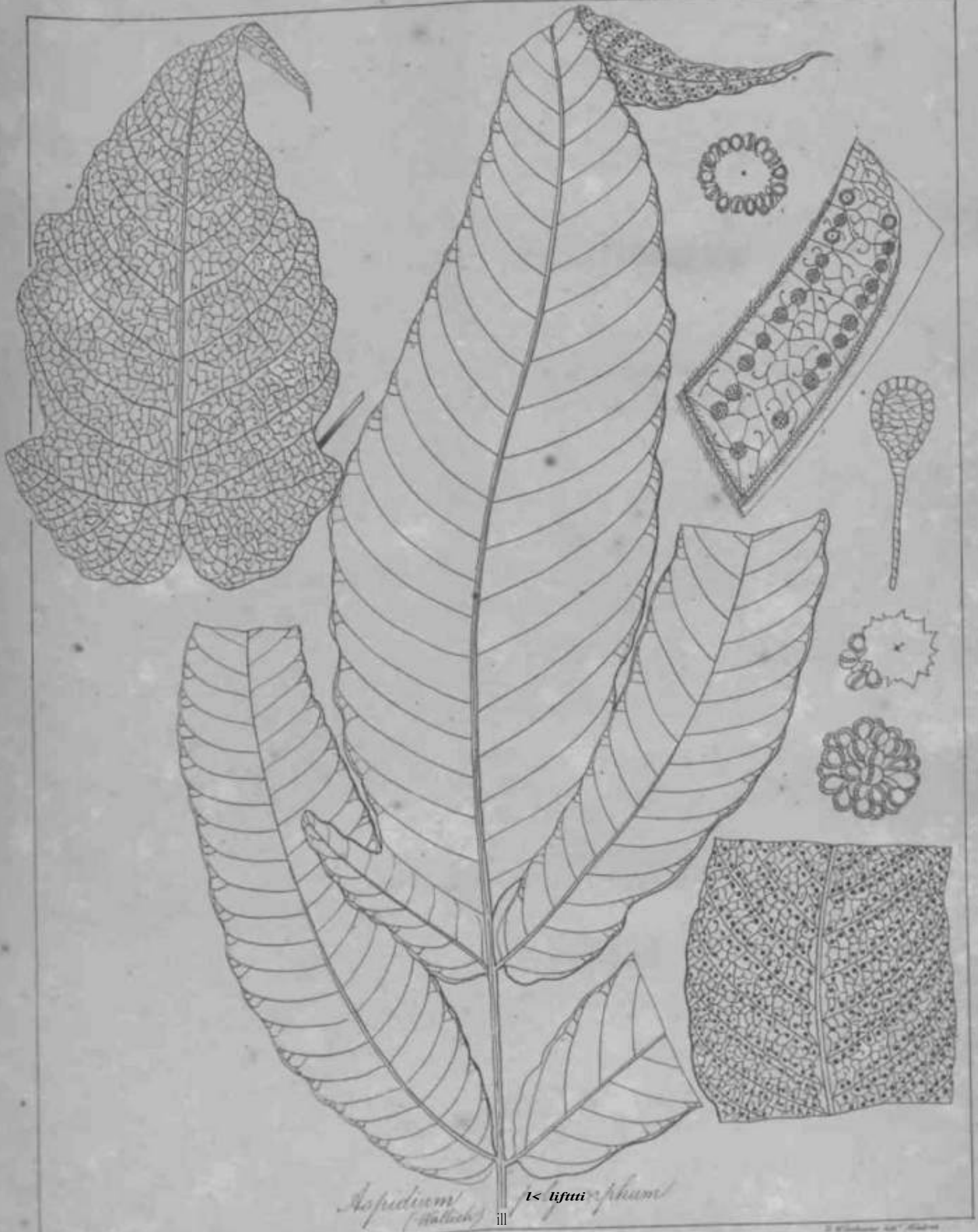


Lastrea odontoloma
(Munro)

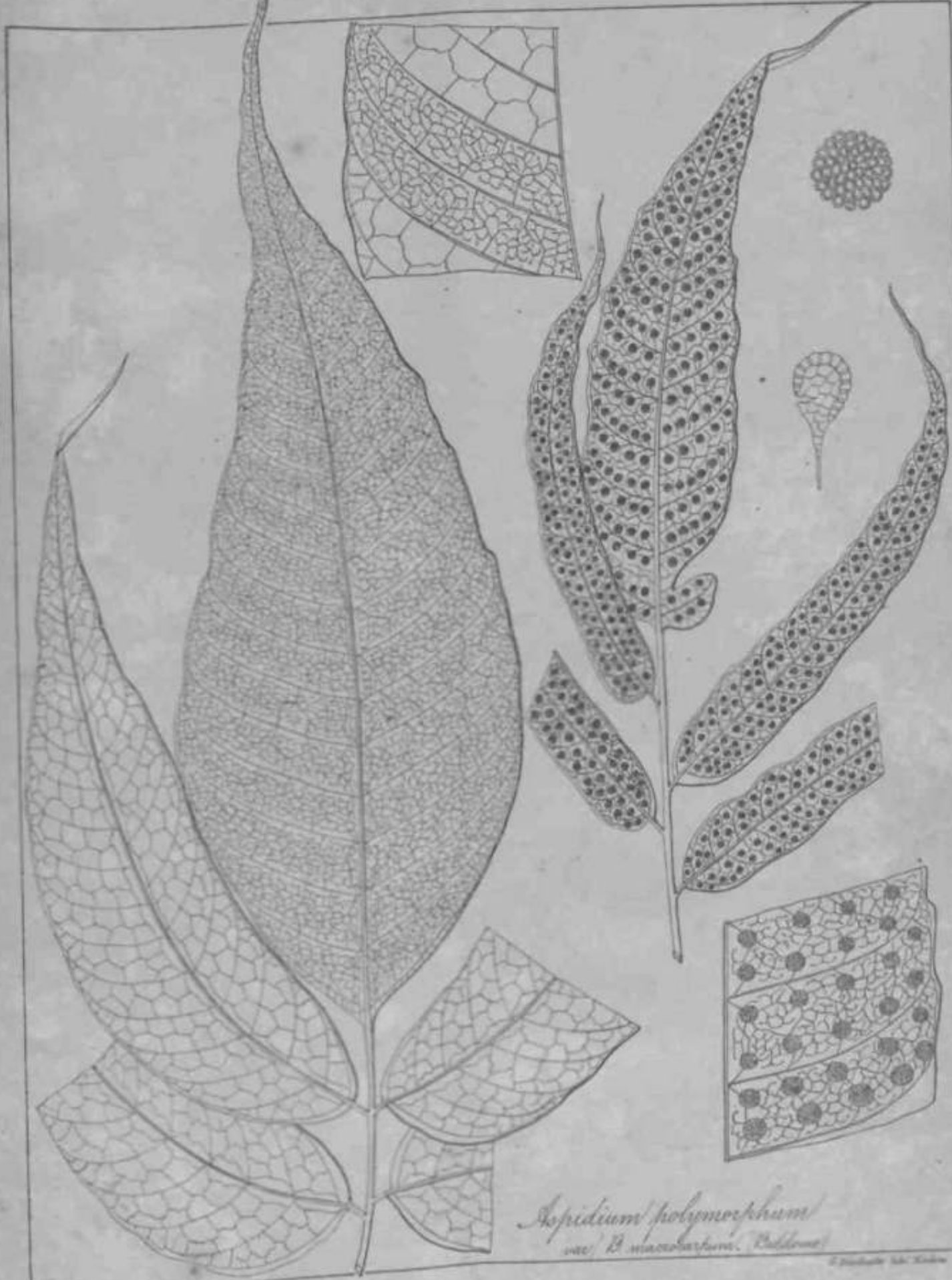


Lactuca cochlearia
(Moench)

J. Kuhnke del. Kuhnke.



Aspidium
(Haller) III *lyfui* *phum*



Aspidium polymorphum
var. *A. macrocarpum*. Rollson!

Aspidium Sch. Radw.

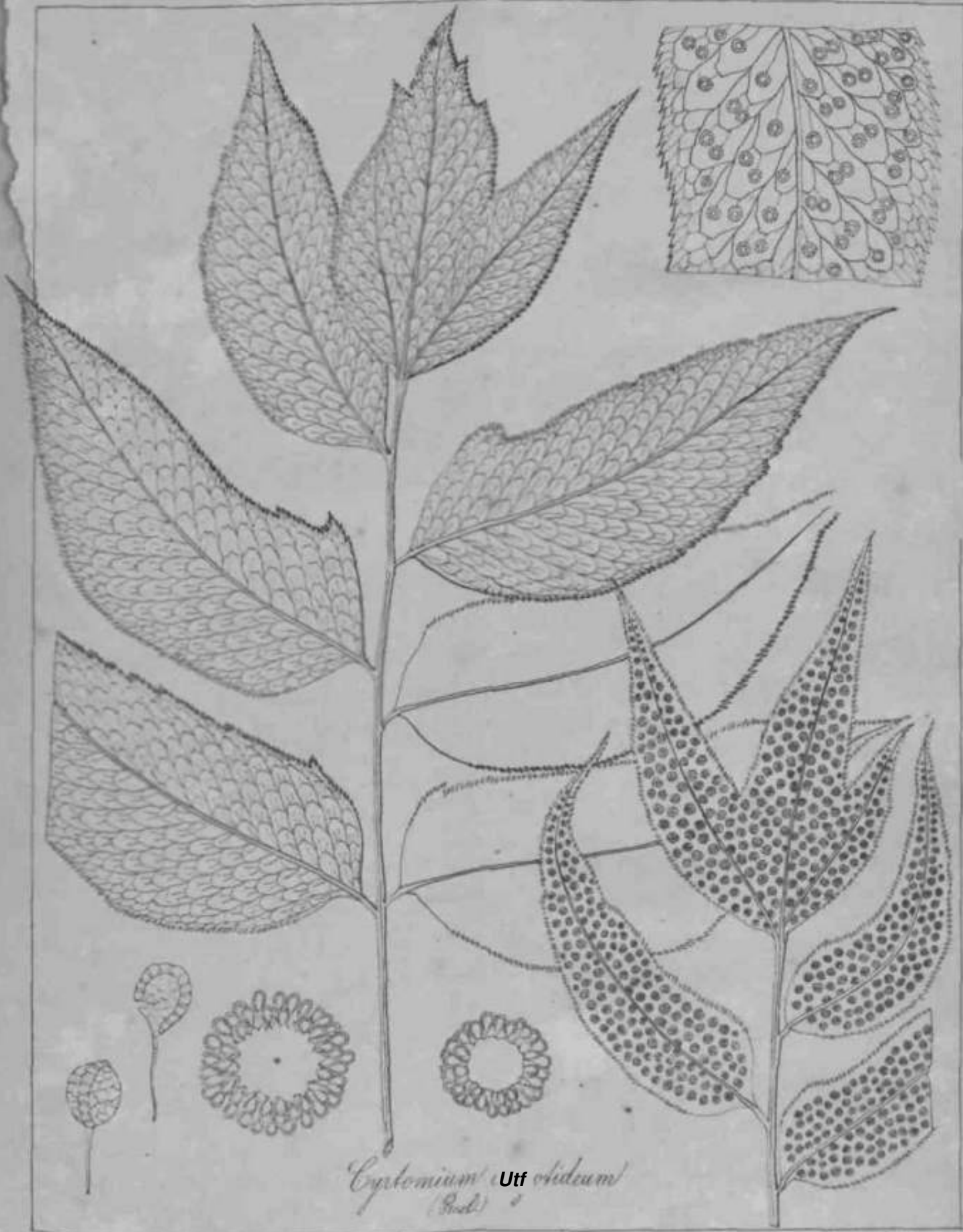
Aspidium Sch.



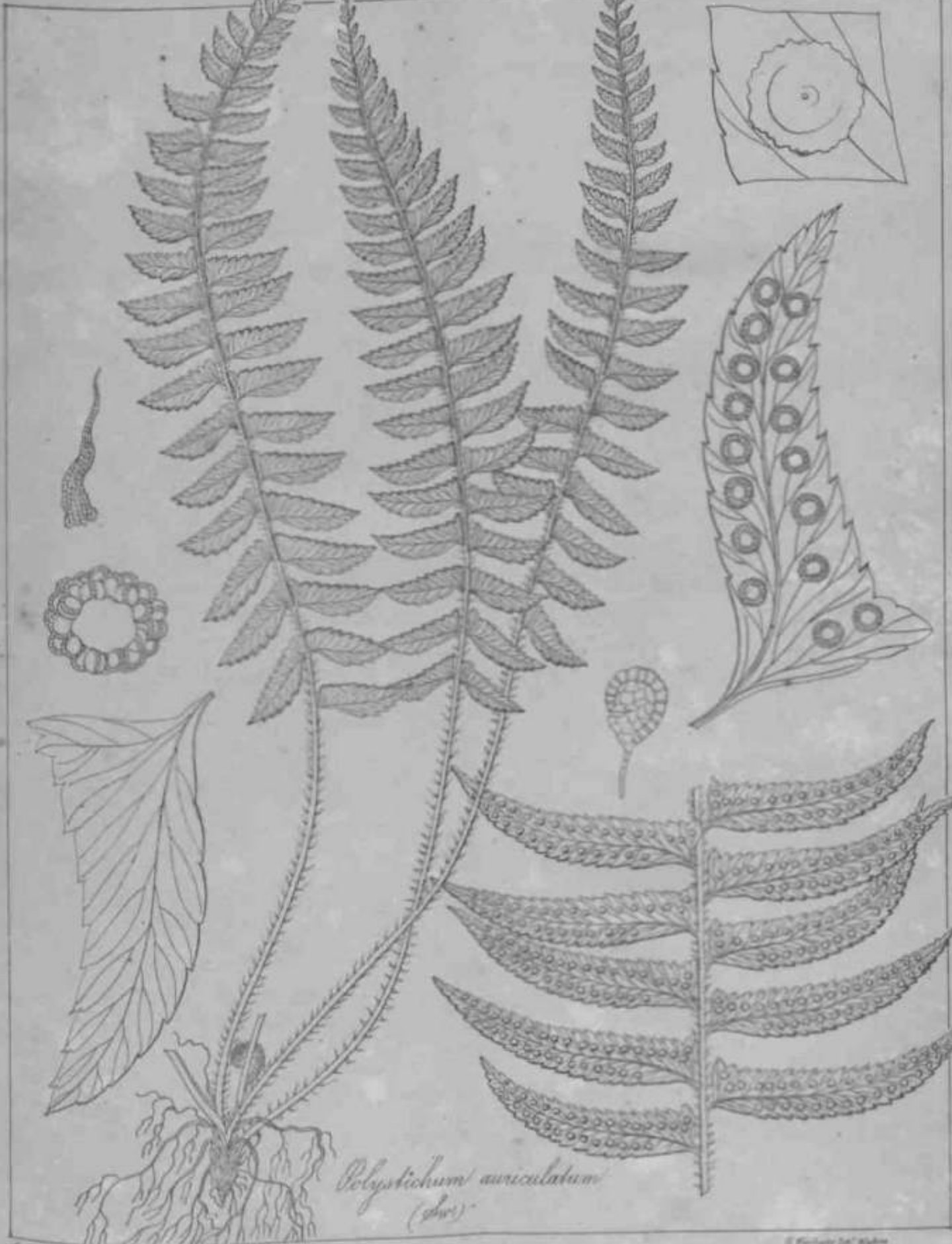
r\

Glyptotheca incipitans (Presl) *Aspidium?*

Glyptotheca irregularis DC



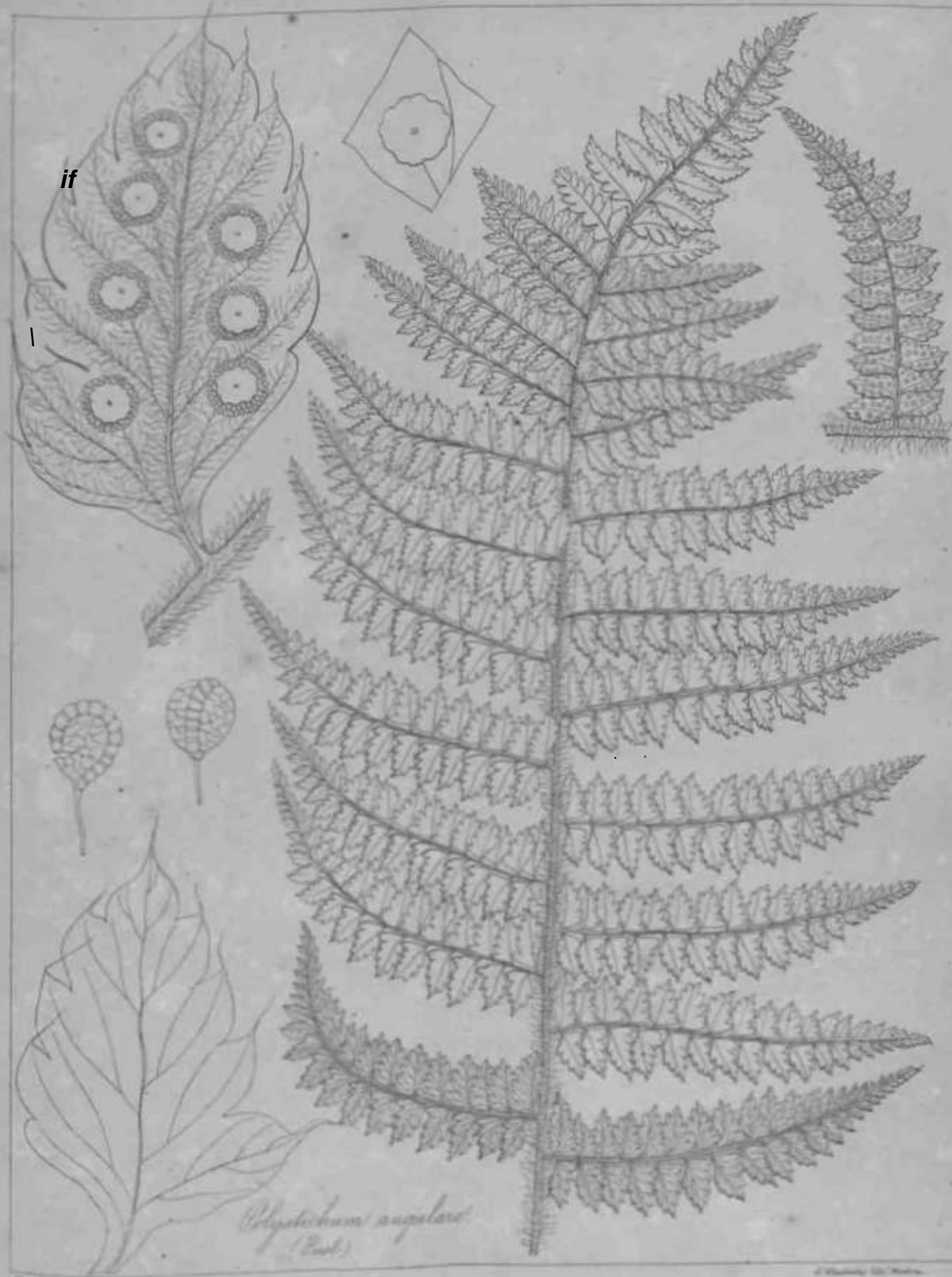
Cystonium utriculatum
(Rostk.)



Polystichum auriculatum
(Sw.)

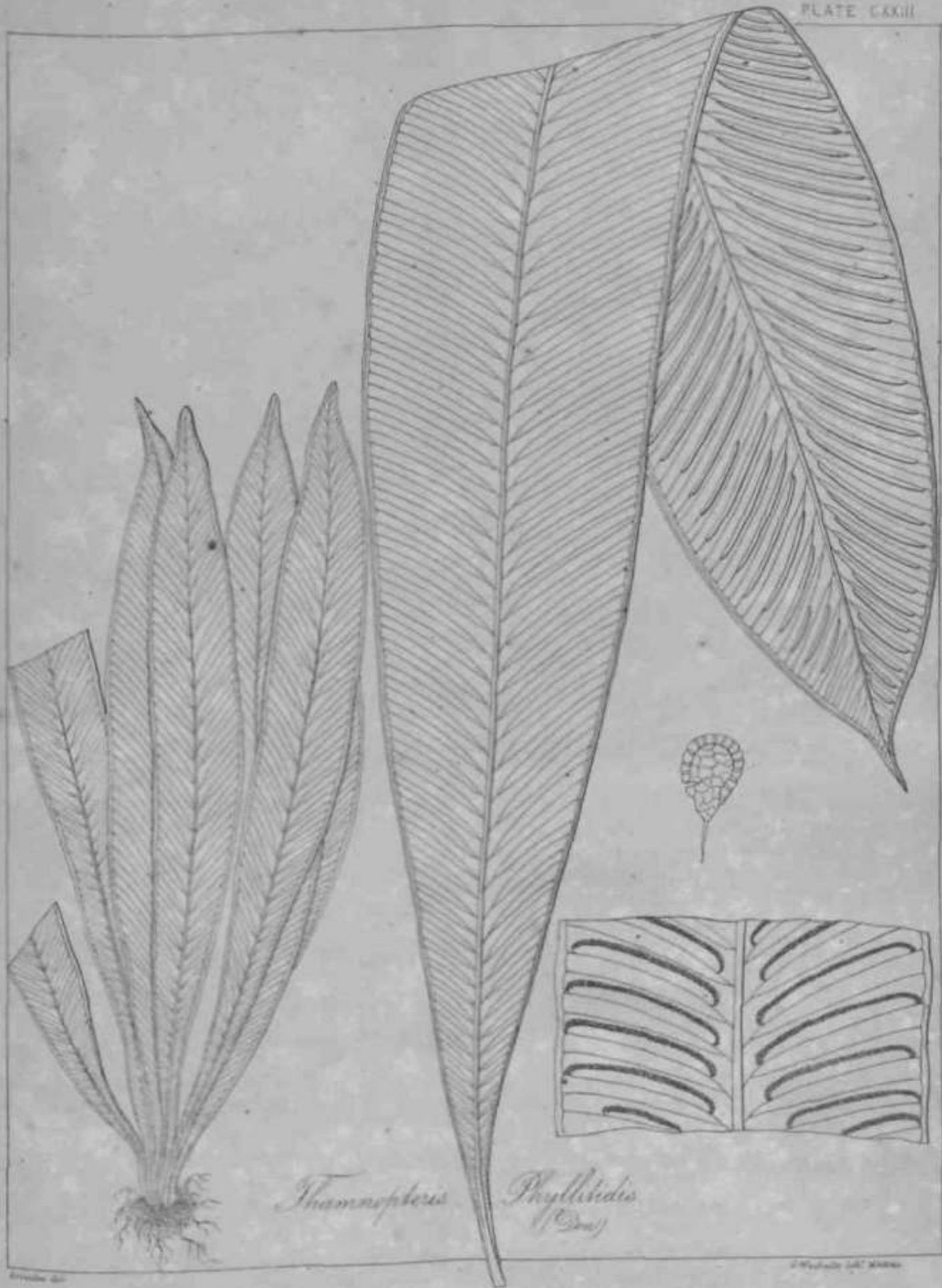


Polystichum aculeatum
(Swartz)



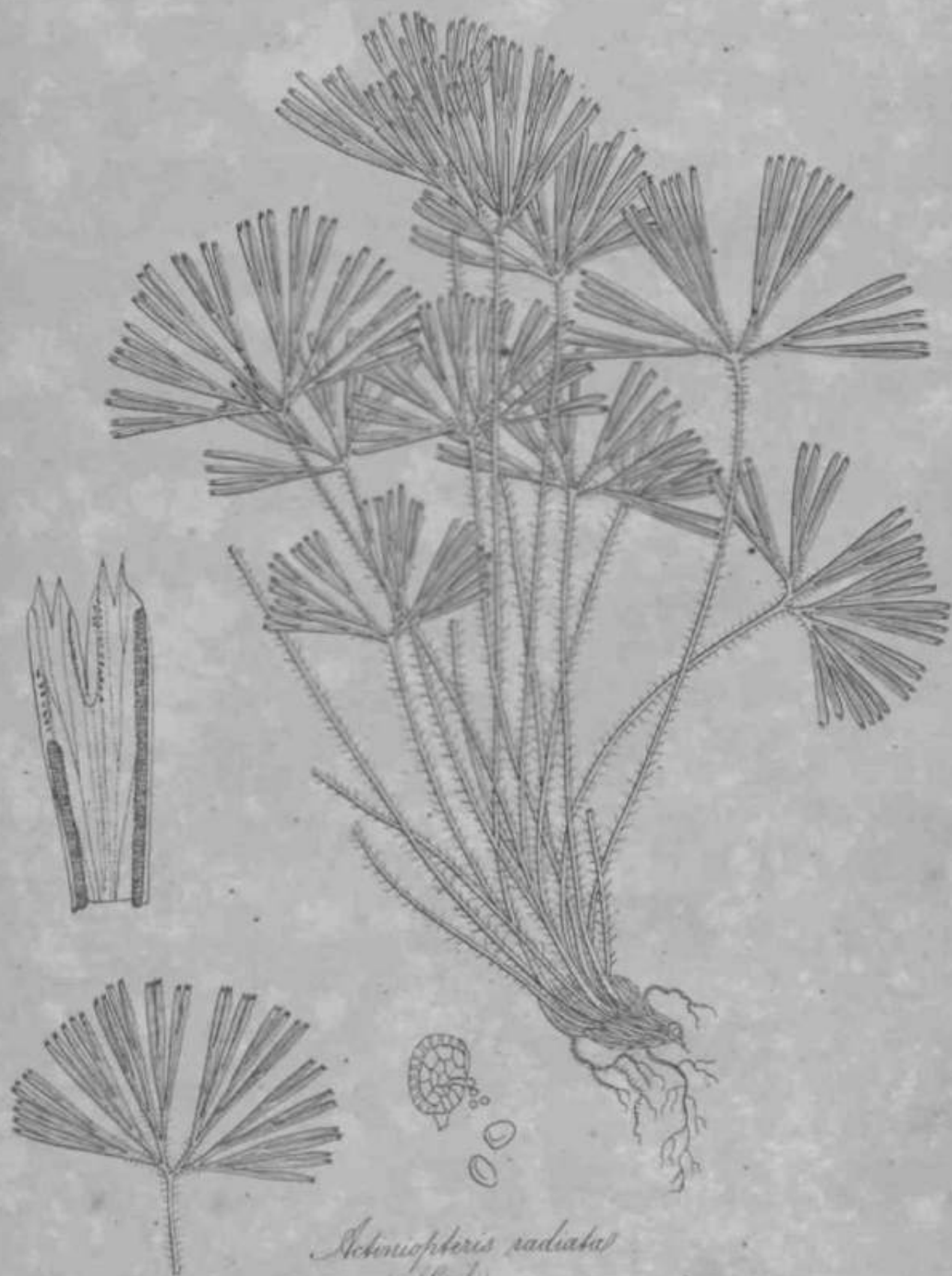
if

Polystichum angulare
(Rost.)



Thamnopterus

Phyllitidis
(Linn.)



Actinopteria radiata
(Luch)



Asplenium ensiforme
(Willd.)



Asplenium Highianum
(Hilleb.)

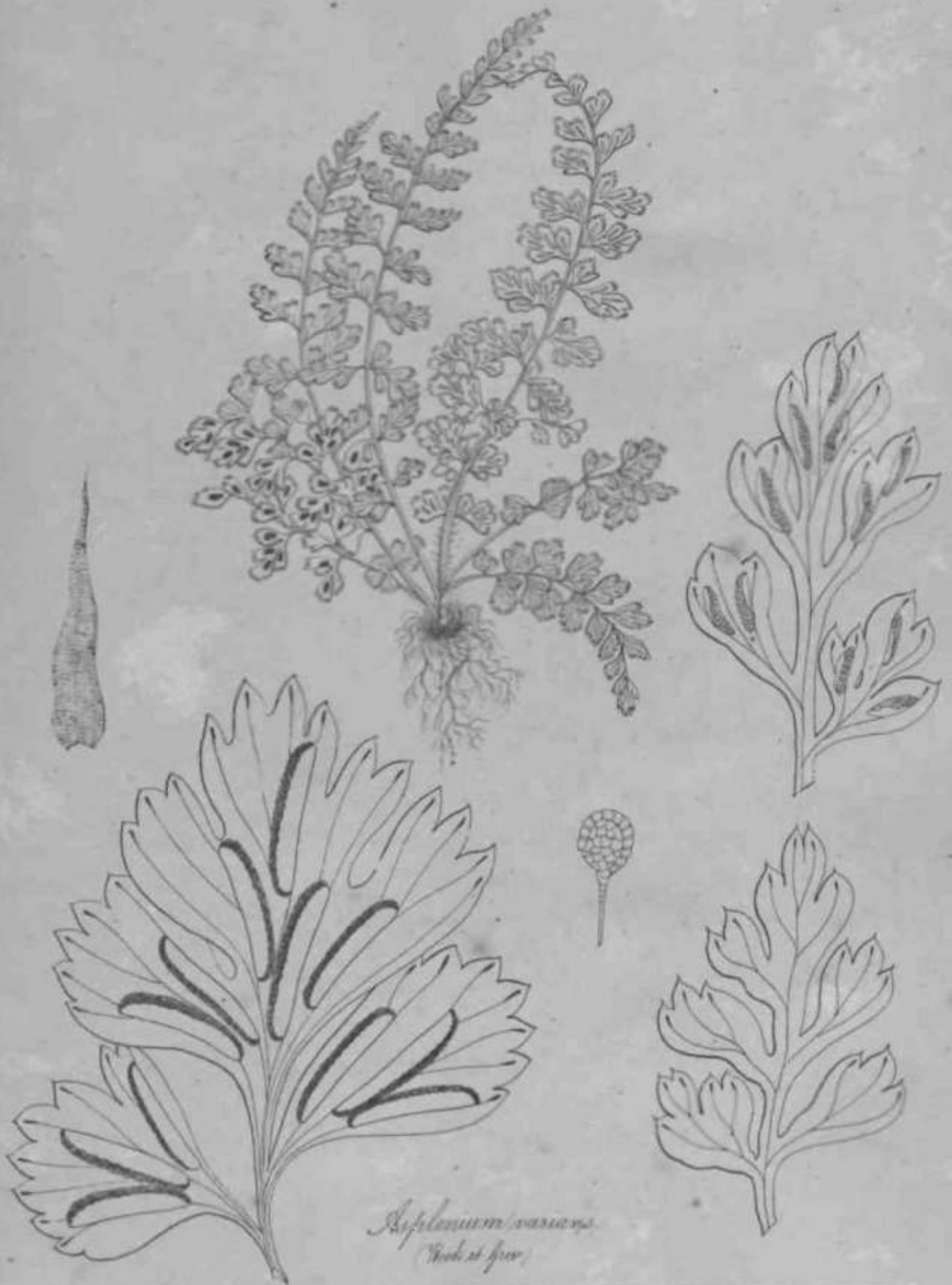


Asplenium Wightianum
var. *B. microphyllum* (R. & B.)



Asplenium persicifolium
(S. Smith)

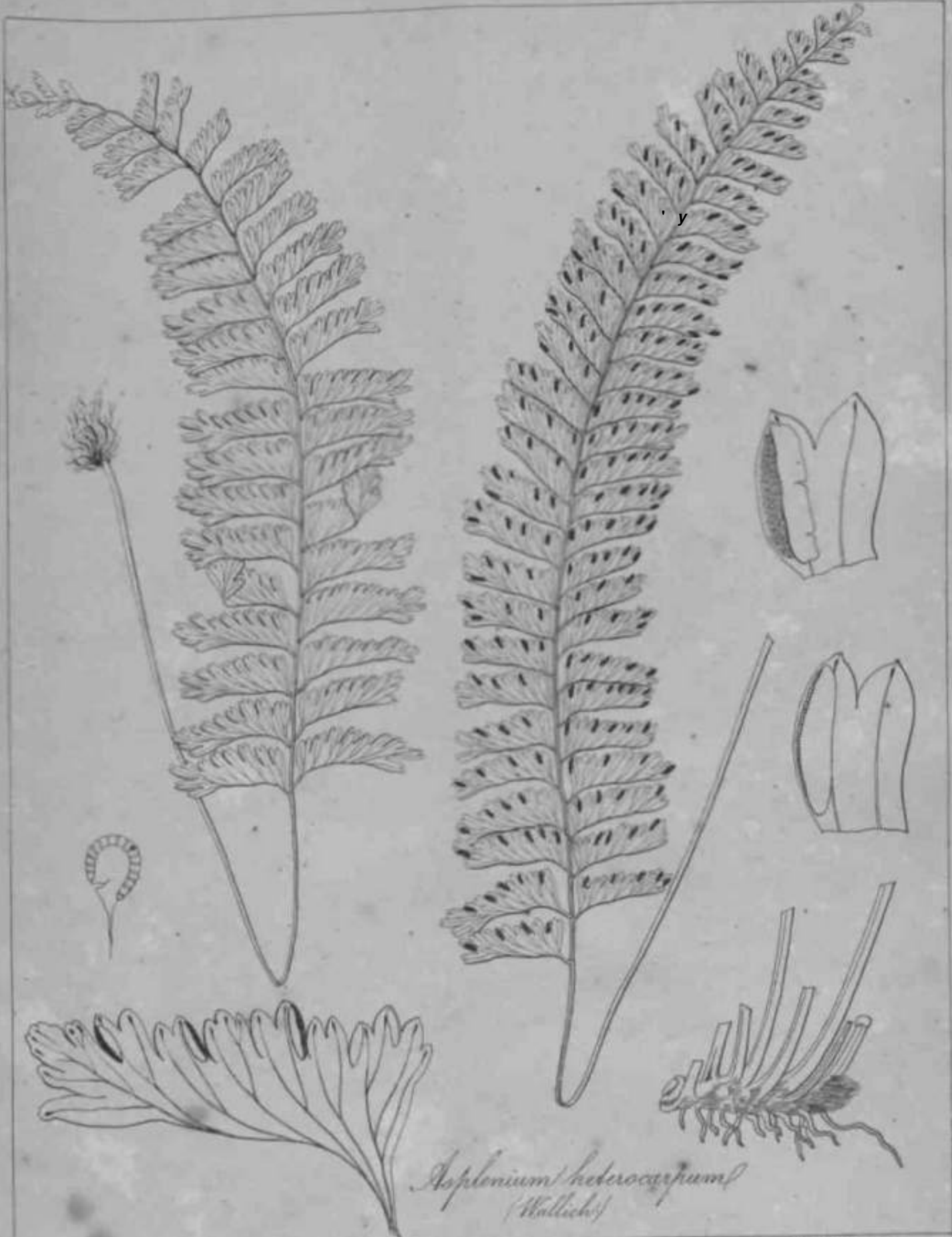
J. Hooker sculp.



Asplenium varians
(Web at first)



Asplenium Acrostichum
(Doe)



Asplenium heterocarpum
(Haller)



Asplenium resectum
(Smith)



Asplenium t/muvftjt
(Wallich)

Seidenh. del.

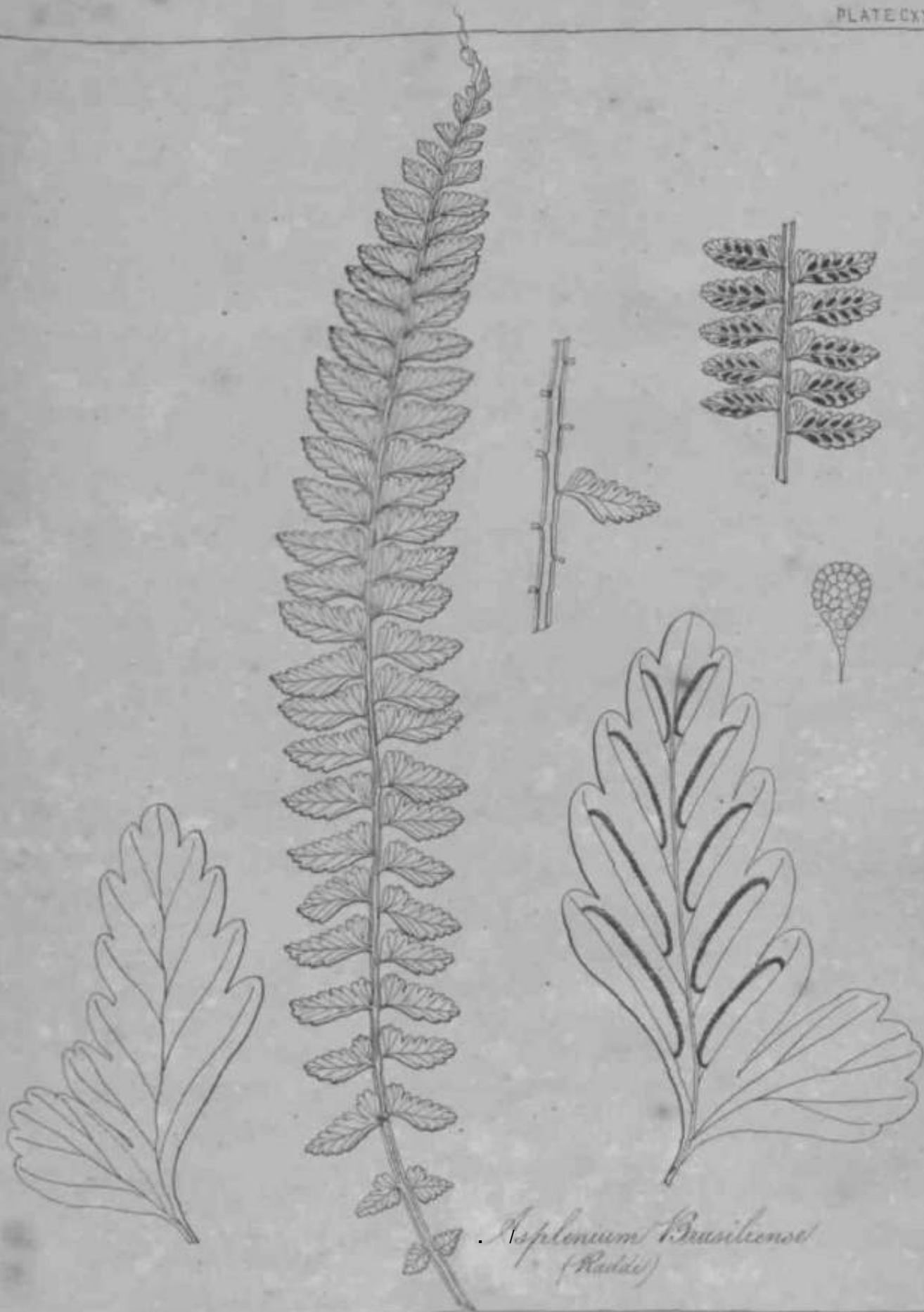
G. Kuhn del. lith.



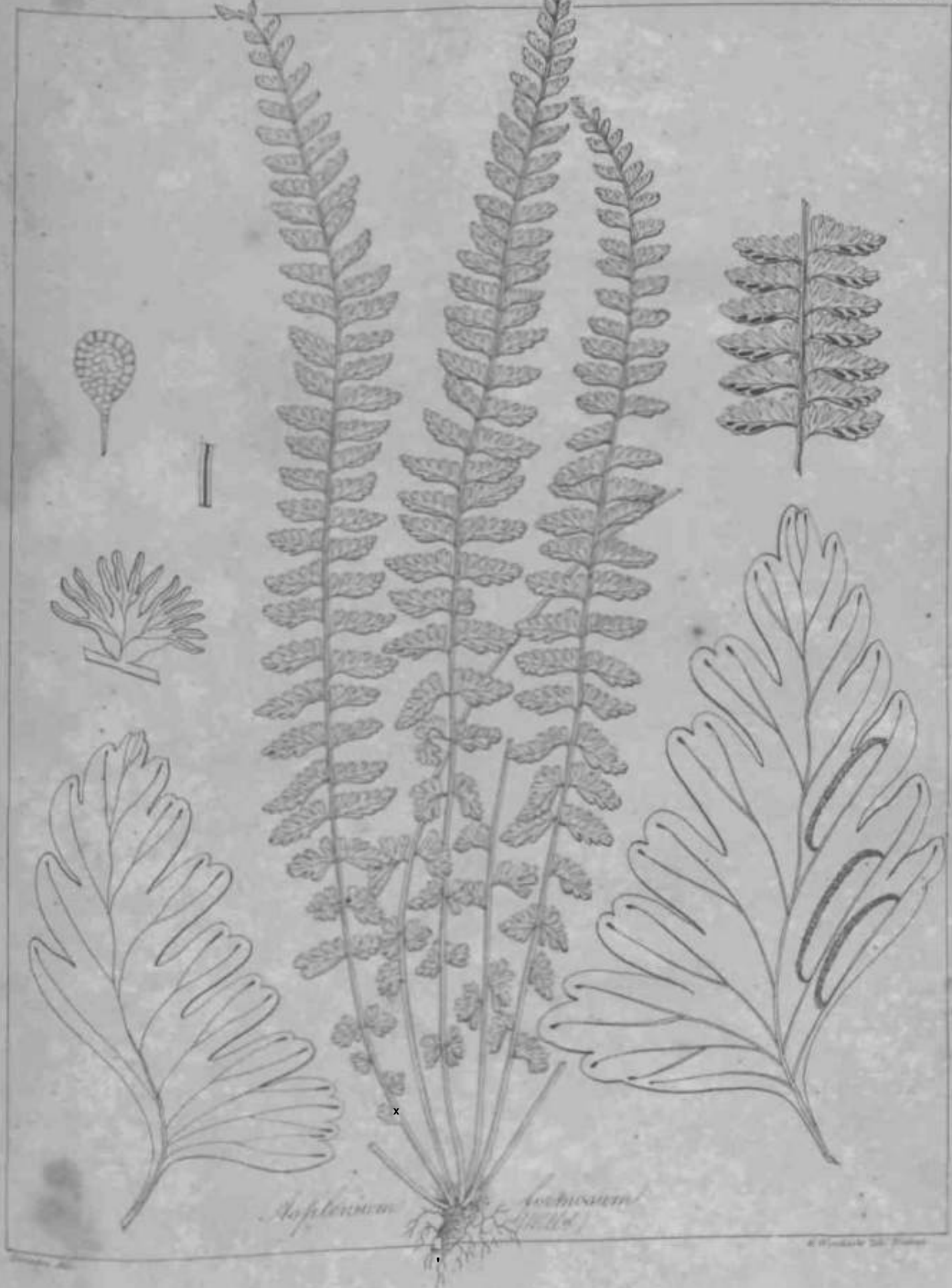
Asplenium haploziforme
(Rab.?)

Comstock del.

© H. S. Gentry, 1917, Boston



Asplenium Brasiliense
(Raddi)



Asplenium

Adiantum



Adiantum acrisum
(Thunb.)



Asplenium prolongatum
Hooker



Asplenium planicaule
(Wall.)



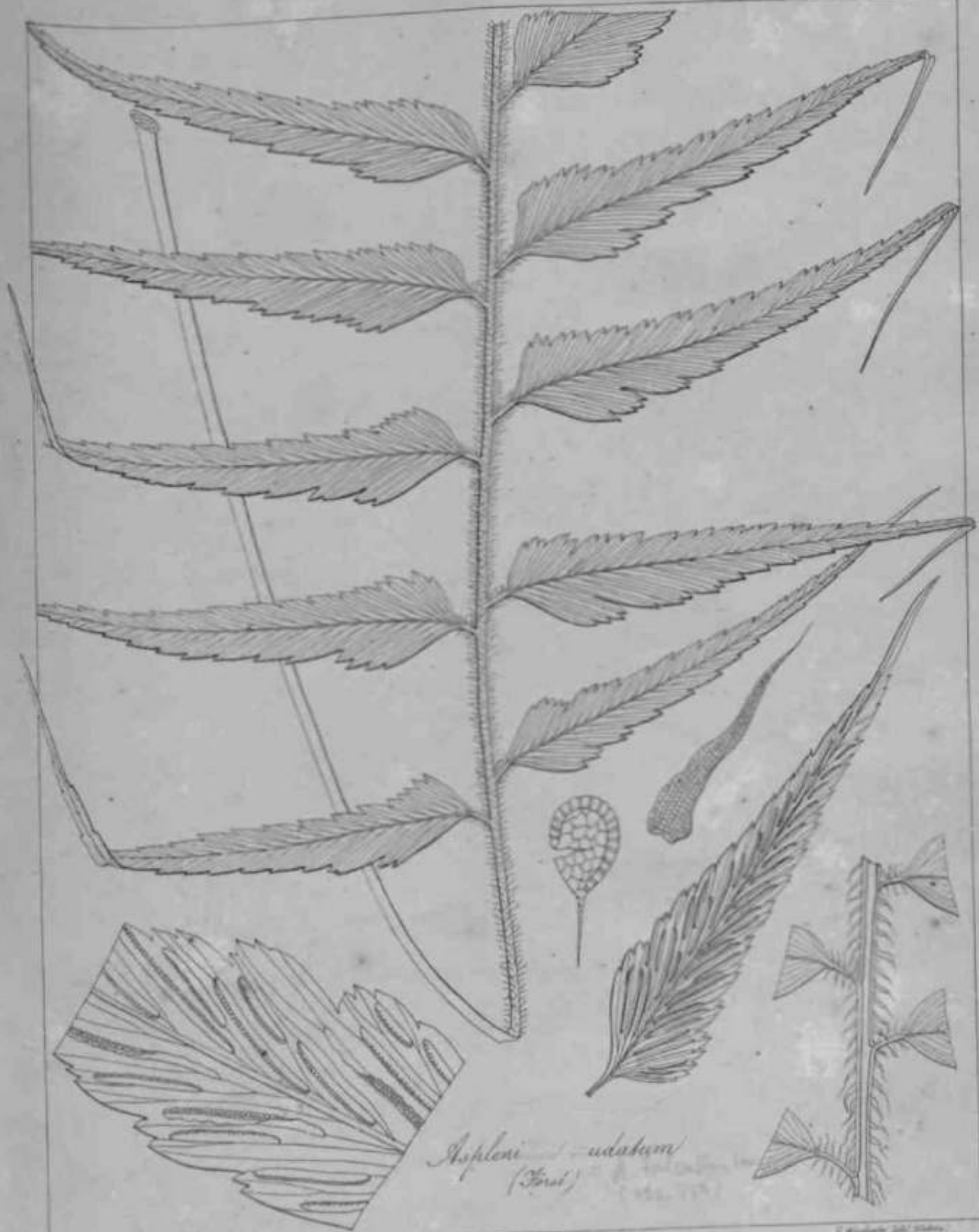
Aplenium contiguum
1864



Asplenium falcatum
(Lam.)



Asplenium macrophyllum
var. *acrophyllum* (Sw.)



Asplenium caudatum
(Fert.)

© W. H. & G. S. S. S. S.

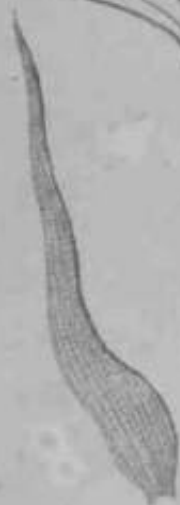
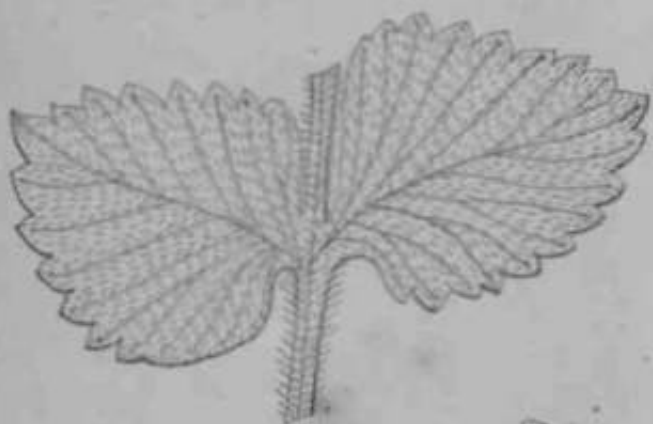
Asplenium caudatum Fert. In the fern are called
the sori parallel to the rachis.



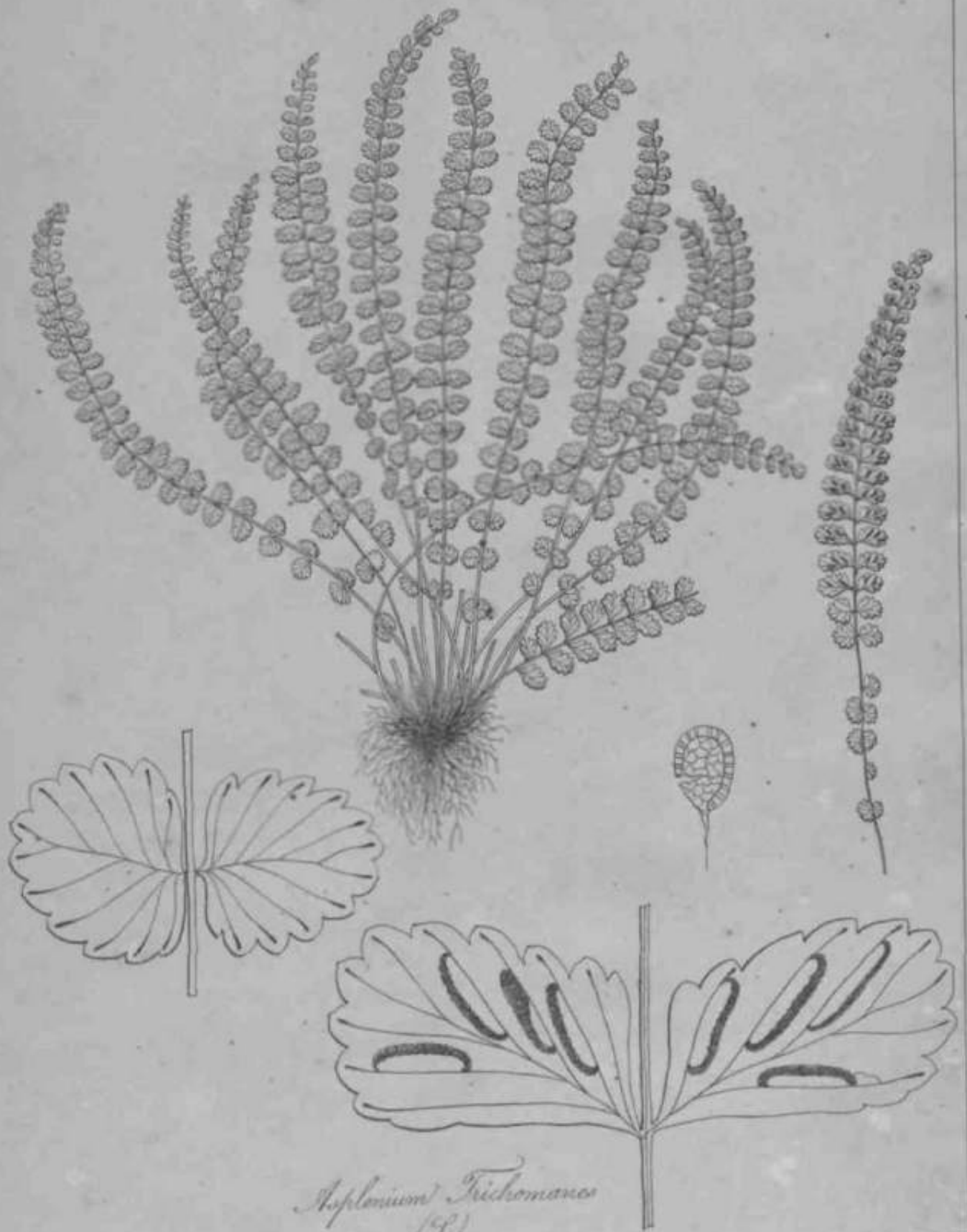
Asplenium furcatum
(Thunb.)



Adiantum laciniatum
(Dunal)



Asplenium acutum
(Paddone)



Asplenium Trichomanes
(L.)



Nephrolepis nitidum
(det.)

W. H. H. H. H. H.



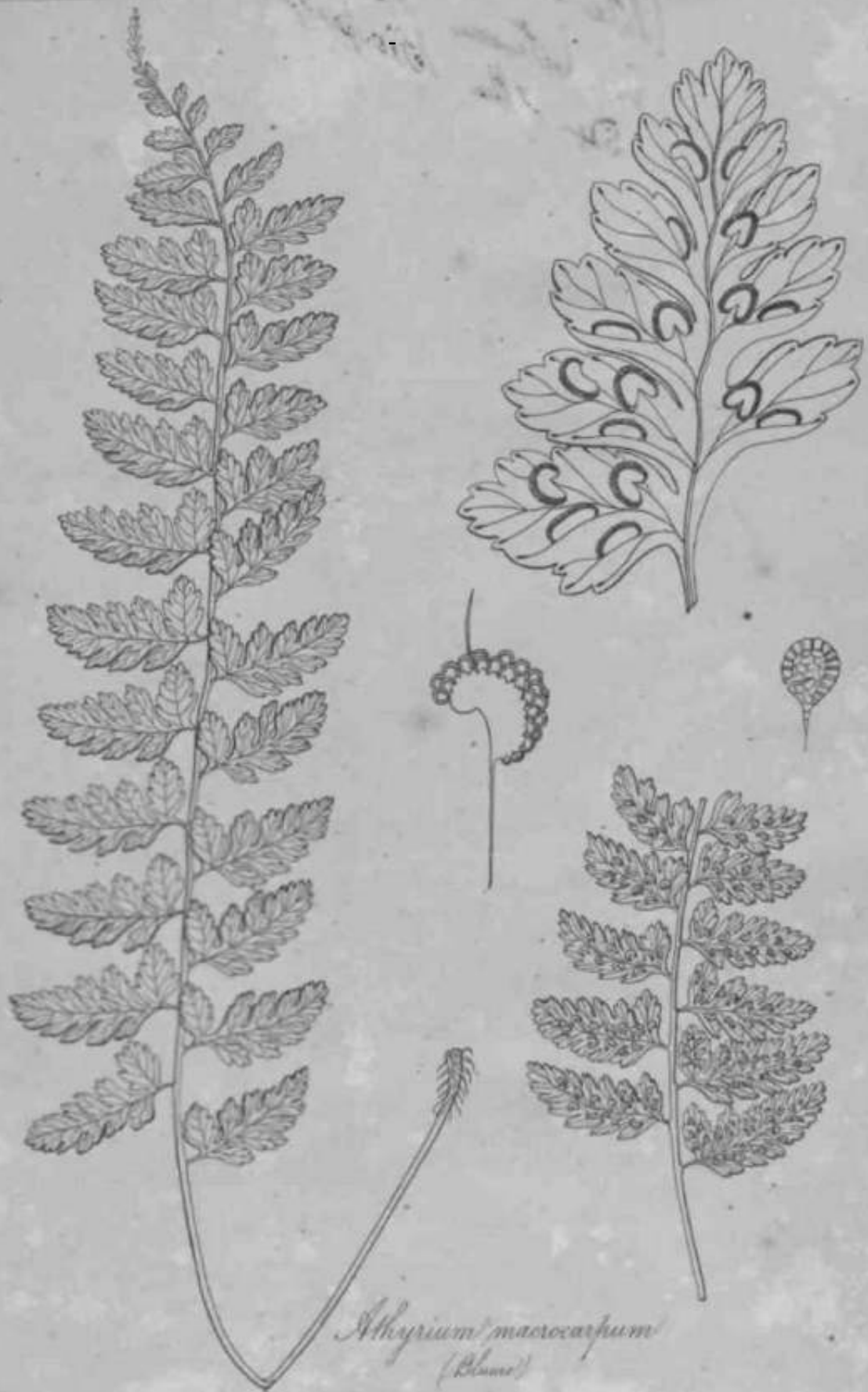
Asplenium nidus
var. *clavatum* (Sw.)



Athyrium Hochsackerianum
(Kuhn)

J. R. Smith del.

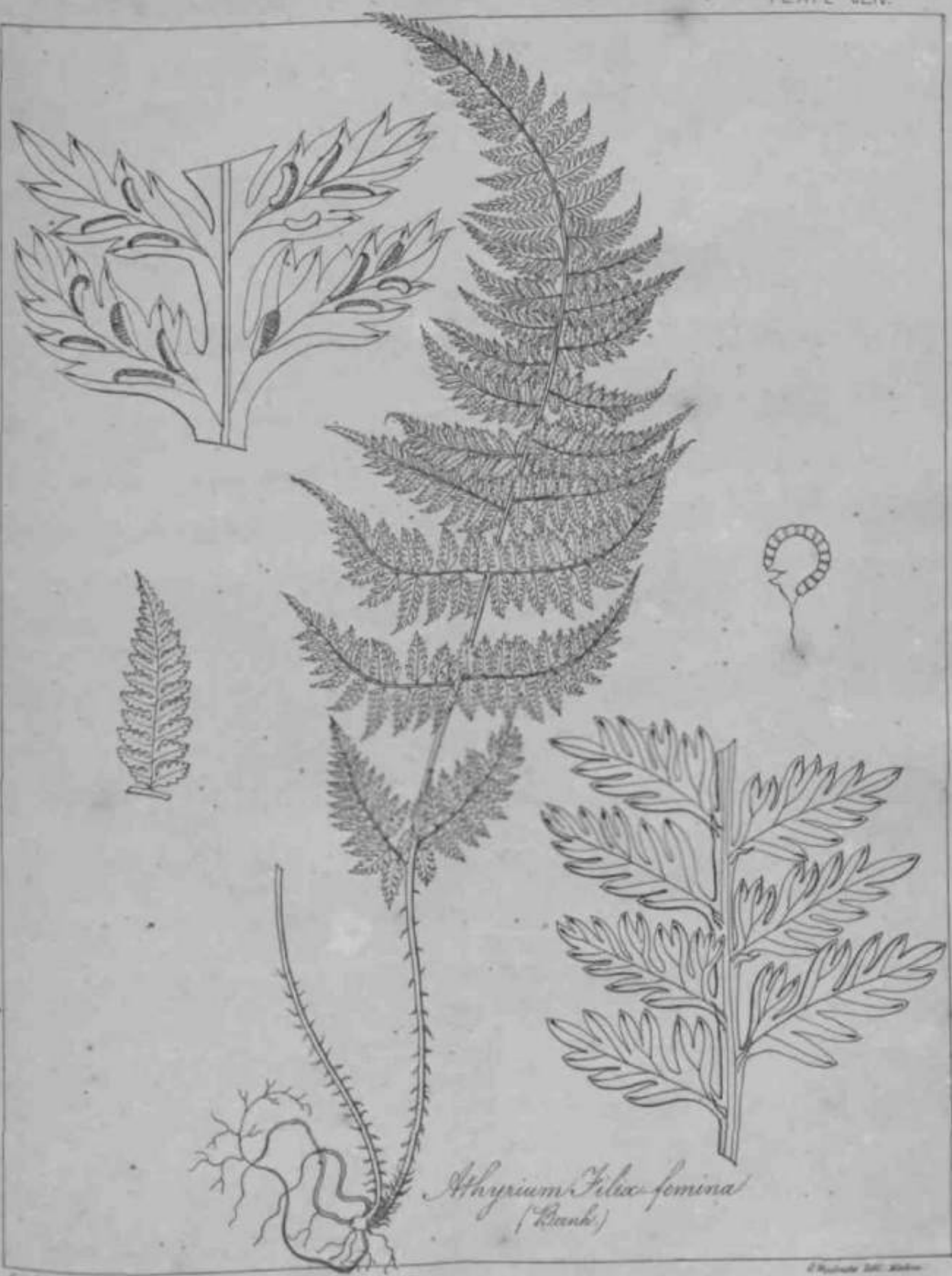
15
Linn. 24



Athyrium macrocarpum
(Blume)



Athyrium macrocarpum
var. B (R. & B.)



Athyrium Filix-femina
(Linn.)



Athyrium pectinatum
(Waltuch)



^mrr

Athyrium filix-femina nigripes.



M

Athyrium australe
(Blanch)



Atlantodia Brunonianana
(Hall)



Diplazium lasiopteris
(Kuhn)



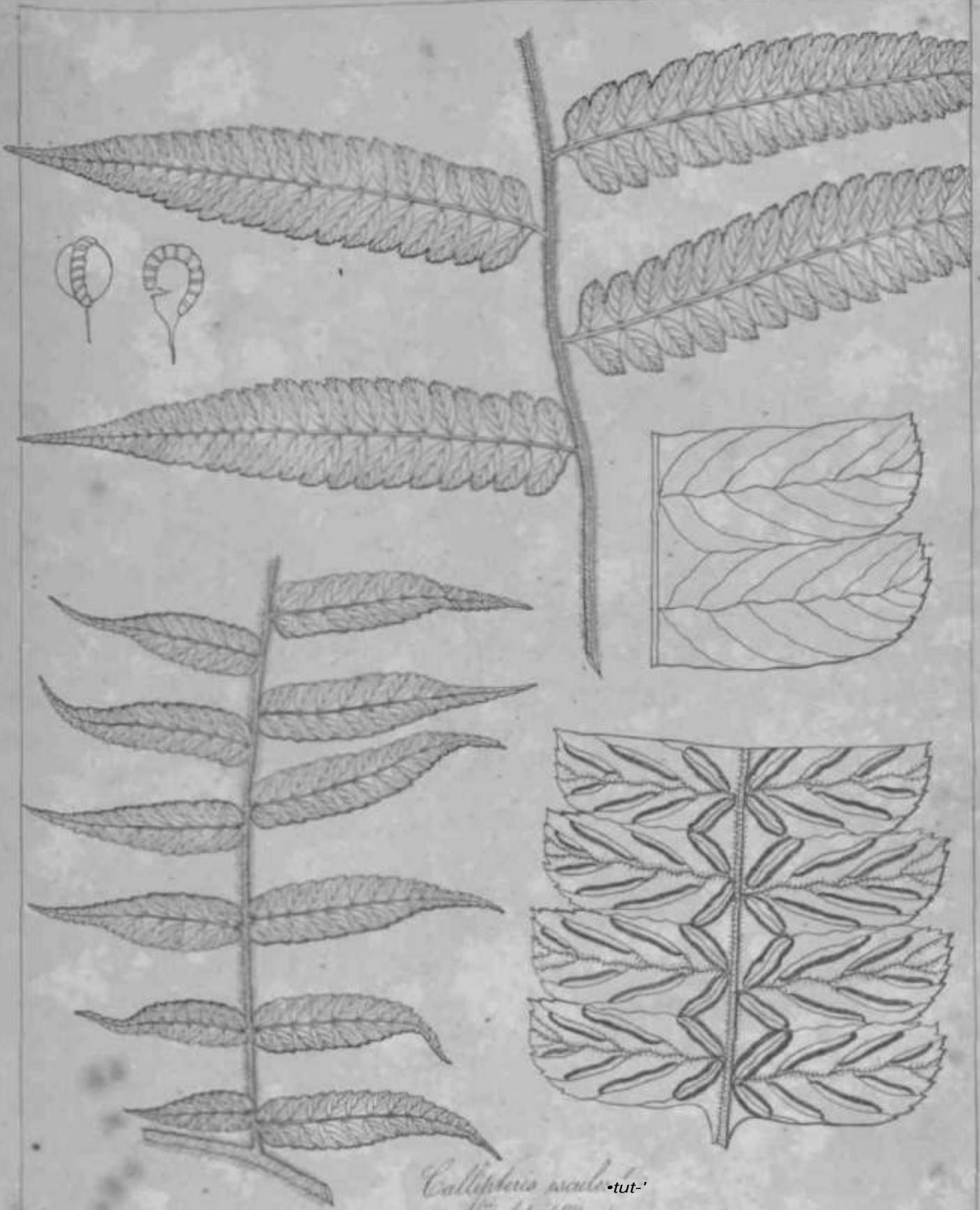
Diplazium sylvaticum (Sw.) M.
(Sw.)



Diplazium dilatatum
(Blanc)



Diplazium polyphodioides
(Hook.)



Callipteris pycnantha Nutt.
 (C. alata ad. Moore)



Polygodium parasiticum
(Muhl.)



Polygodium pinnatifidum
(Lam.)



Polypodium obliquatum
(Blume)

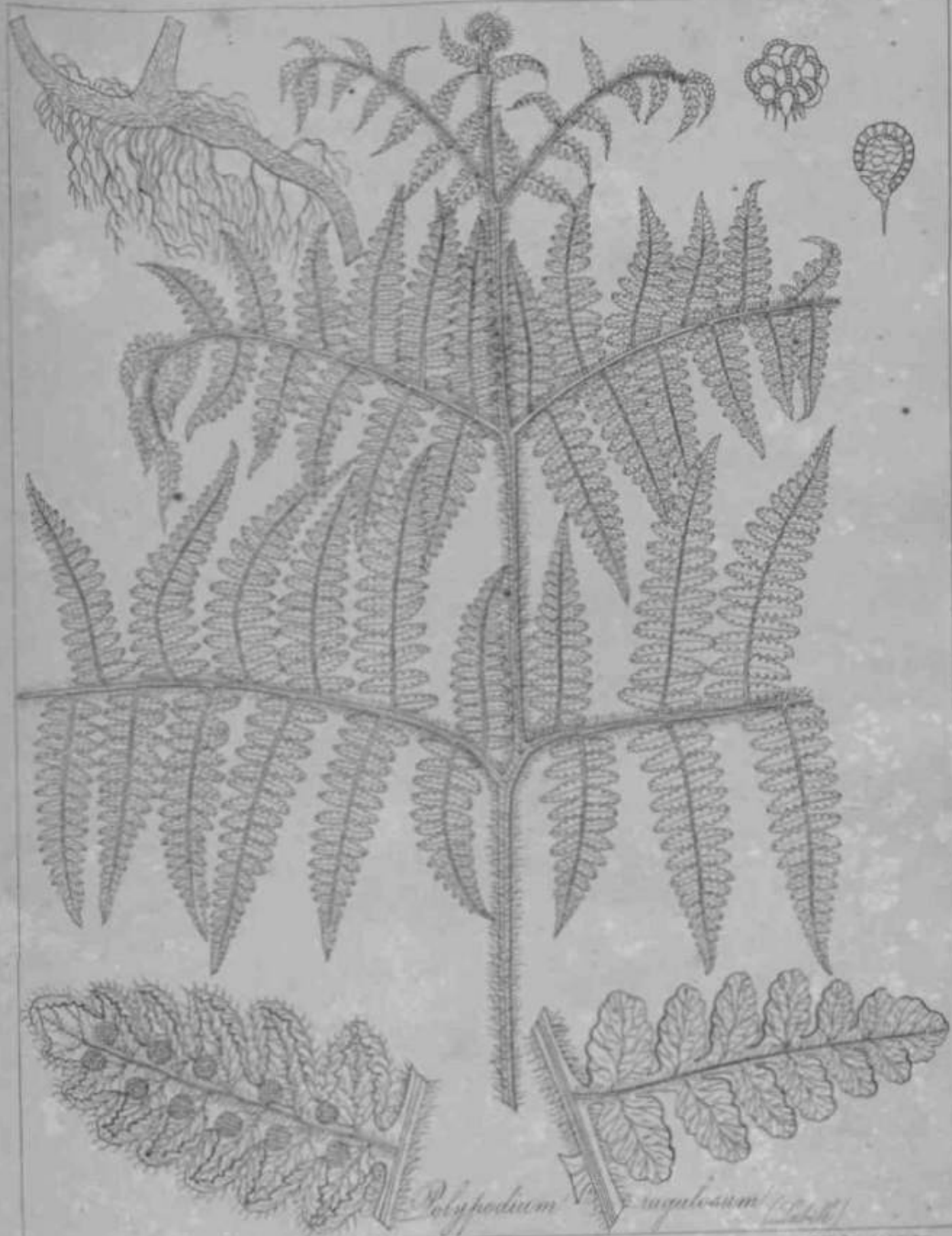




Polypodium

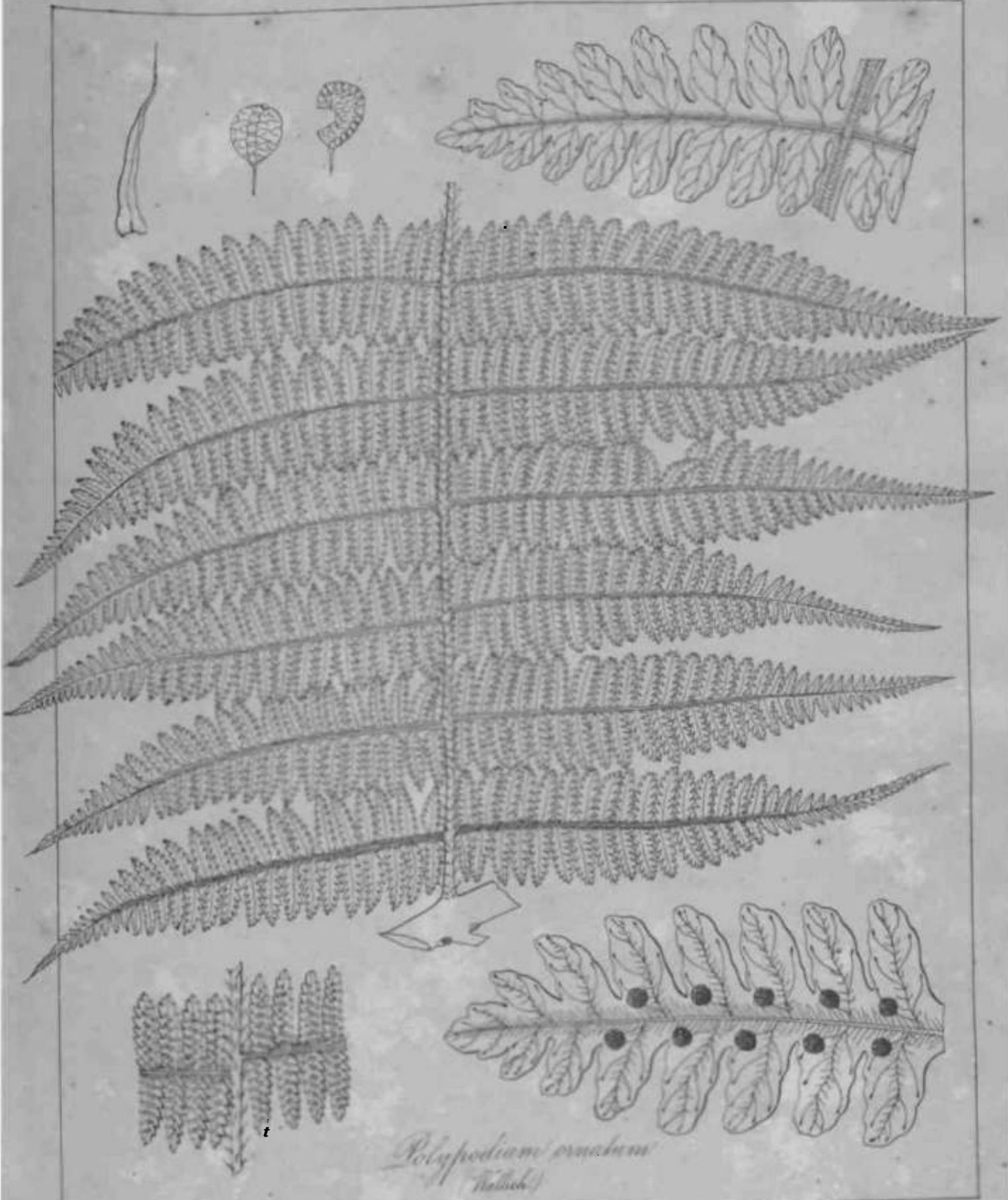
nigro-carpum
(L. Biddle)

Lactuca scabrosa Kunze

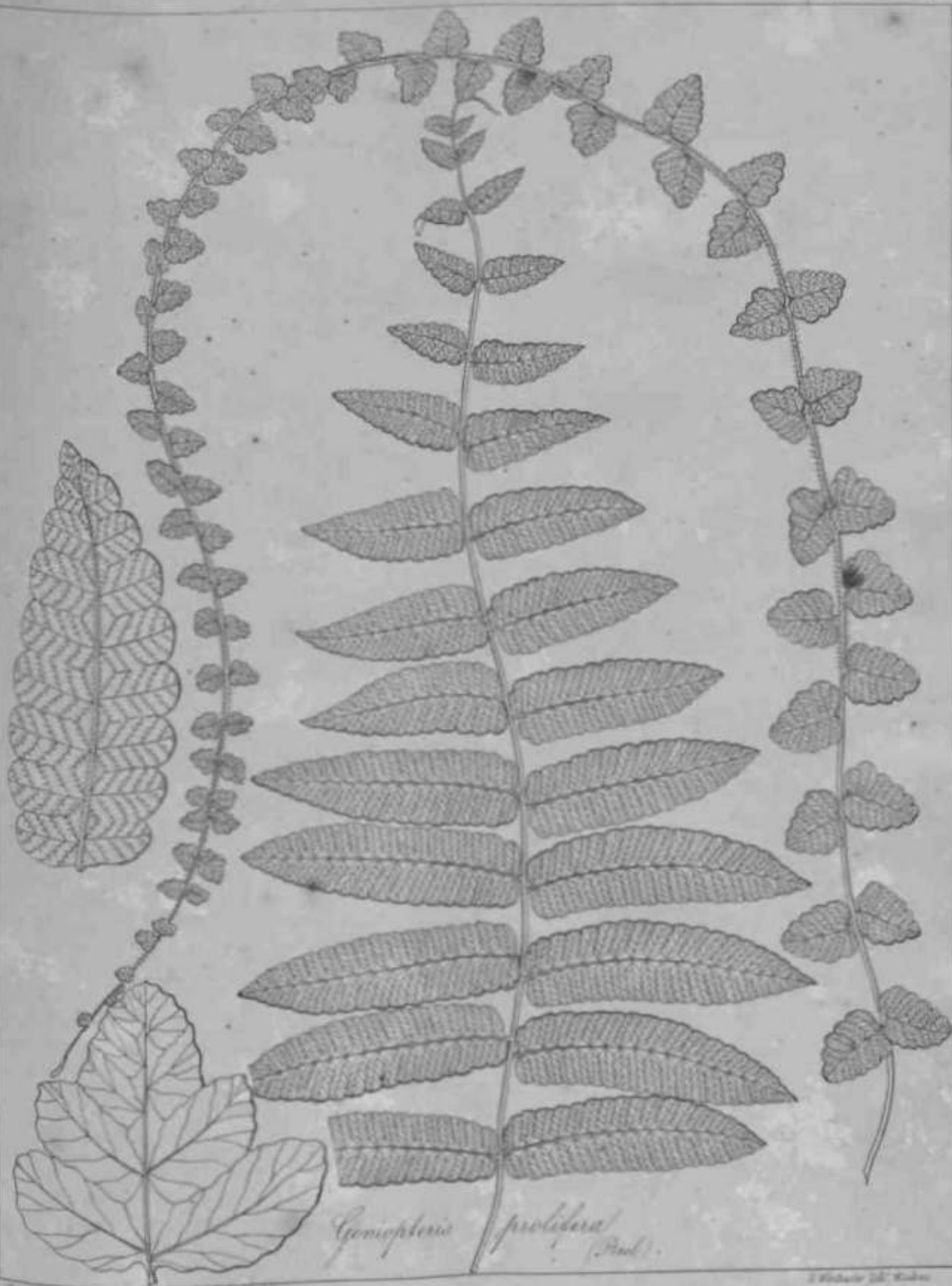


Polypodium rugulosum (C. Chr.)

© H. G. Rehn, 1910



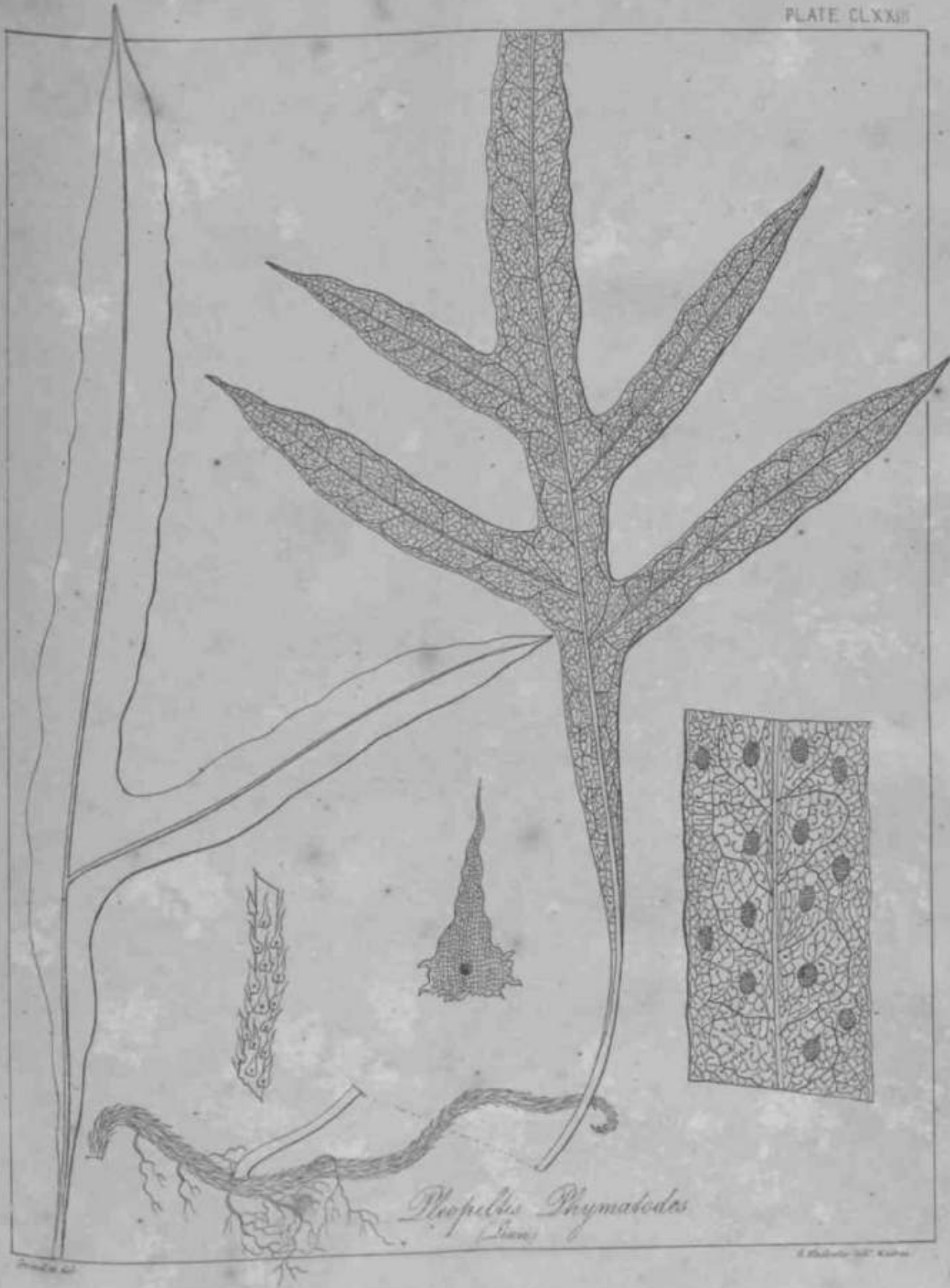
Polypodium ornatum
(Hedick)



Goniopteris prolifera (Presl.)

Seebold del.

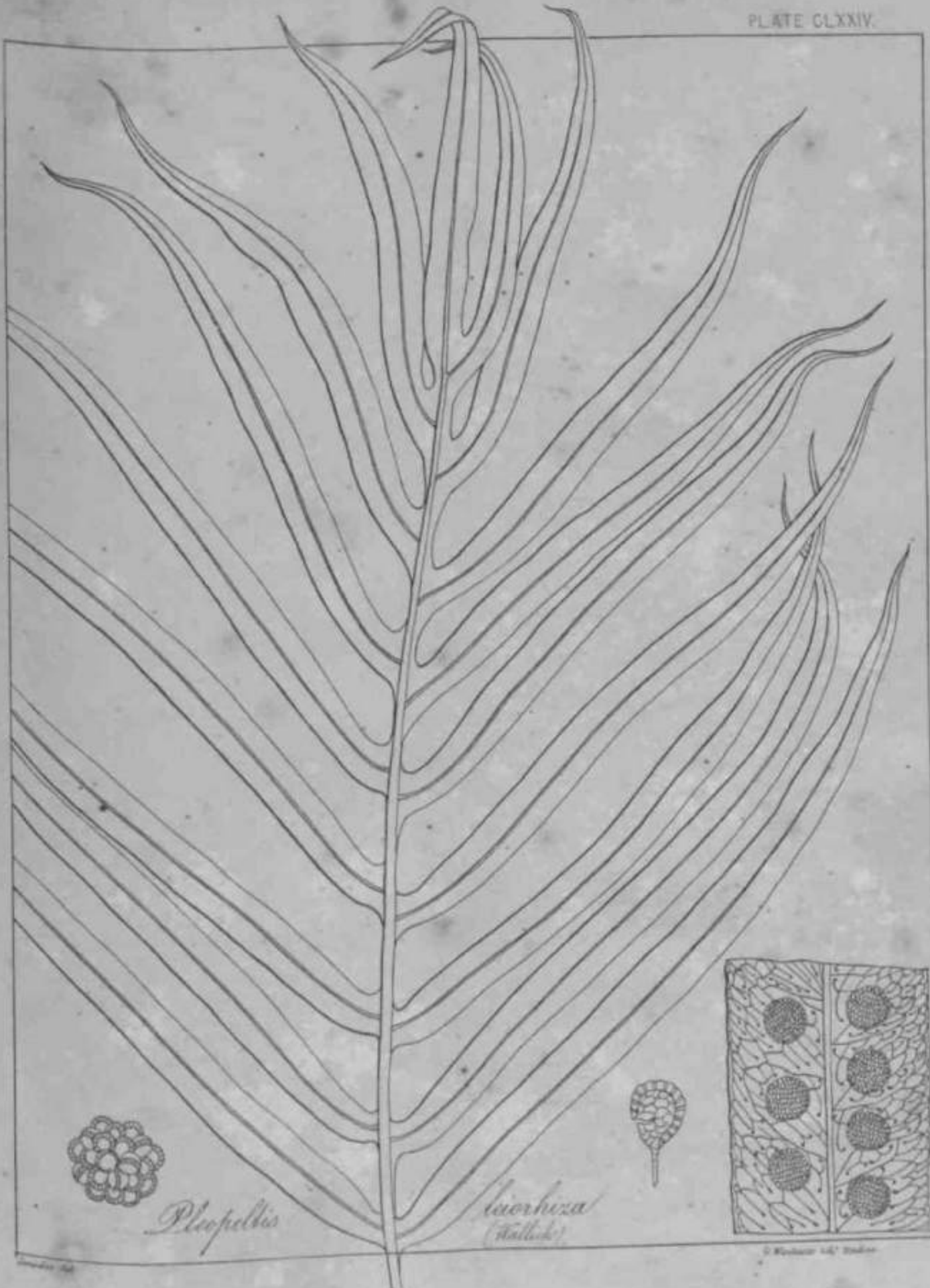
J. Kuhn del. Kuhn sculp.



Phopeltis Phymatodes
(Linn.)

A. Kuhn - del. Kuhn - sculp.

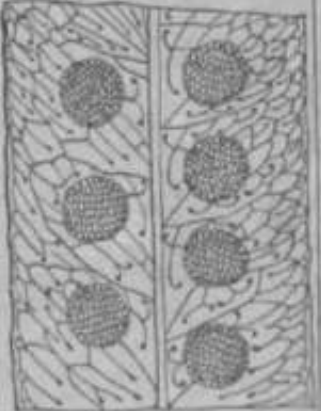
1861



Pleopeltis

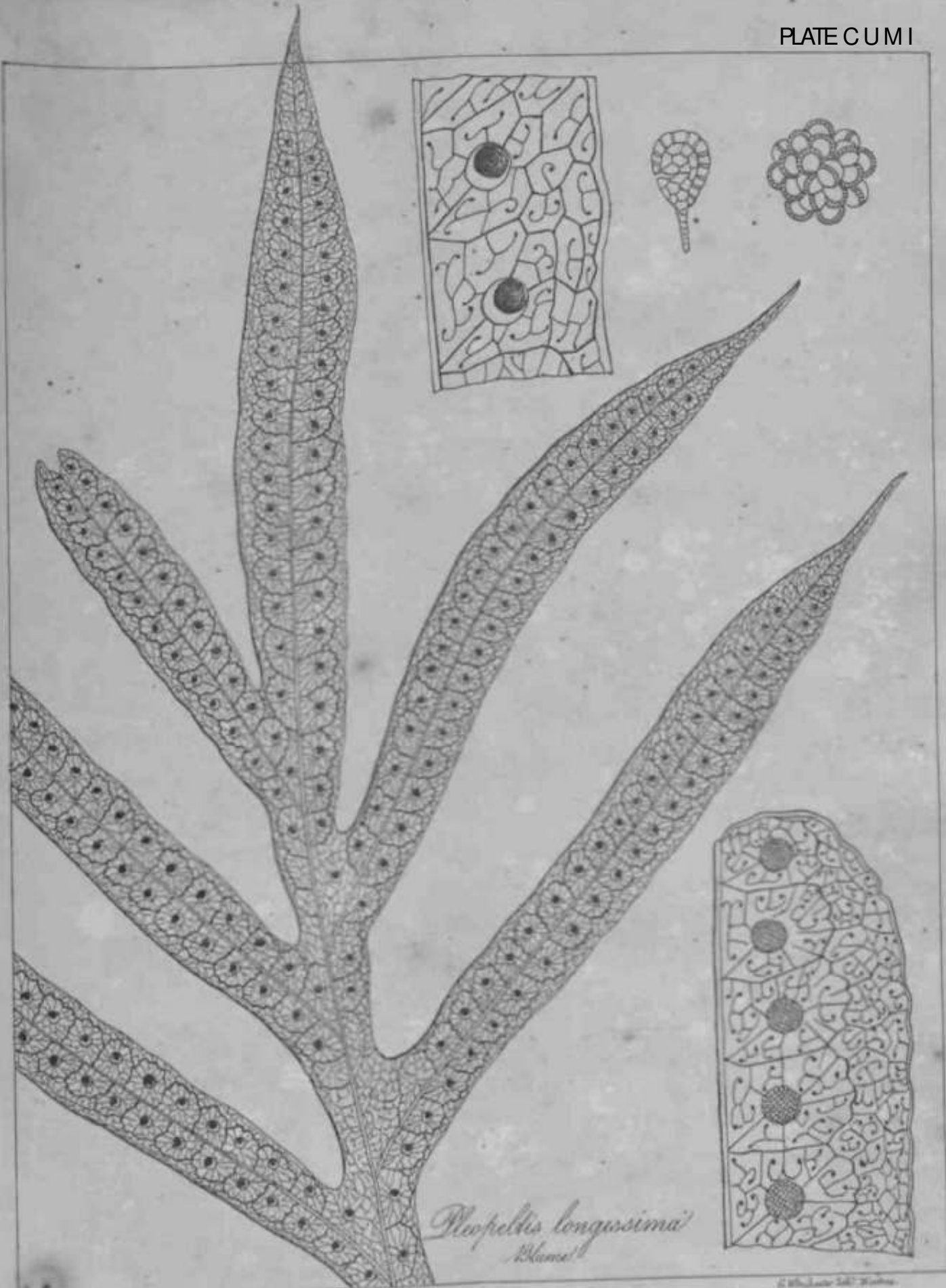


laevirhiza
(Hallé)



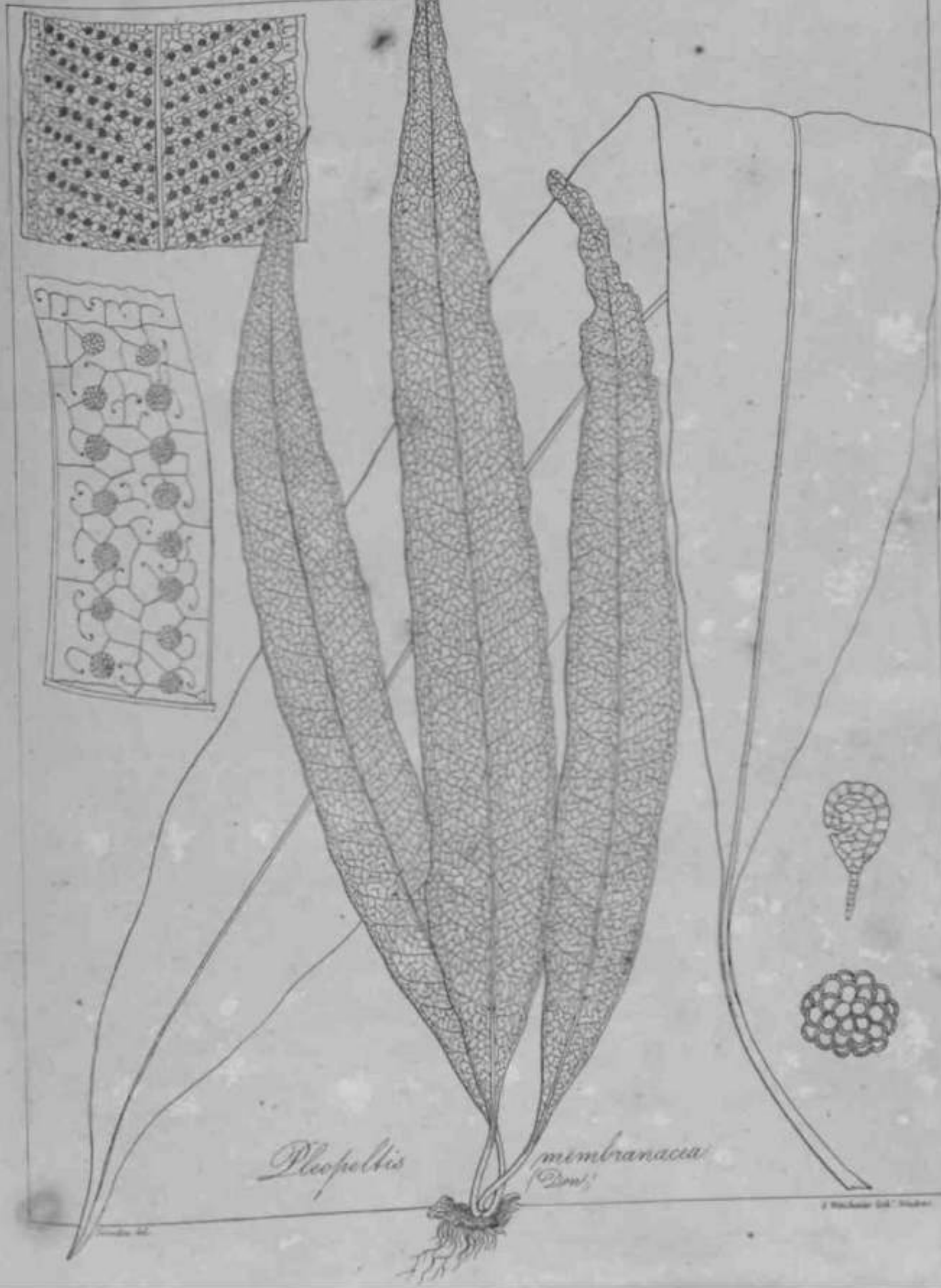


Placopeltis oxyloba
(Wall.)



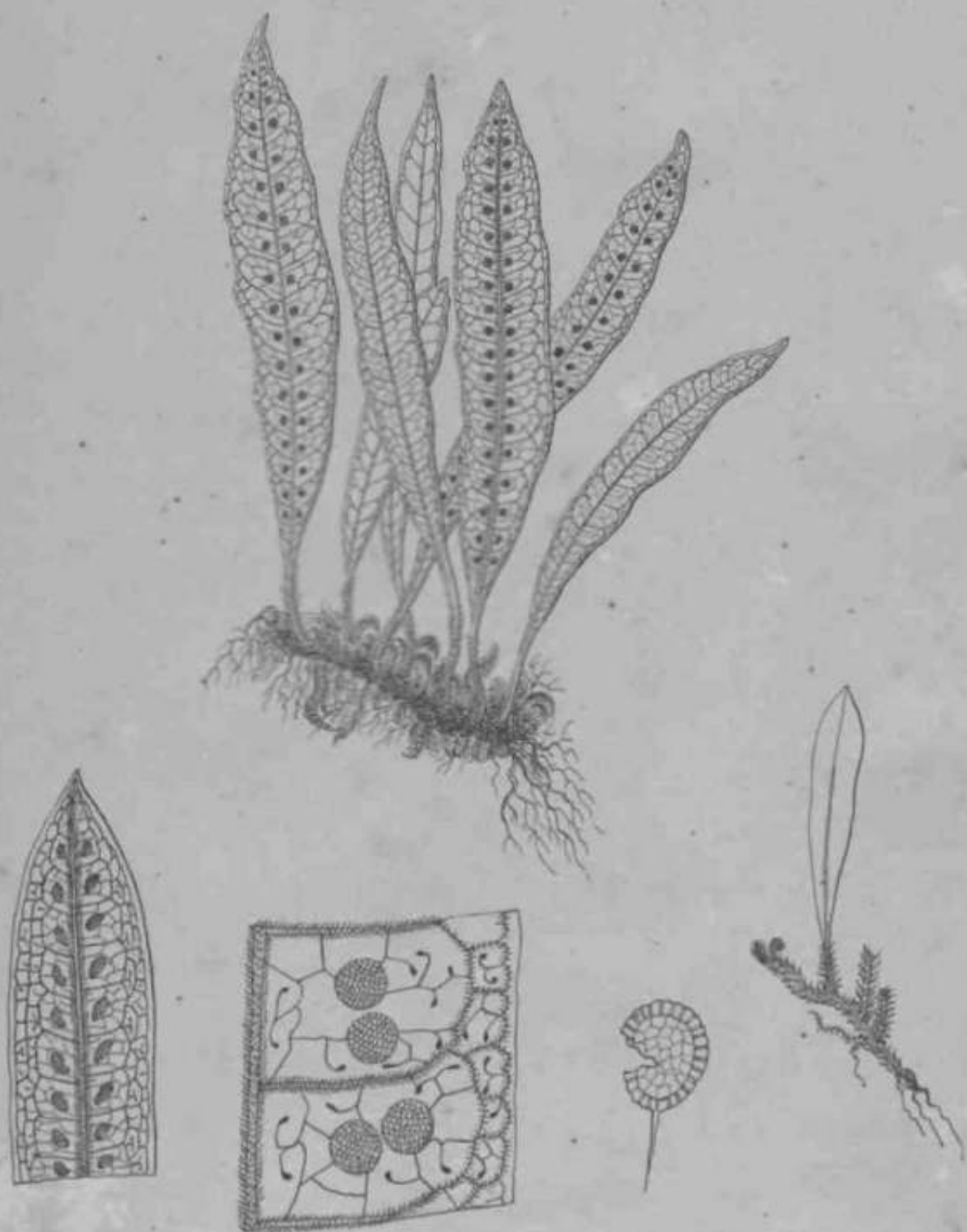
Neopeltis longissima
Blume

G. H. R. L. S. H. W. H. S.

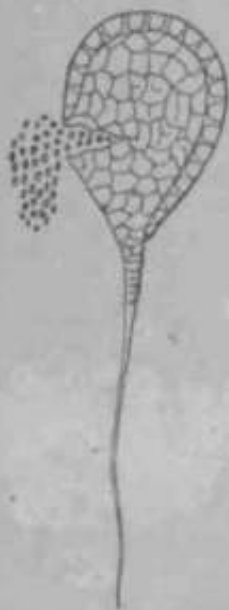
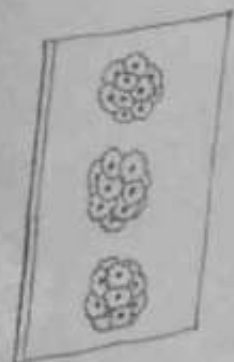


Pleopeltis membranacea
(Bowling)

J. Maclean del. T. Moore sculp.



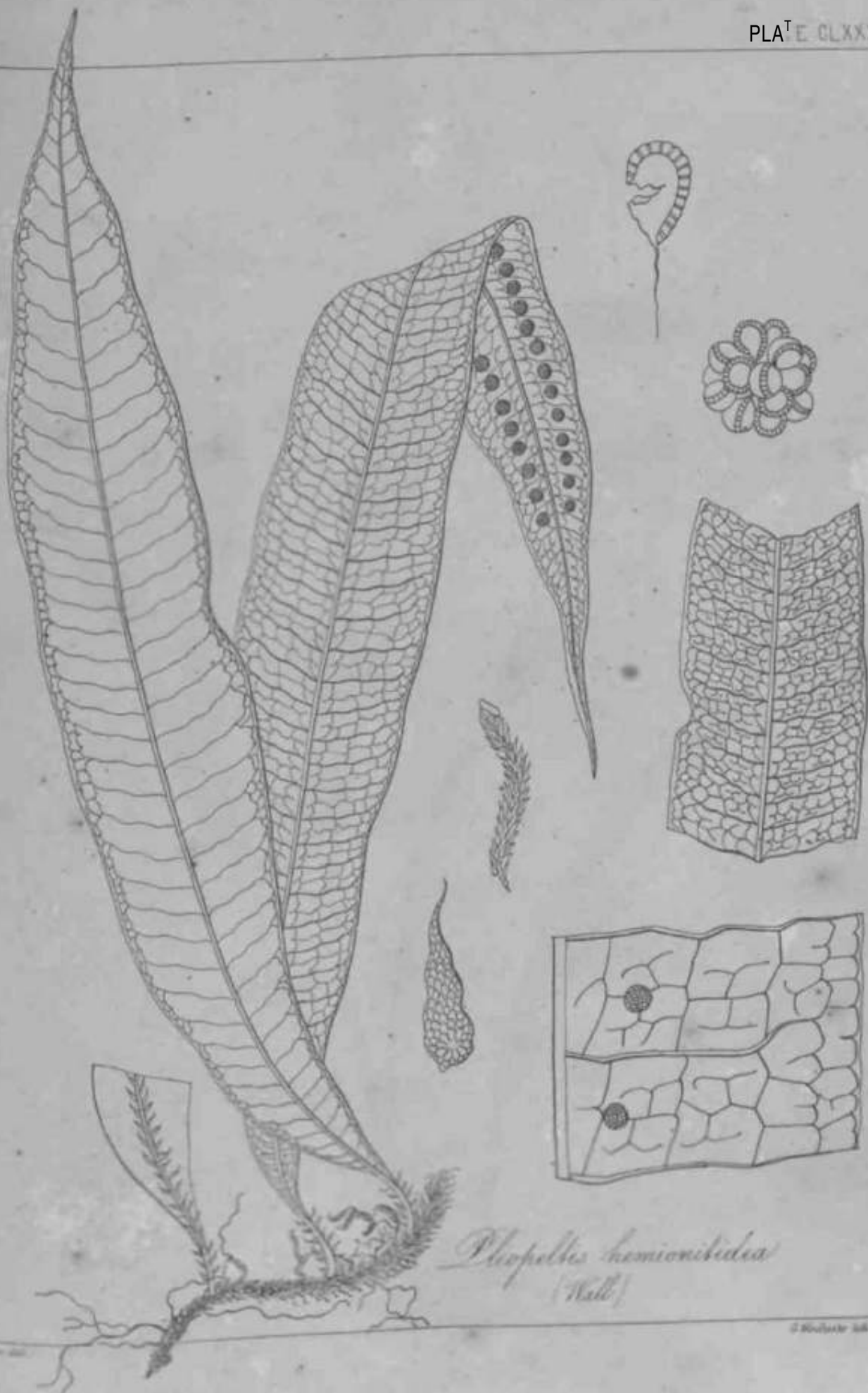
Pleopeltis midactyla
(Walters)



Pleopeltis Wightiana
(Hook.)

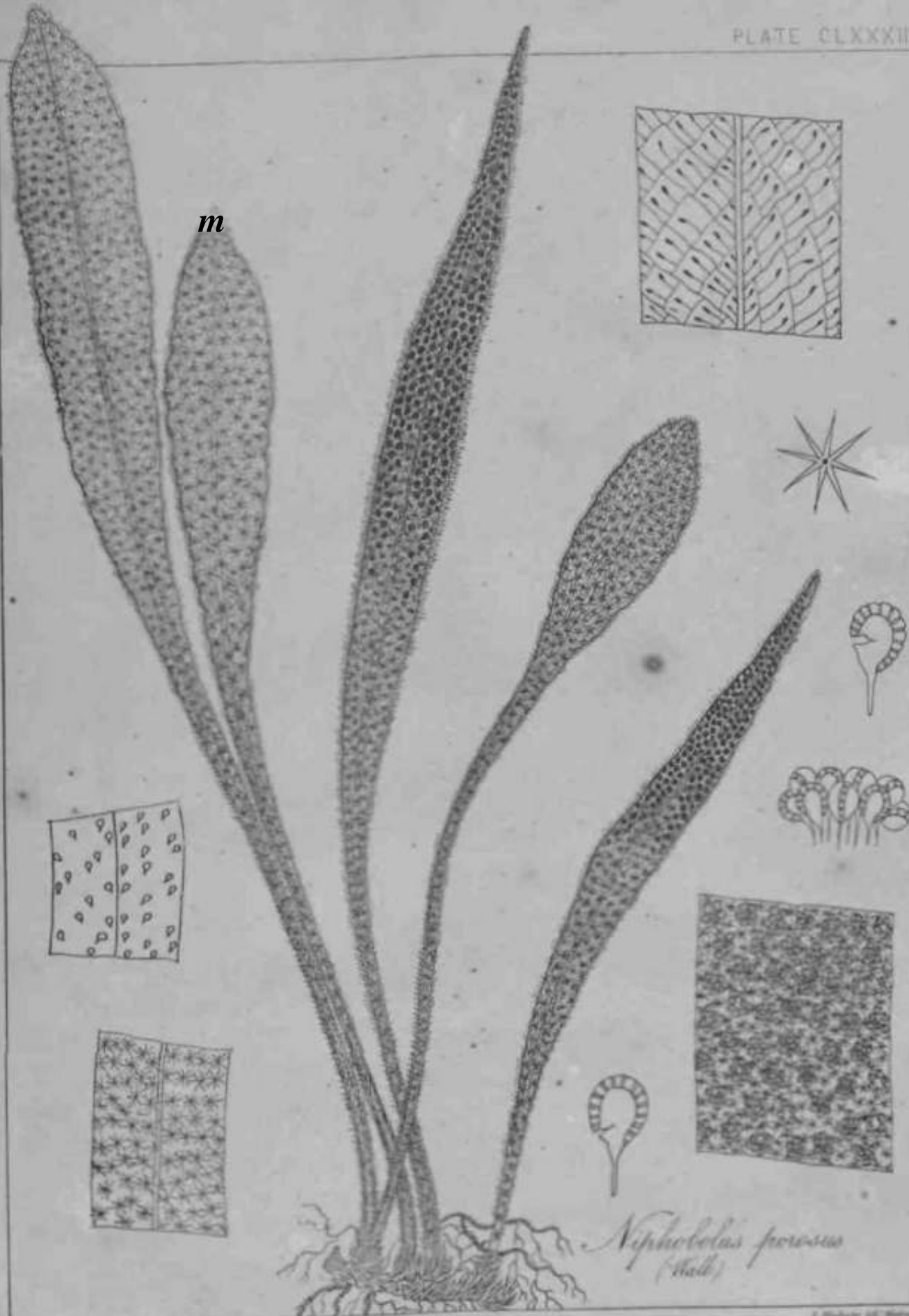


Pleopeltis lepidota
(Milla)

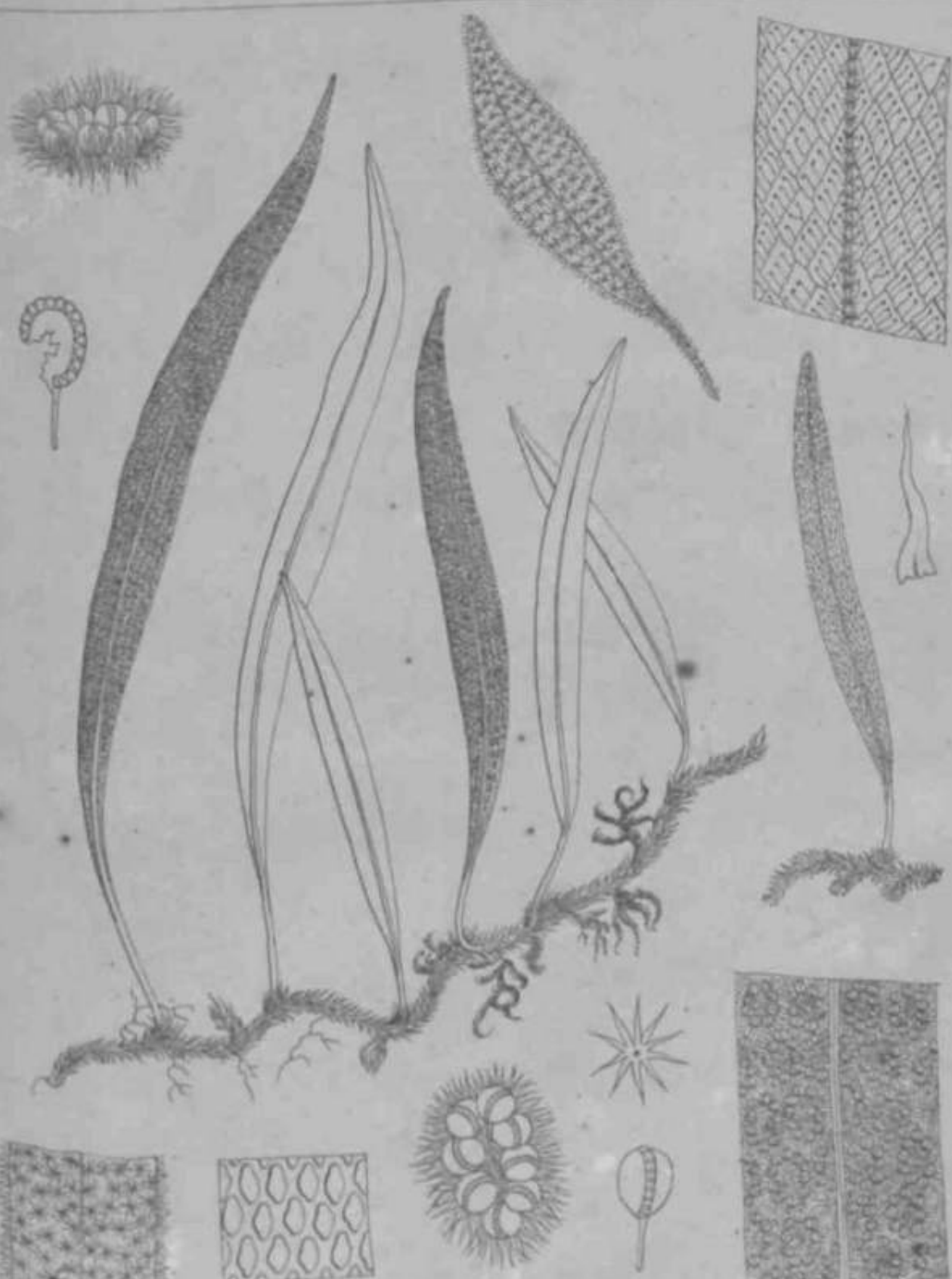


Phopeltis hemionitidea
(Wall.)

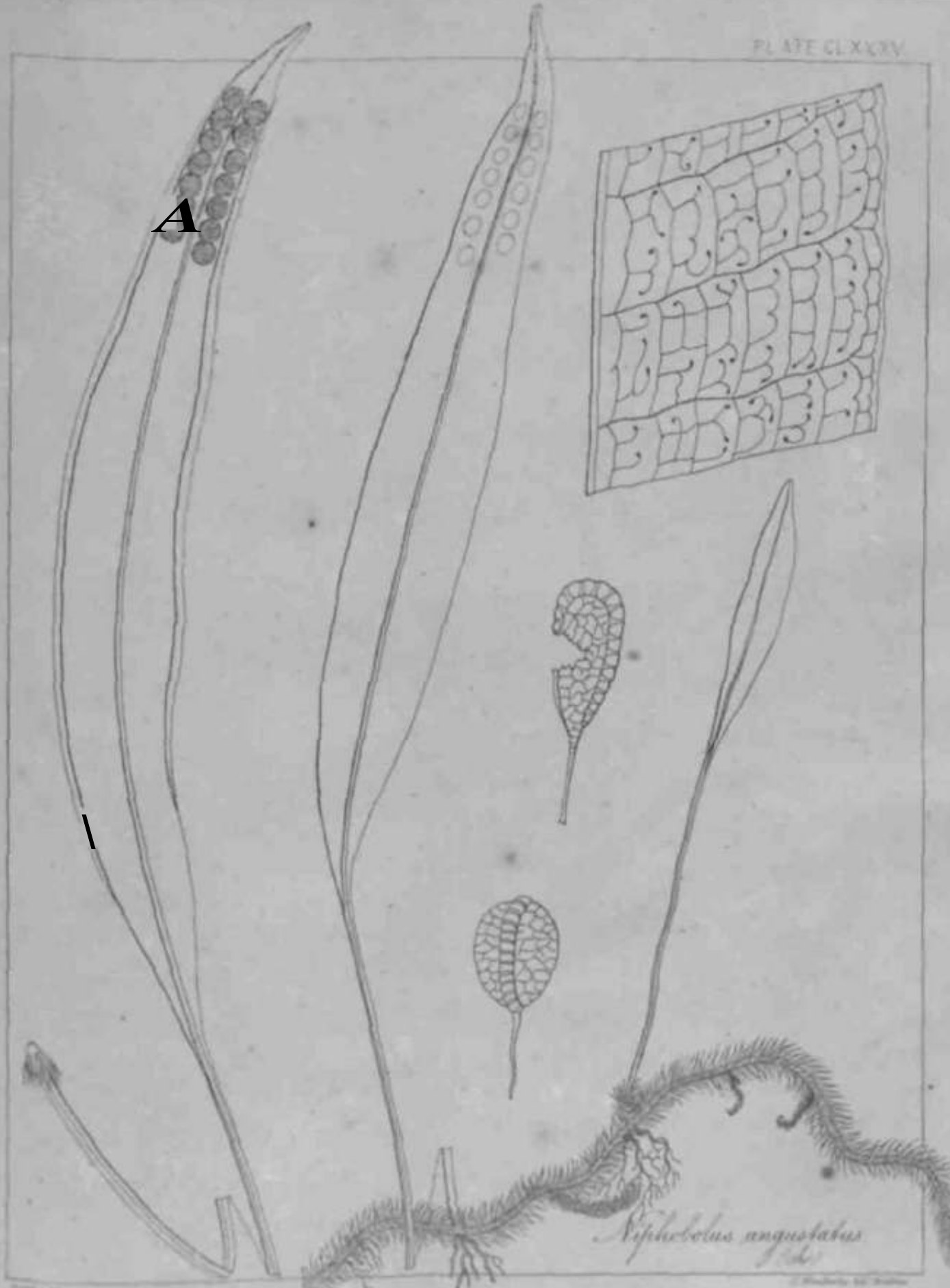
m



Niphobolus porosus
(Hall)

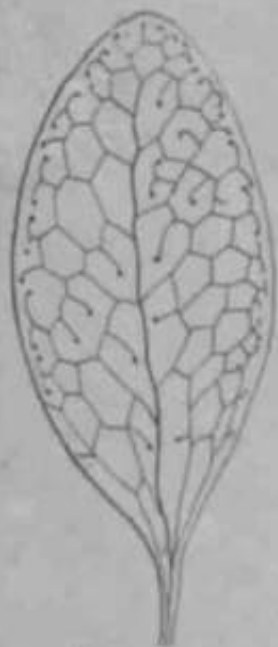


Nipholobolus adnascens
Hook.

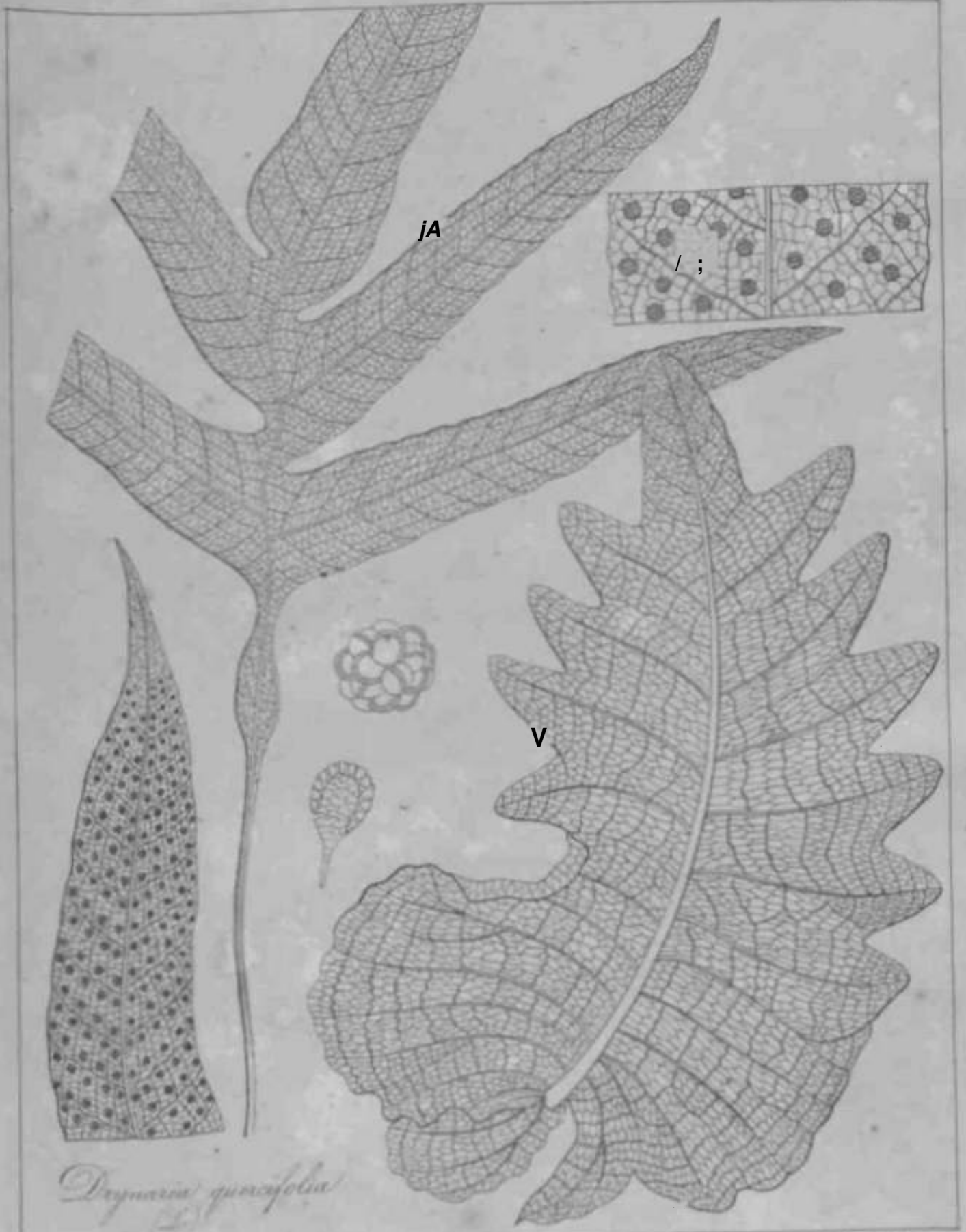


Niphelobolus angustatus
Schreb.

W. H. Bull. Bot. Garden



Niphobolus nummularifolius
(Molina)



Dryopteris quercifolia



Cheilanthes tenuifolia
(L.)



Chailanthes varians
Hooker



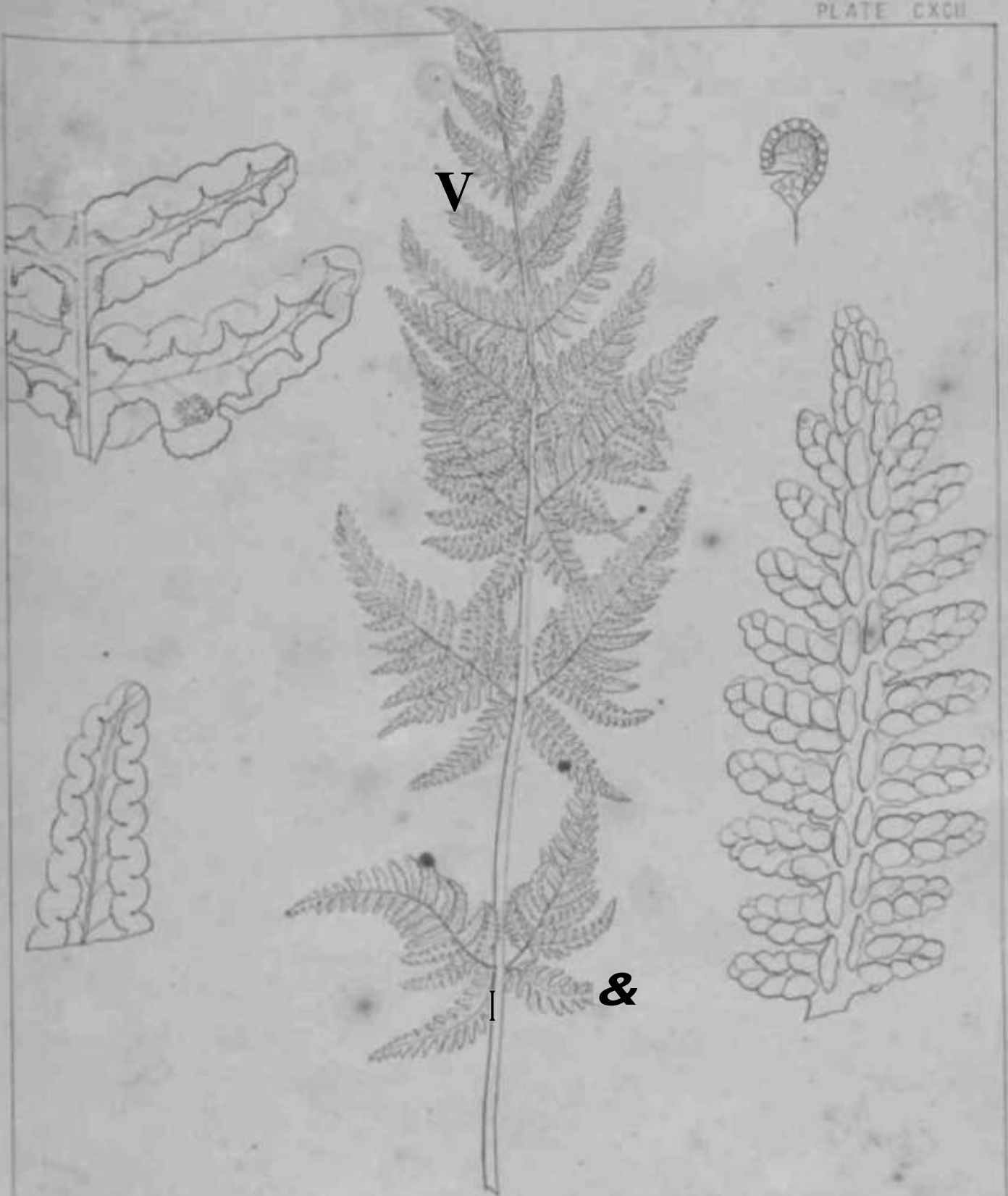
Chalcidanthus

Mysorensis
(Kittak)

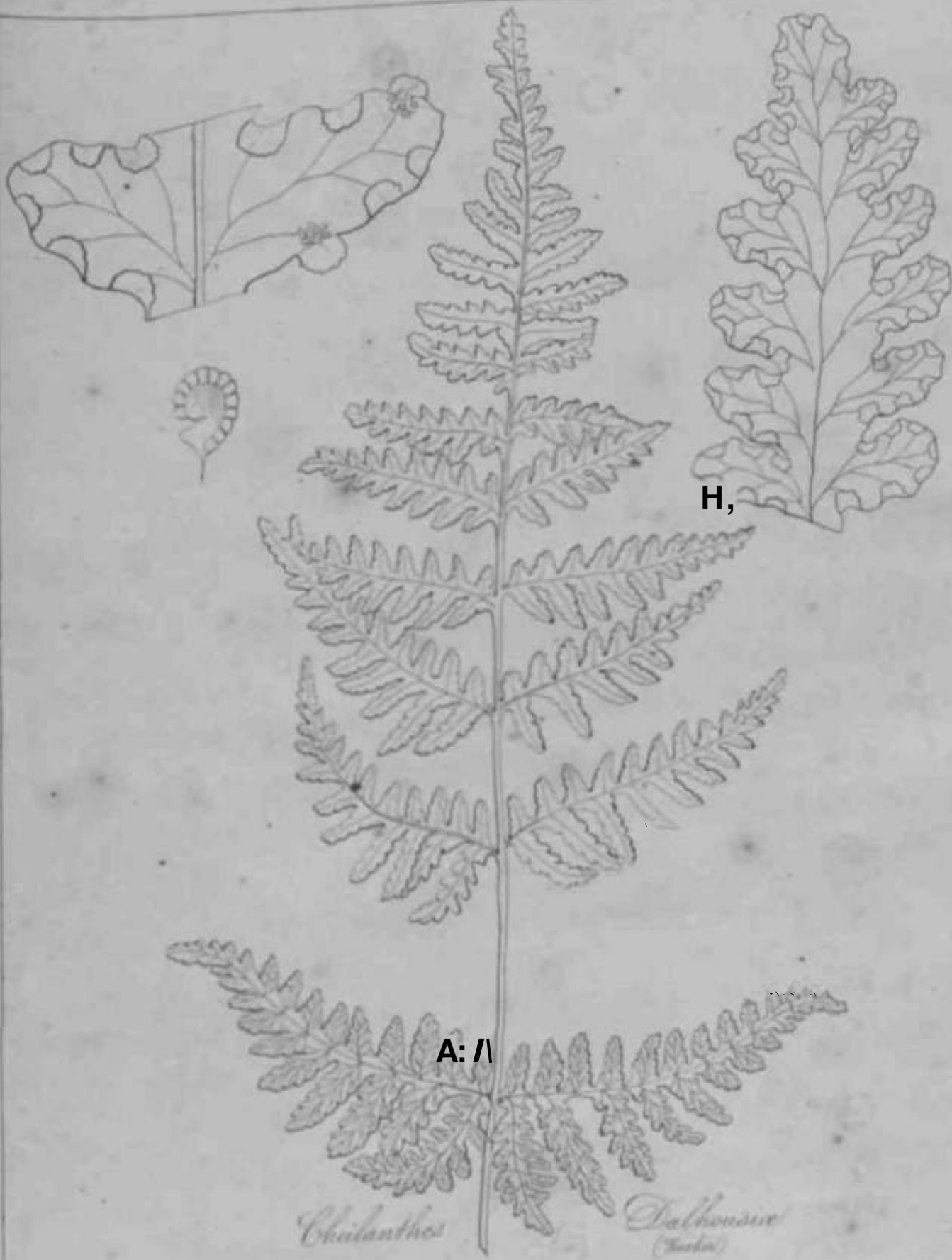


Chulanthos farinosus
(Small)

© Richard W. Allen



Cheilanthes lulliosa.
(Horn)



H,

A: /

Chilanthos

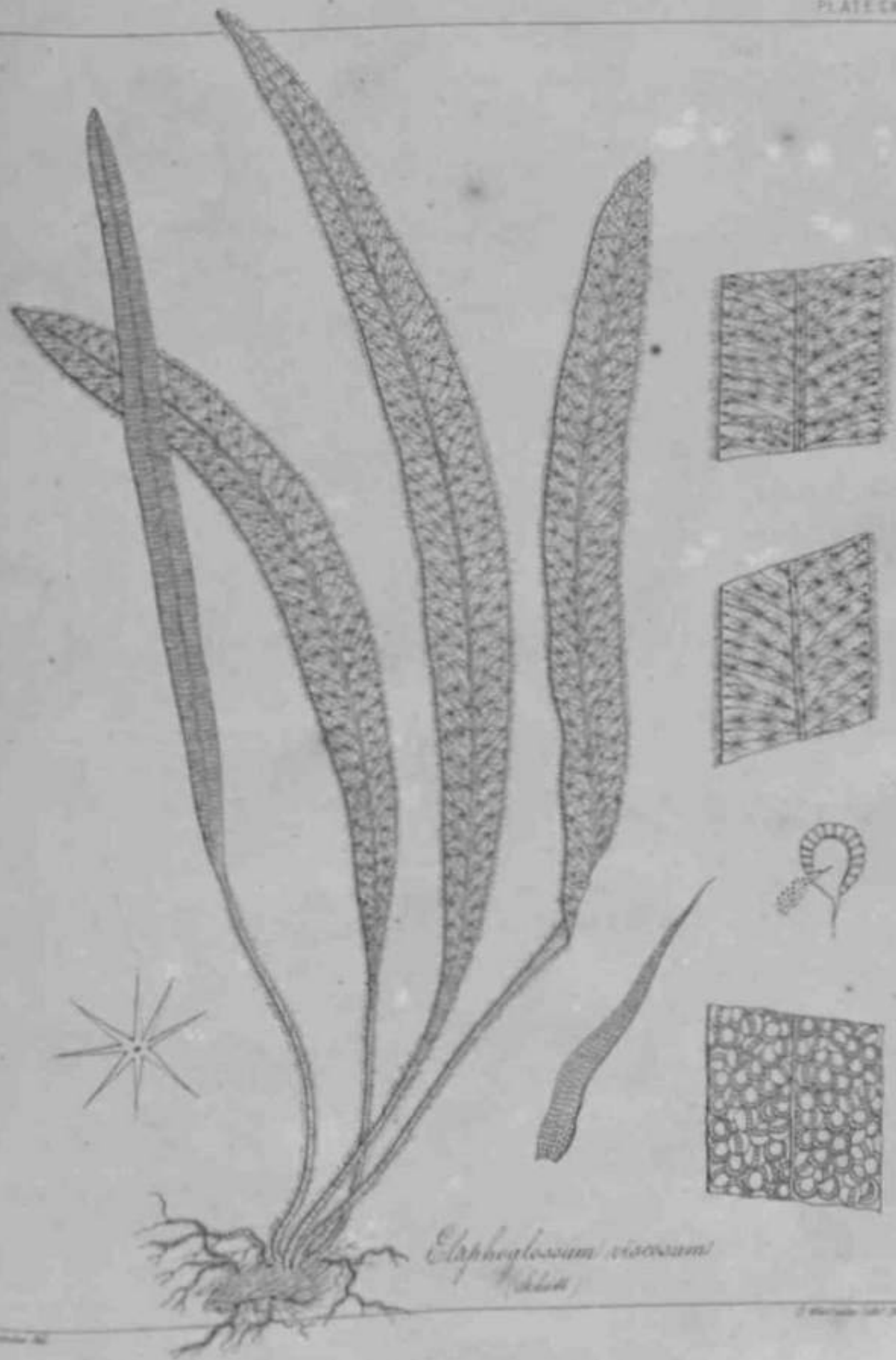
Dalhousie
(Hook.)



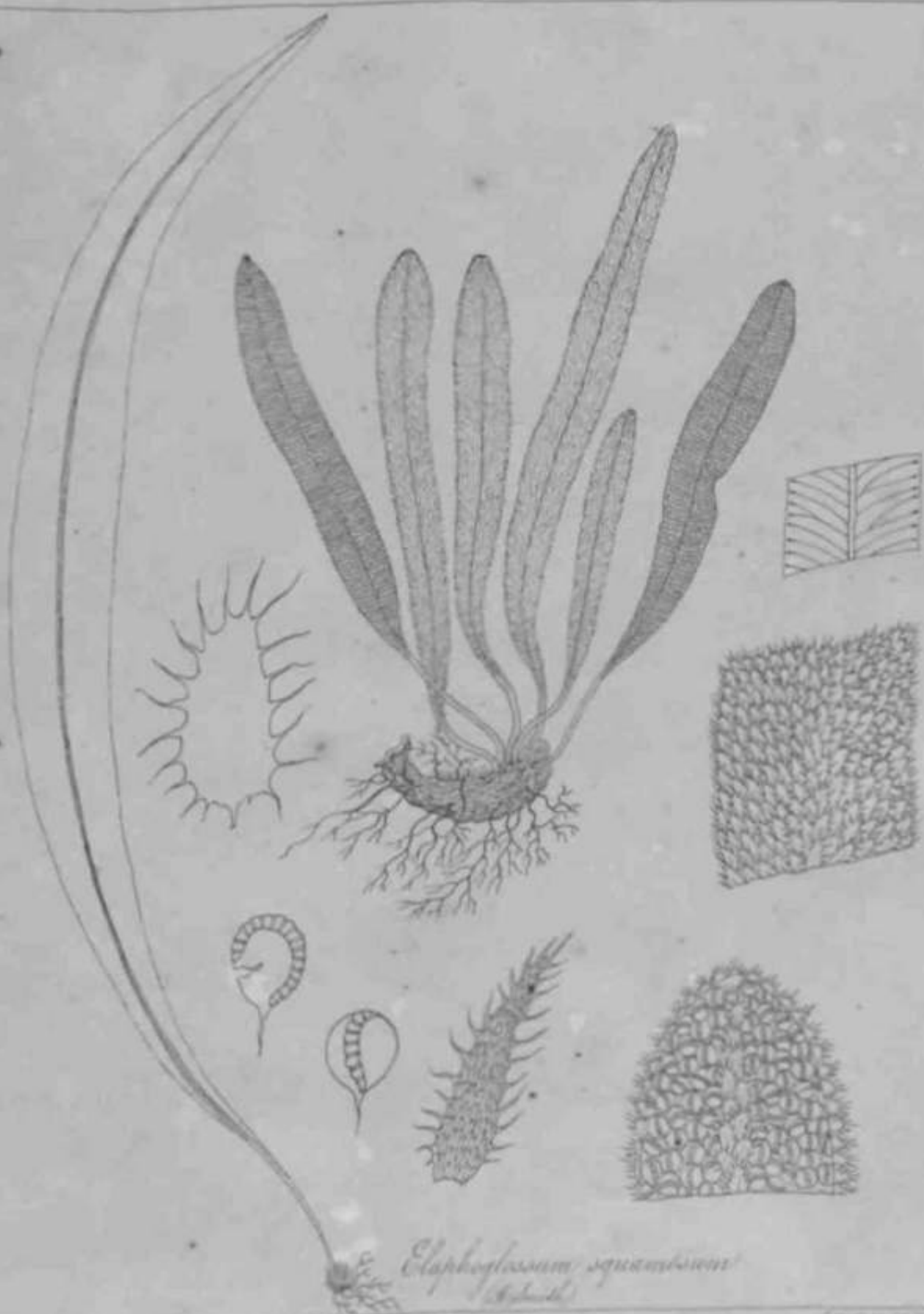
Polypodium arborescens
Schreb.



Polybotrya asplenifolia
(Lam.)



Elaphoglossum viscosum
(L.) Kuhn



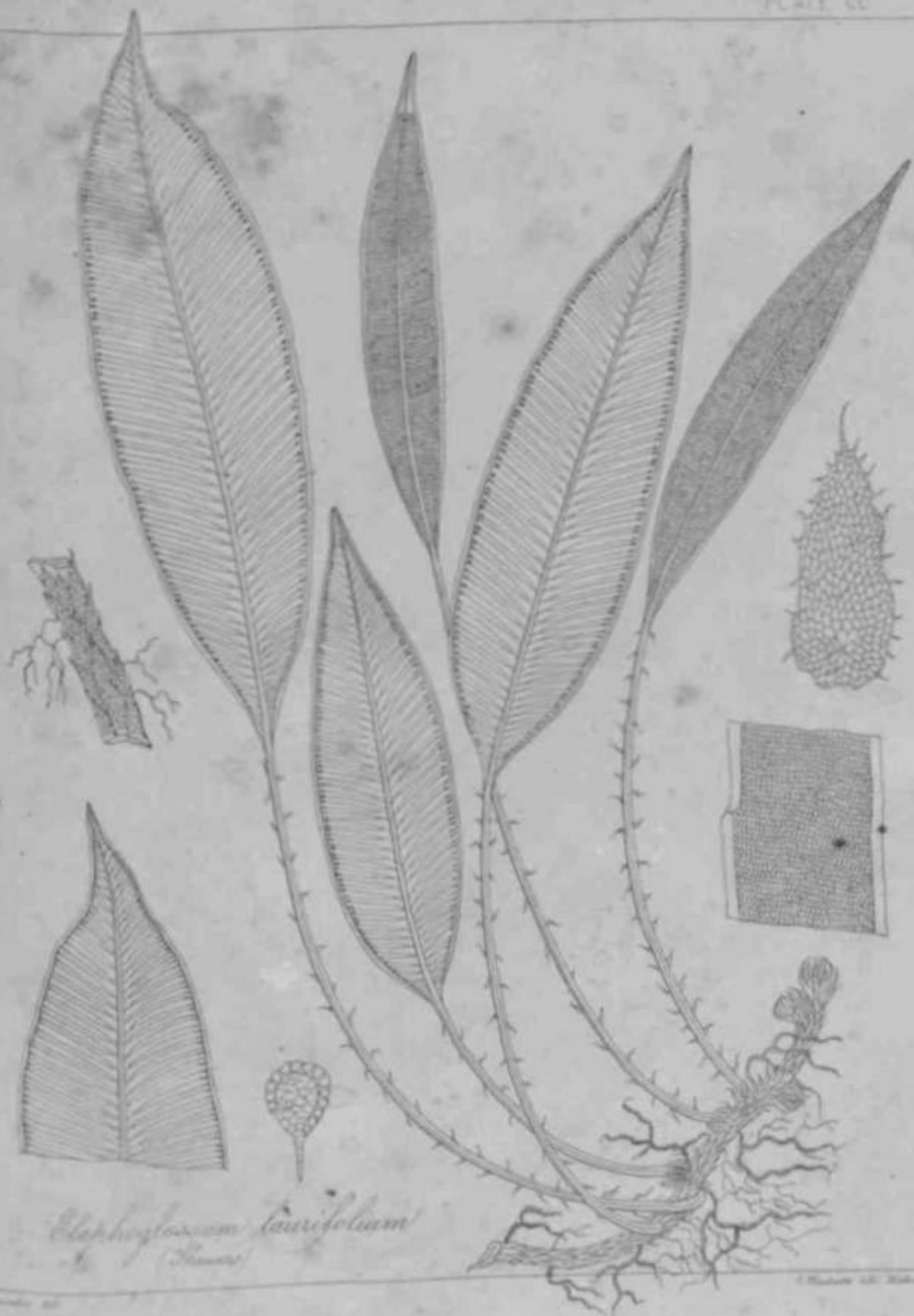
Elaphoglossum squarrosissimum
(L.) Hook.



Elaphoglossum conforme
Schott



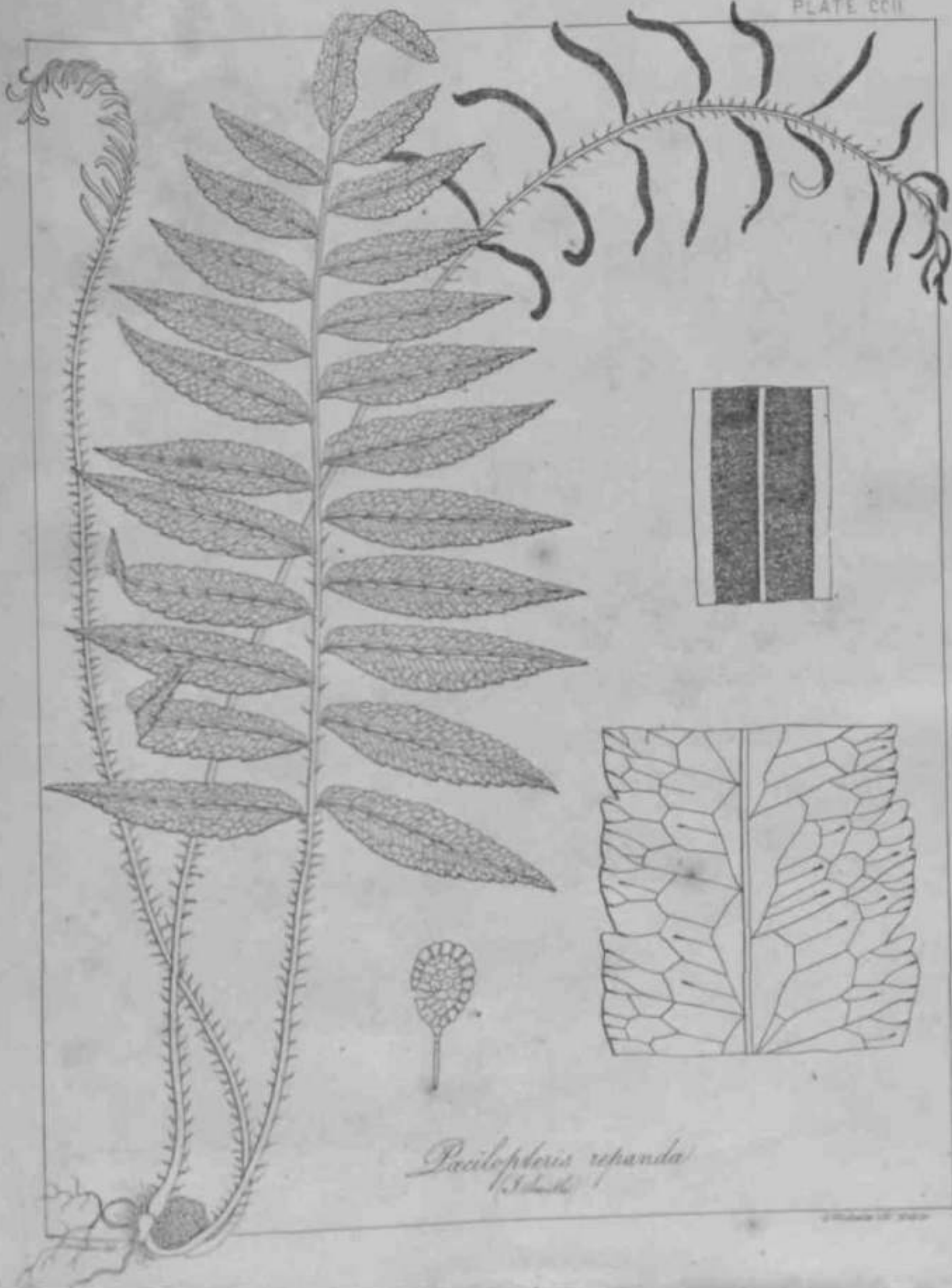
Elaphoglossum stigmatolepis
(Fr.)



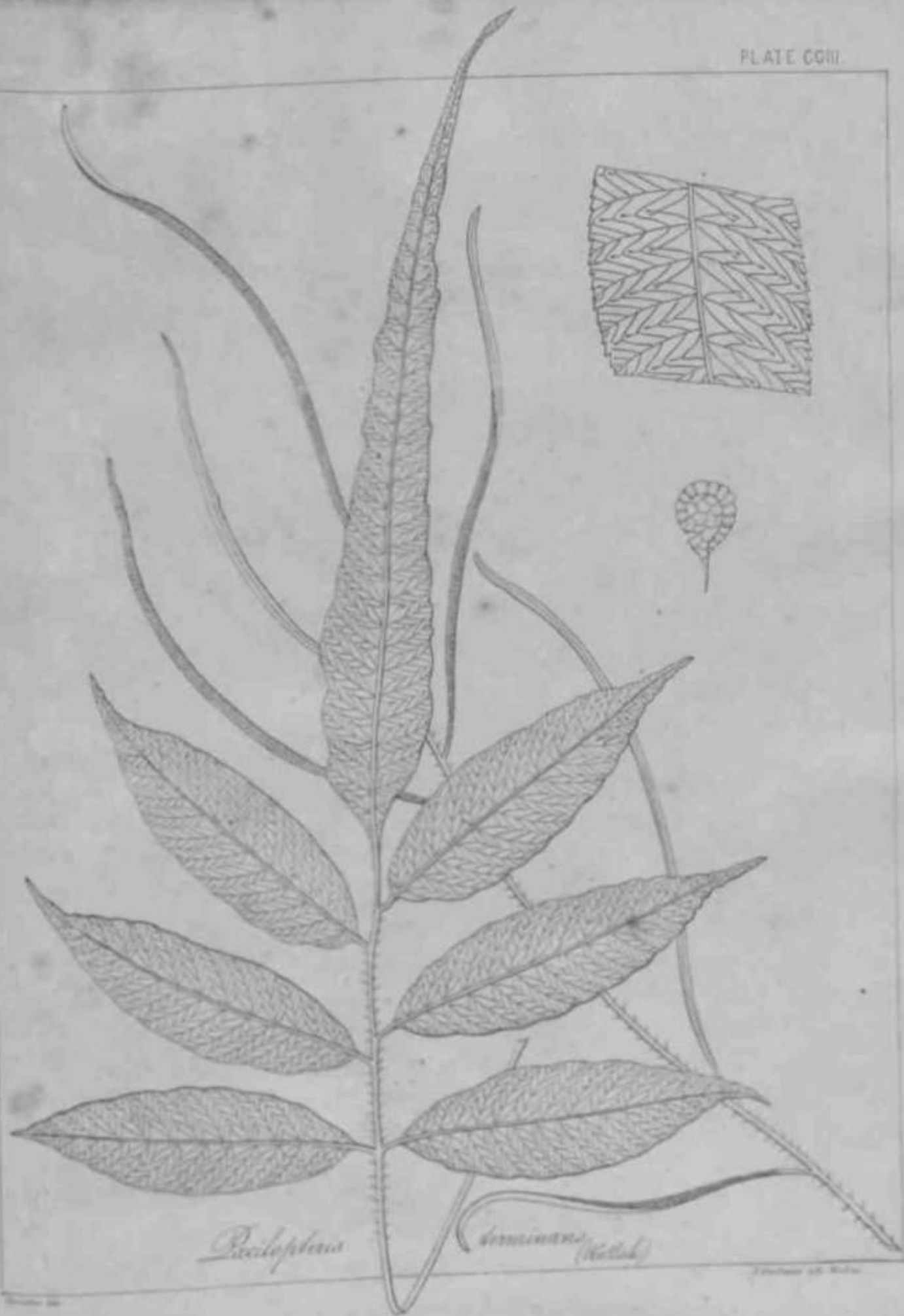
Elephoglossum laurifolium
(Lamour.)



Monochloa sandwicensis, 1 frond.



Pacilopteris repanda
Schubert



Psiloptera

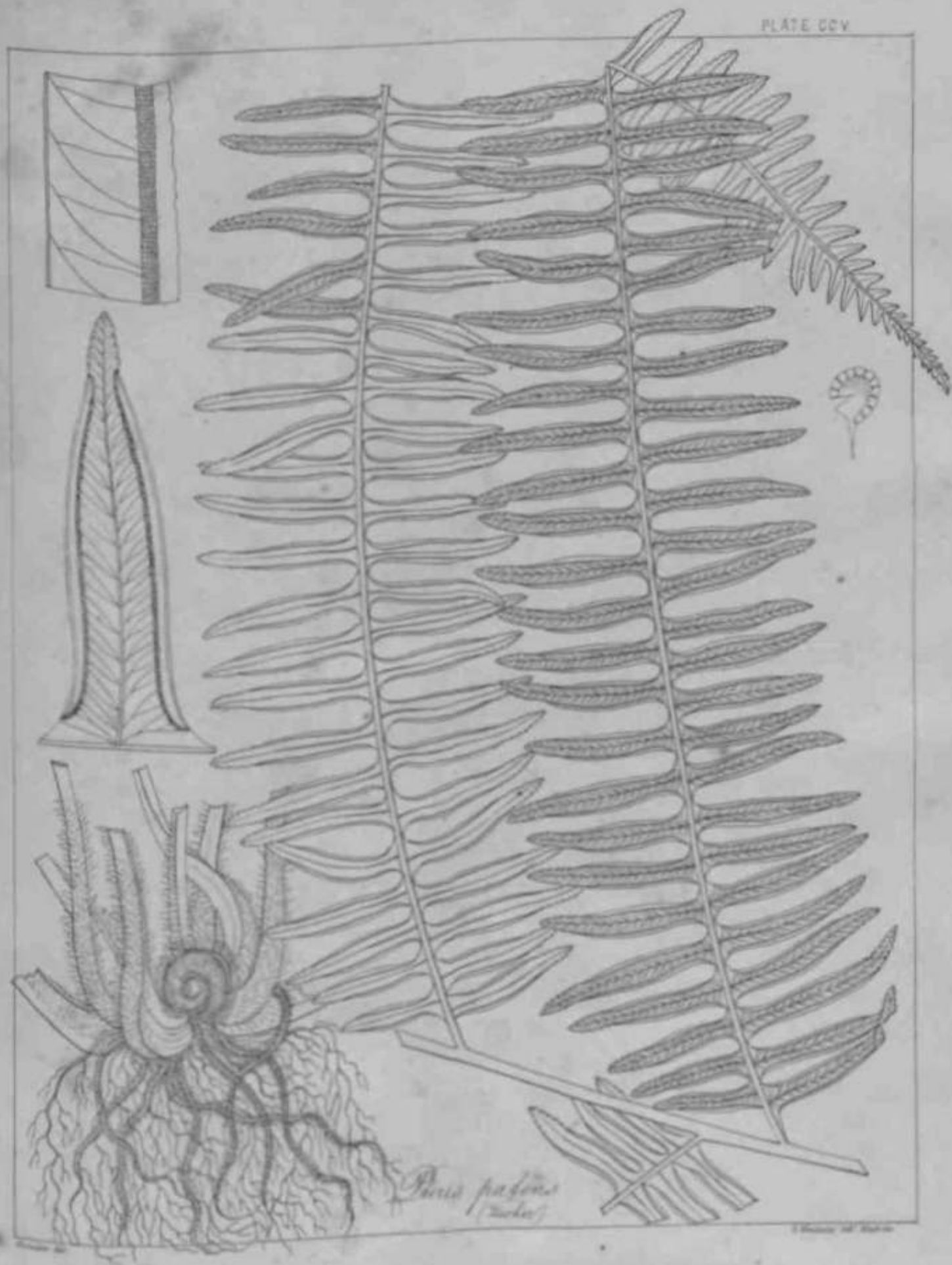
dominans (Willd.)

J. H. R. W. H. W.



Acrostichum aureum

J. B. Smith del. W. H. Miller sculp.



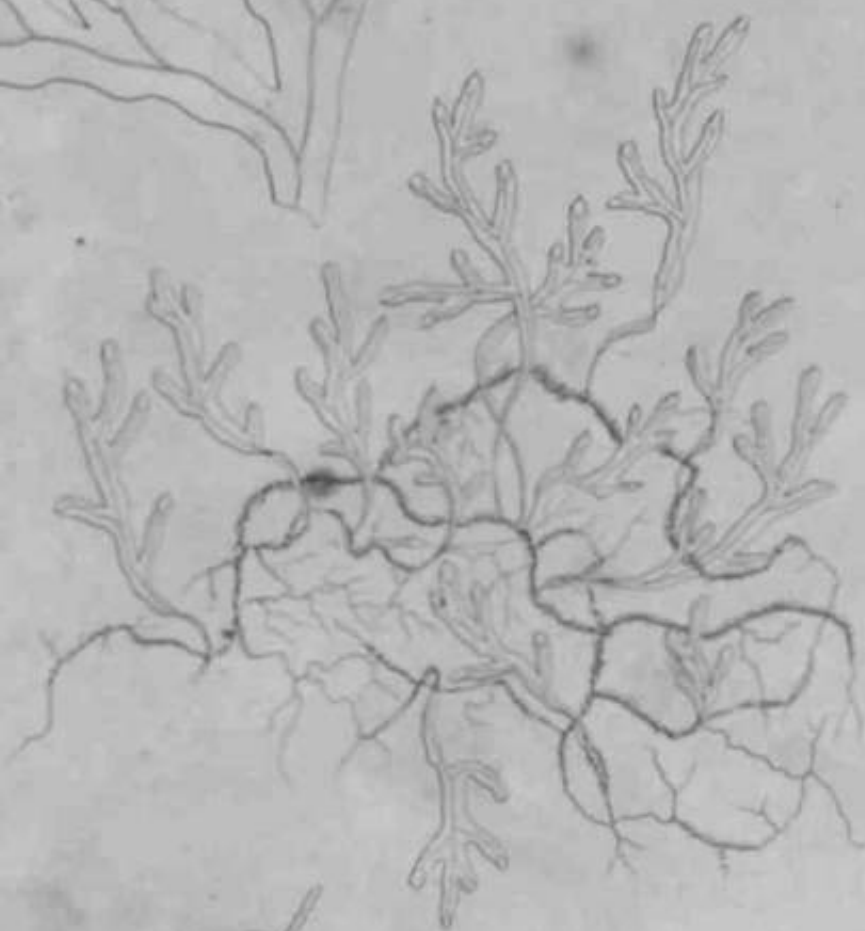
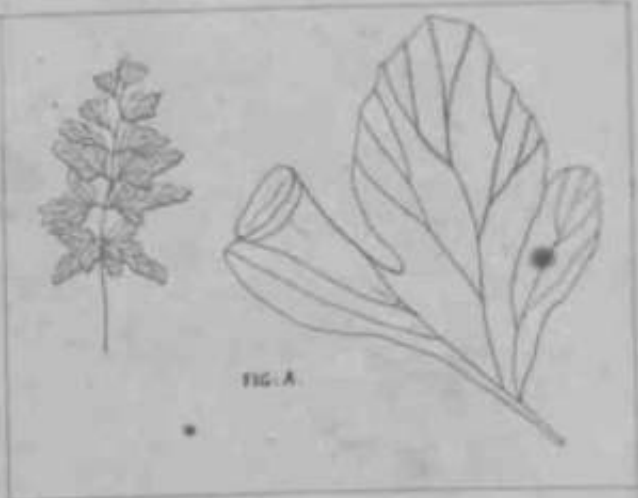
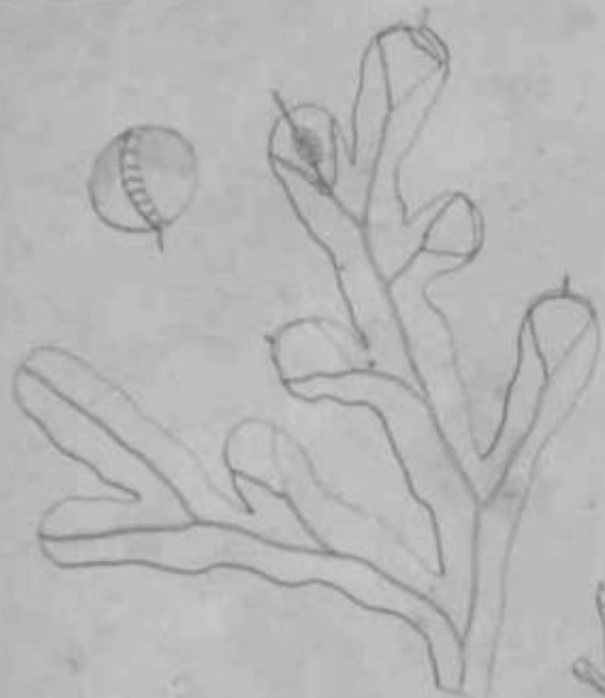
Paris japonica
(Zucc.)



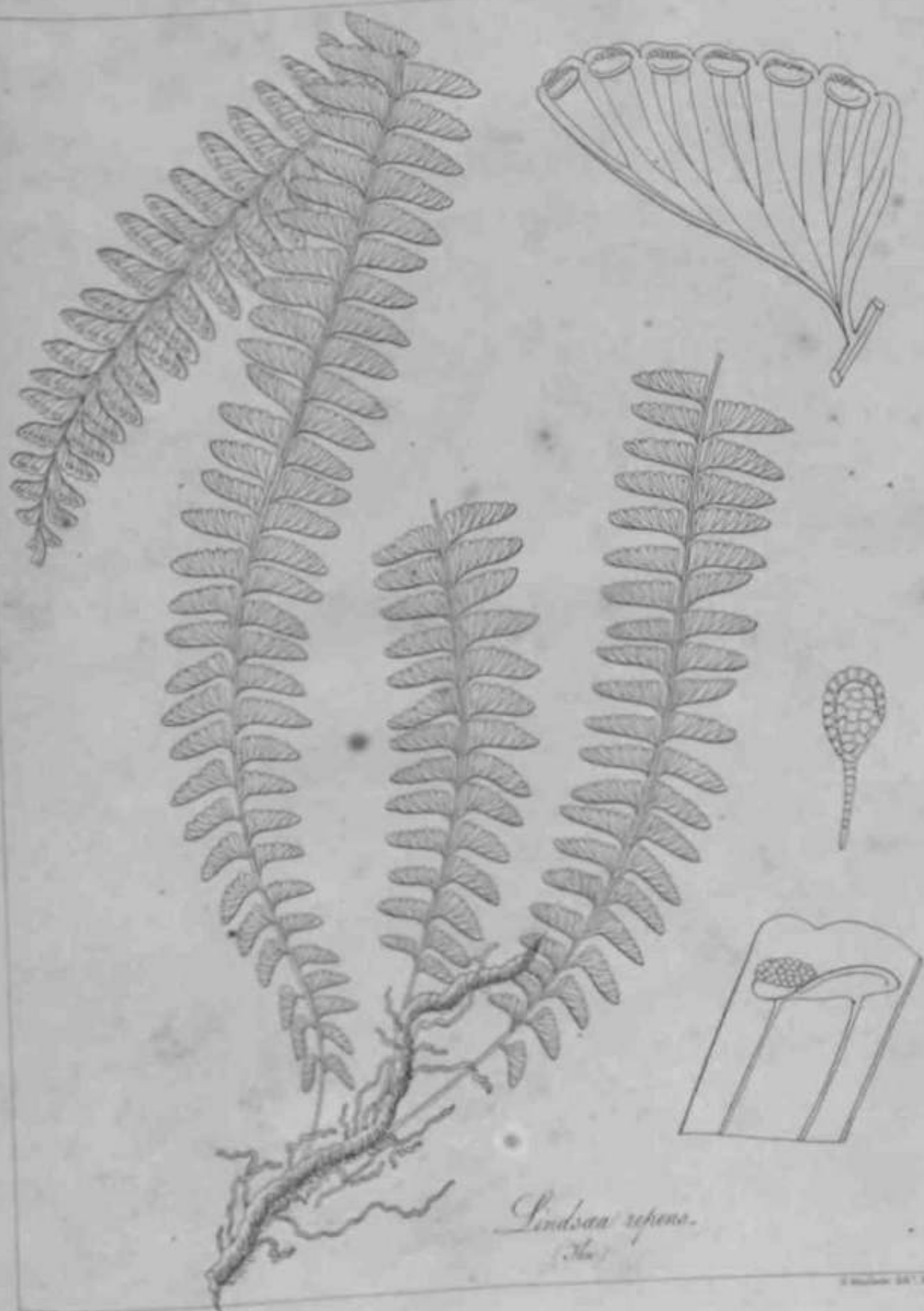
Lindsaea heterophylla
 (Lindl.)



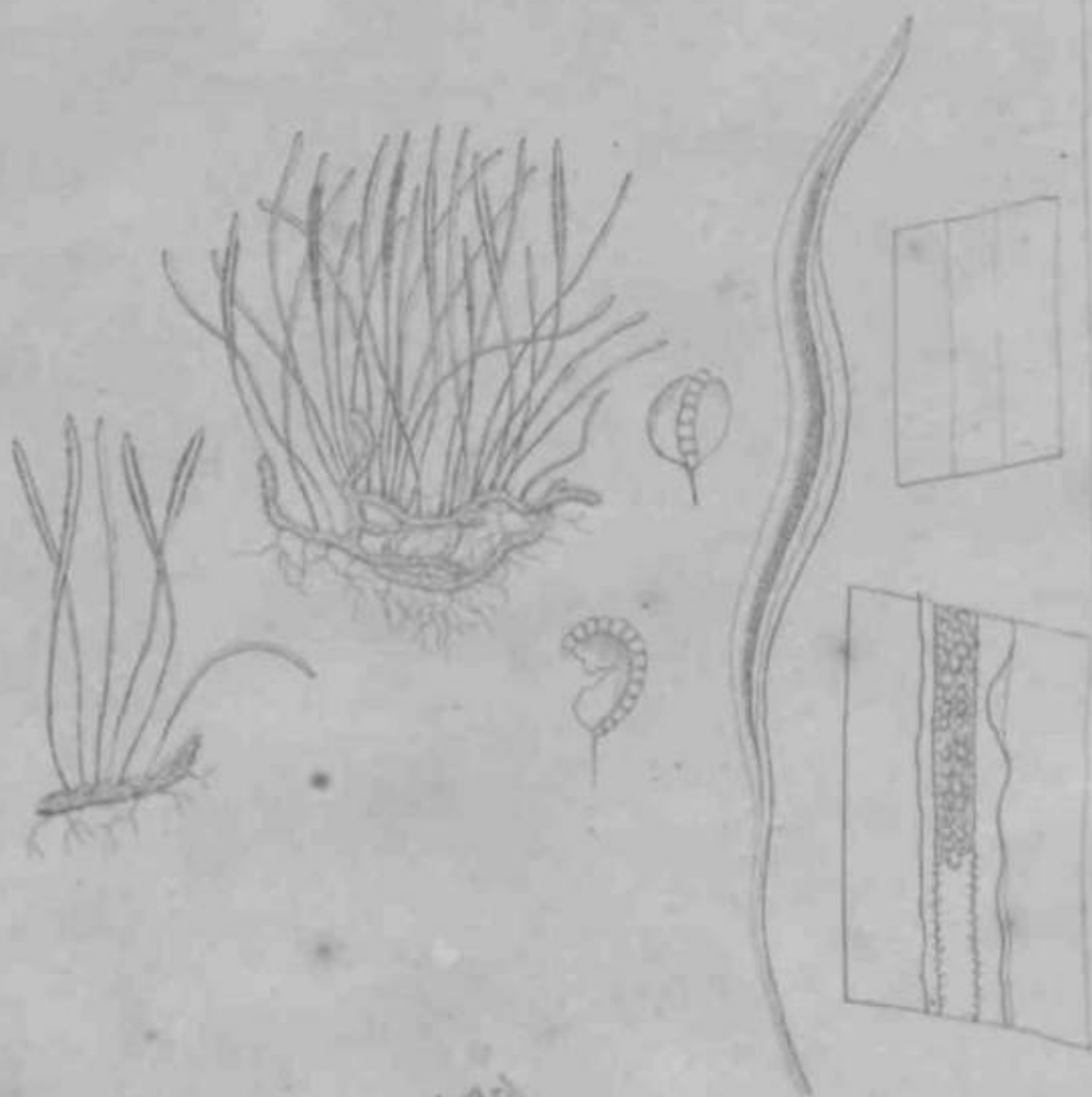
Hymenophyllum crispatum
(Willd.)



Eichomanes intramarginale
(Hook. & Grev.)

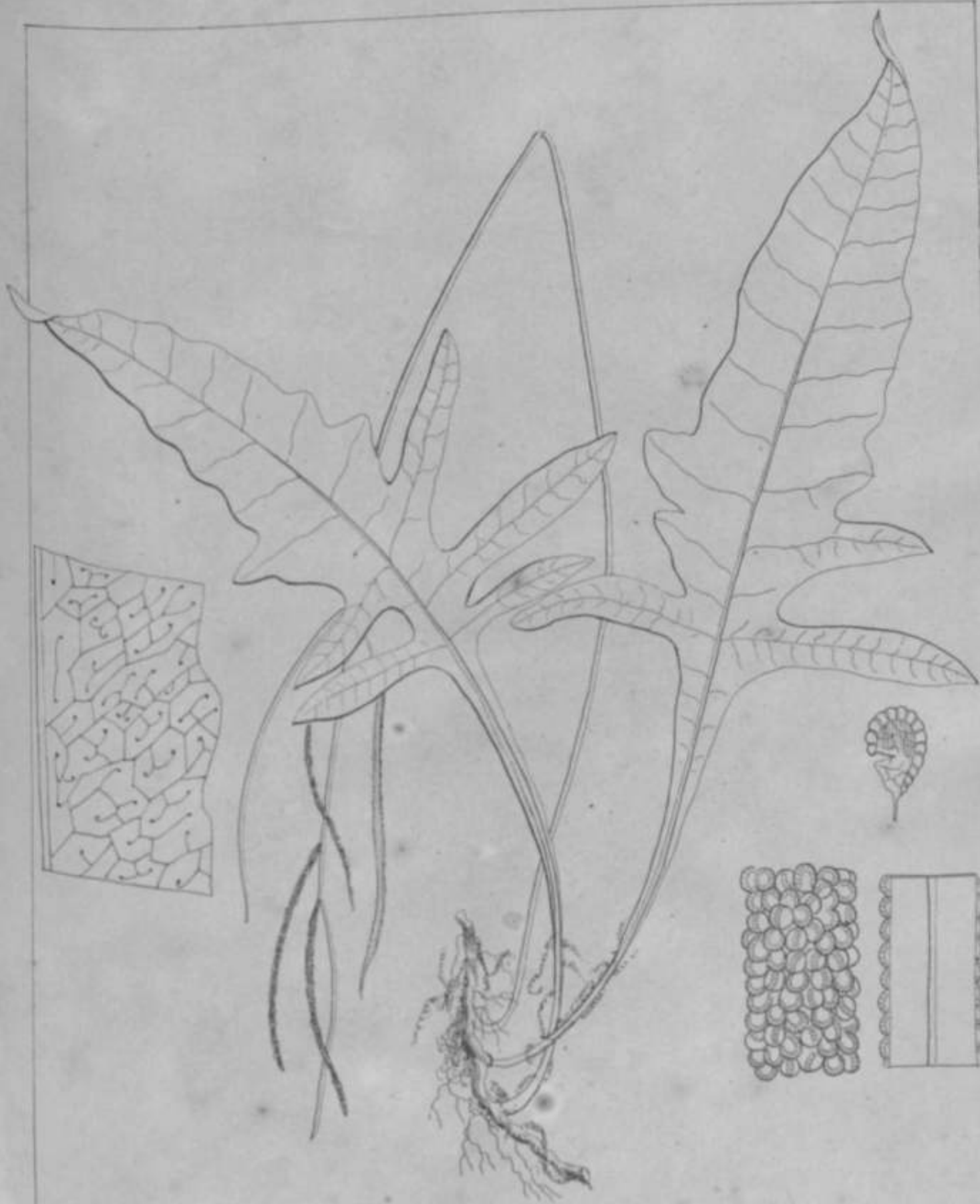


Lindsaea repens.
(No.)

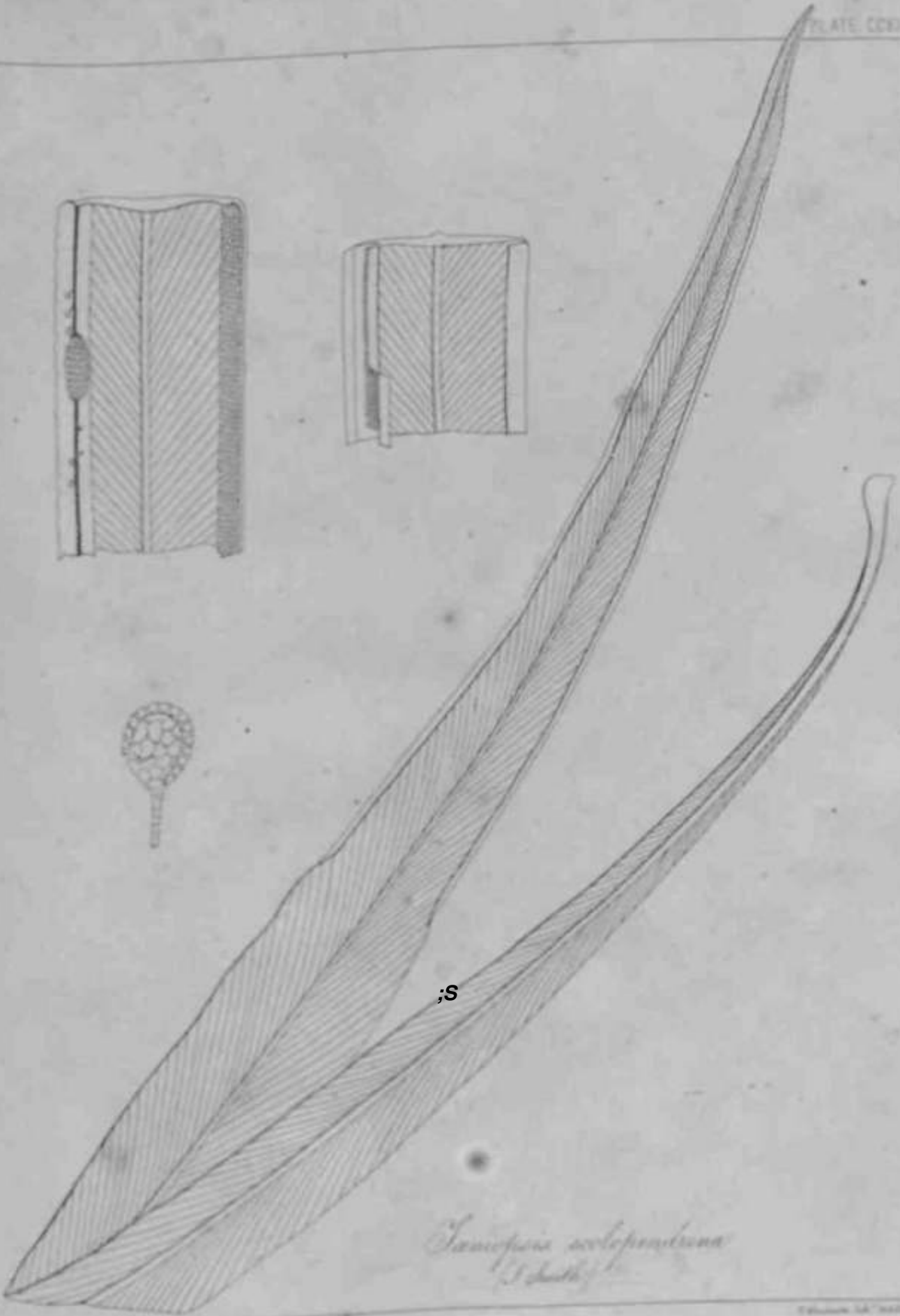
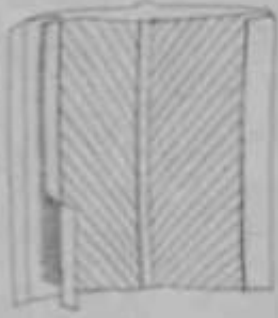
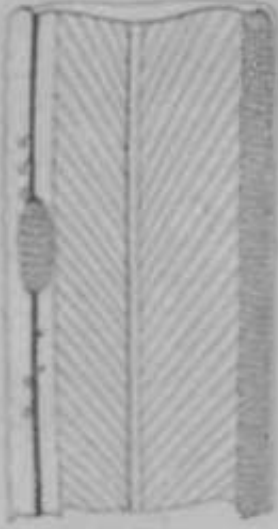


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Monogramma Singhaniae
(Hook.)

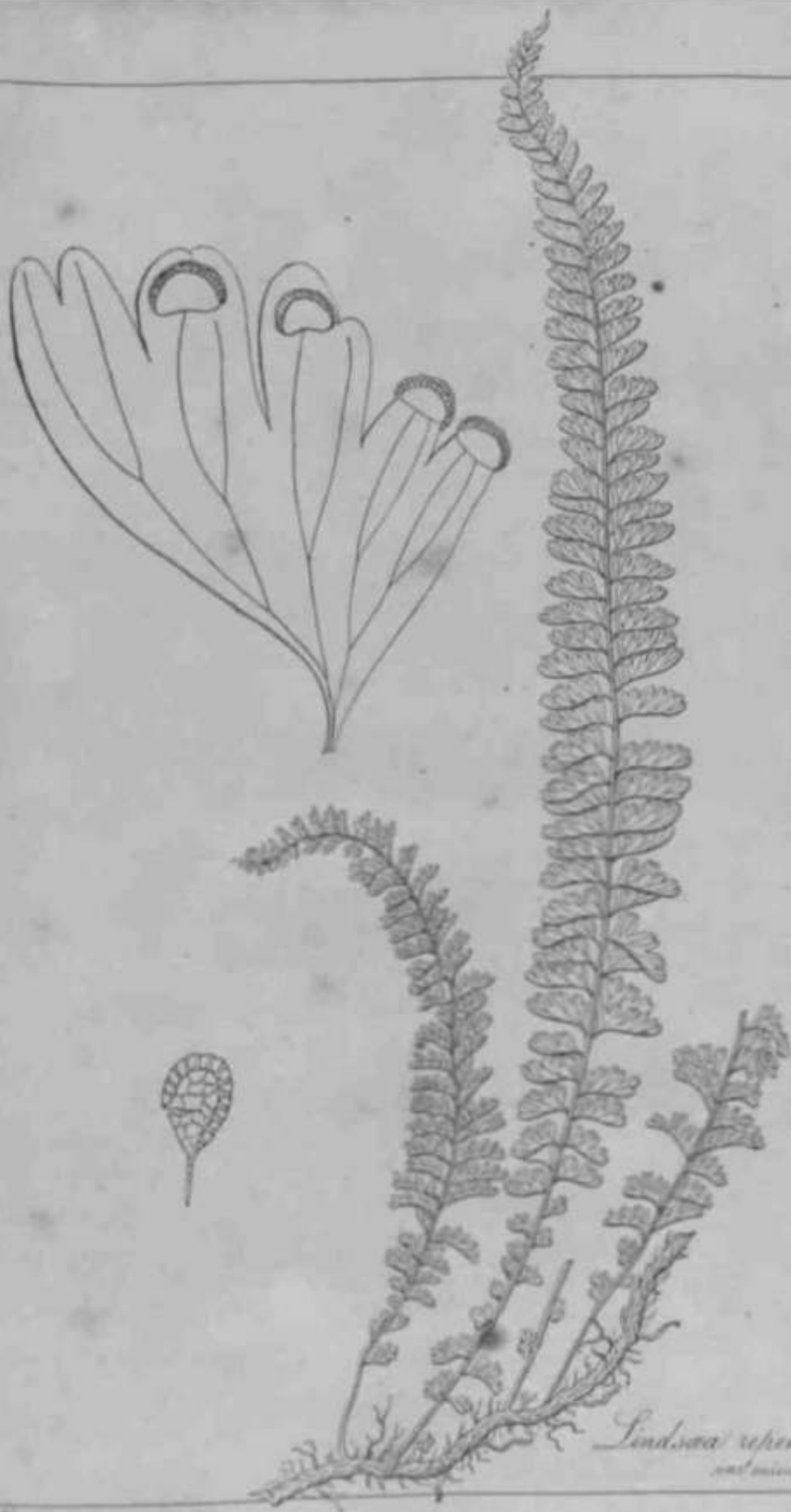


Gymnosphaera Fici
var. *pinatifida* (Moore)



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Tamiaspis scolopendrina
Schubert



Lindsea rehens
and minor (Lindl.)



Lindera Walpolei
(Rubiaceae)

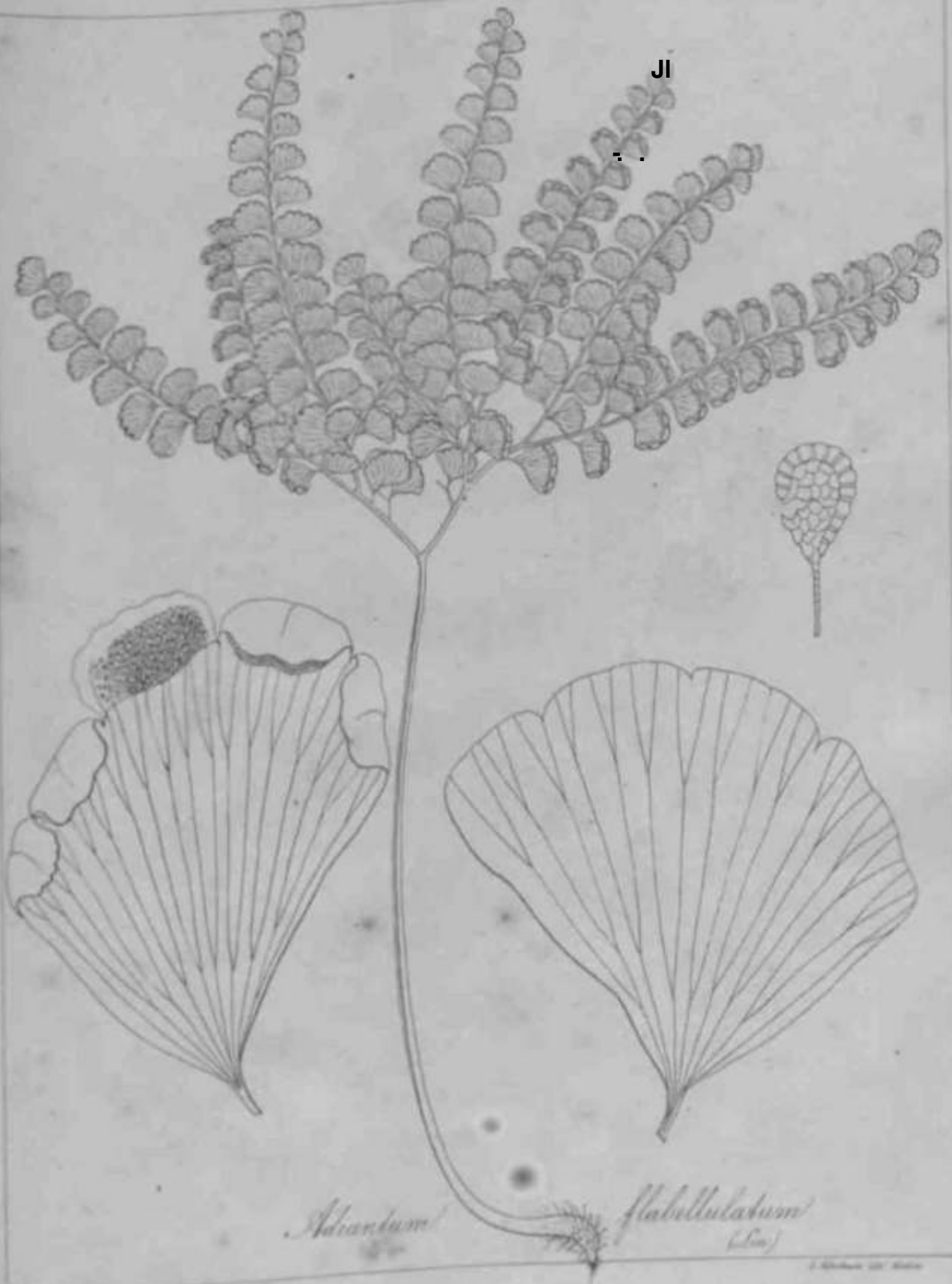


Lindsaea flabellulata
(Beyard)



Lindsaea caudata
(Lam.)

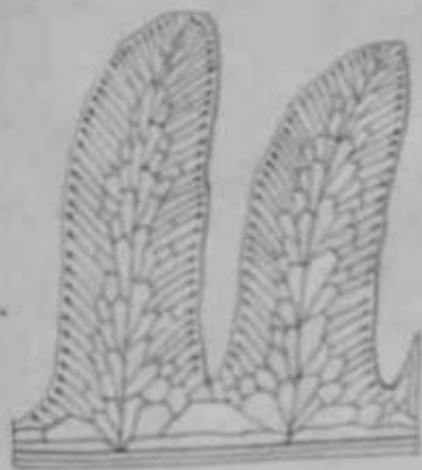
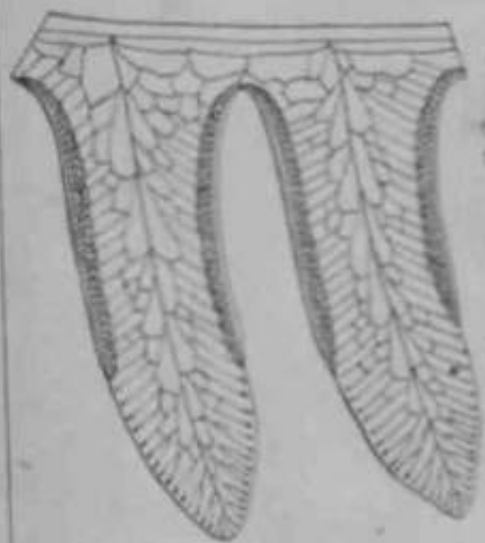
JI



Adiantum flabellulatum (L.)



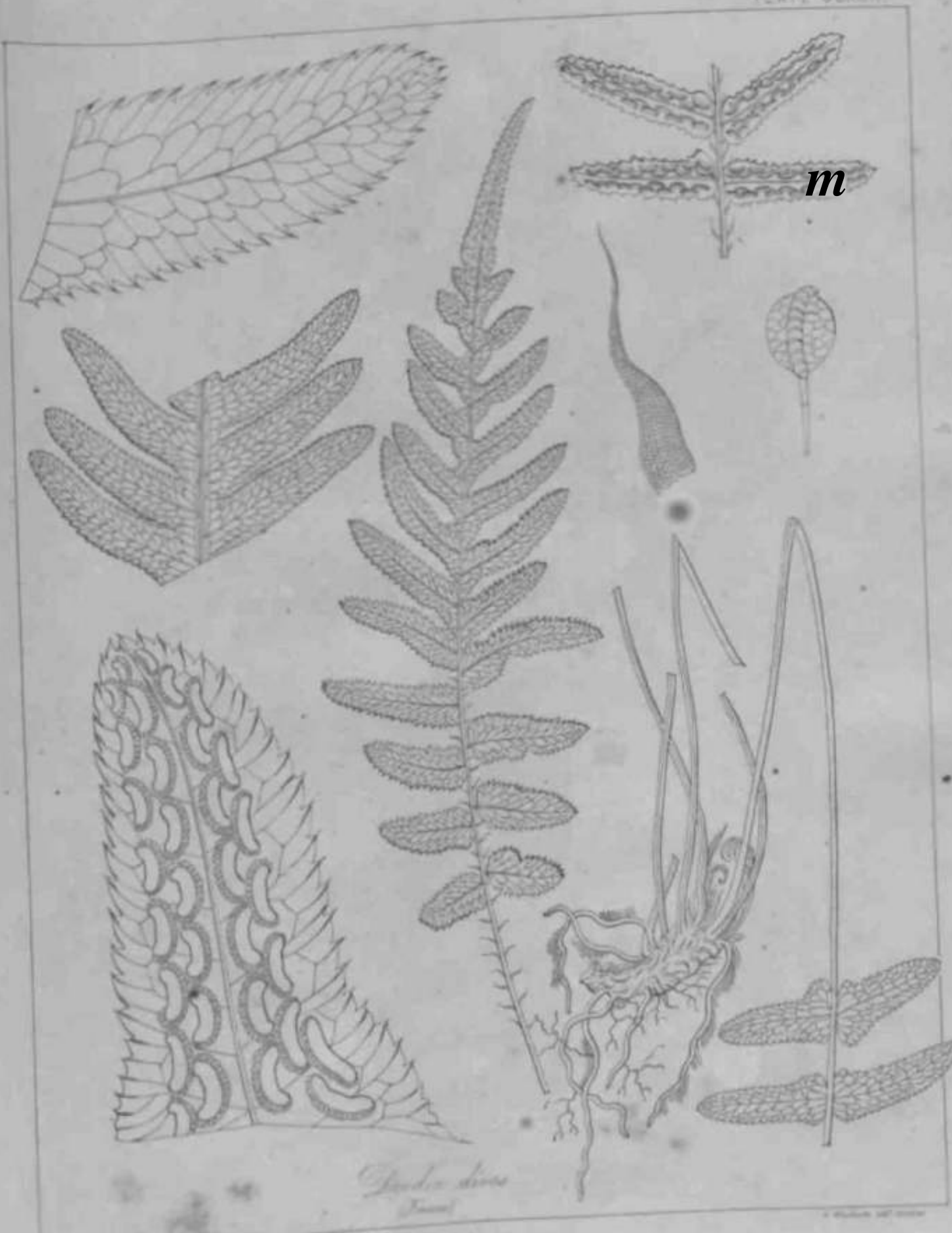
Pteris blanda
(L.) Link.



Tetobrochia tripartita
(L.)



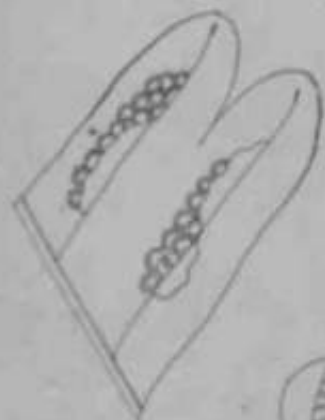
Litobrochia aurita
(Blume)



Lydia divisa
Frond



Meniscium Thwaitesii (Hook.)



Aplenium elongatum
L.

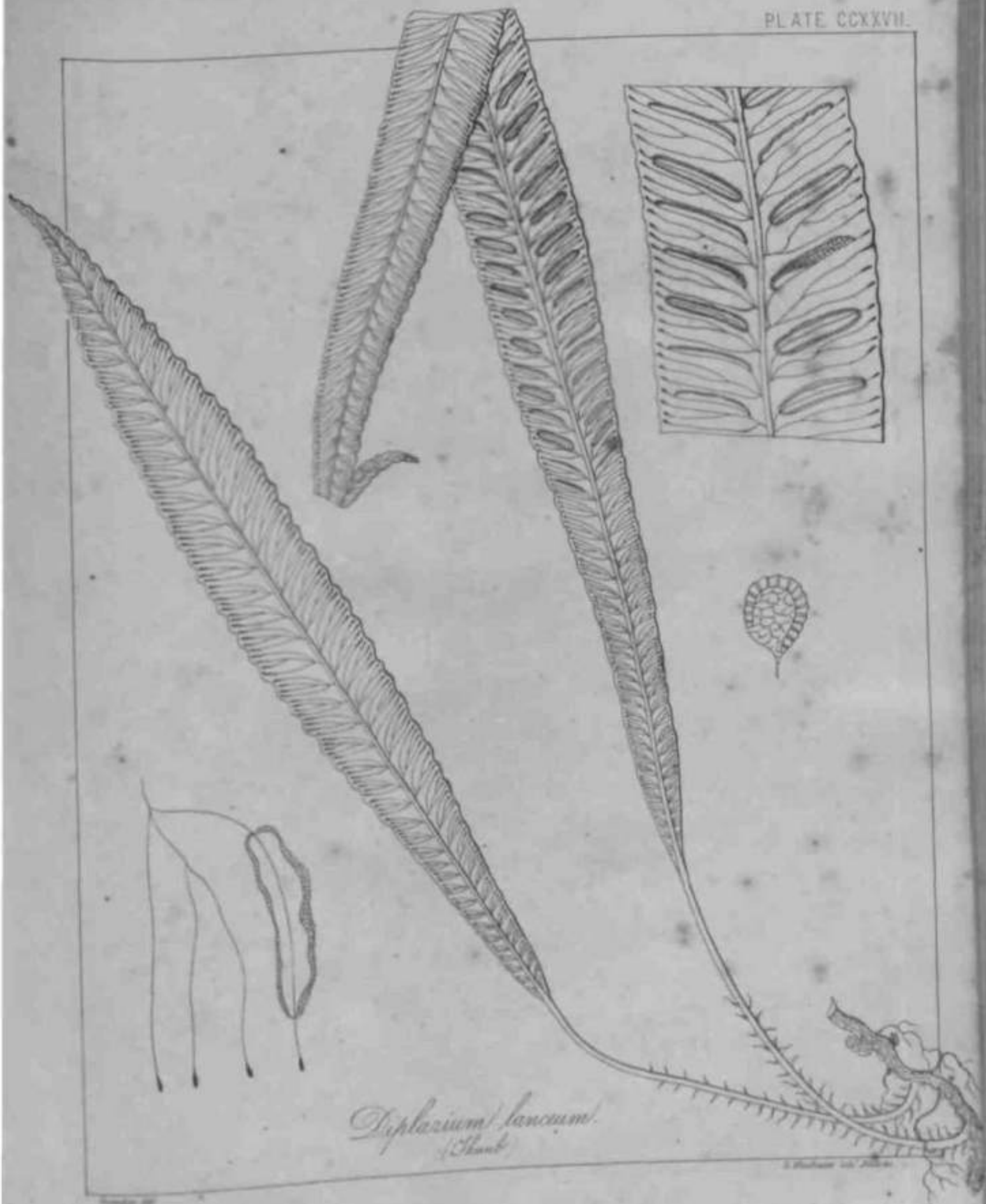


Asplenium laserpitifulum
(Lam.)

J. Smith del. H. G. & G.

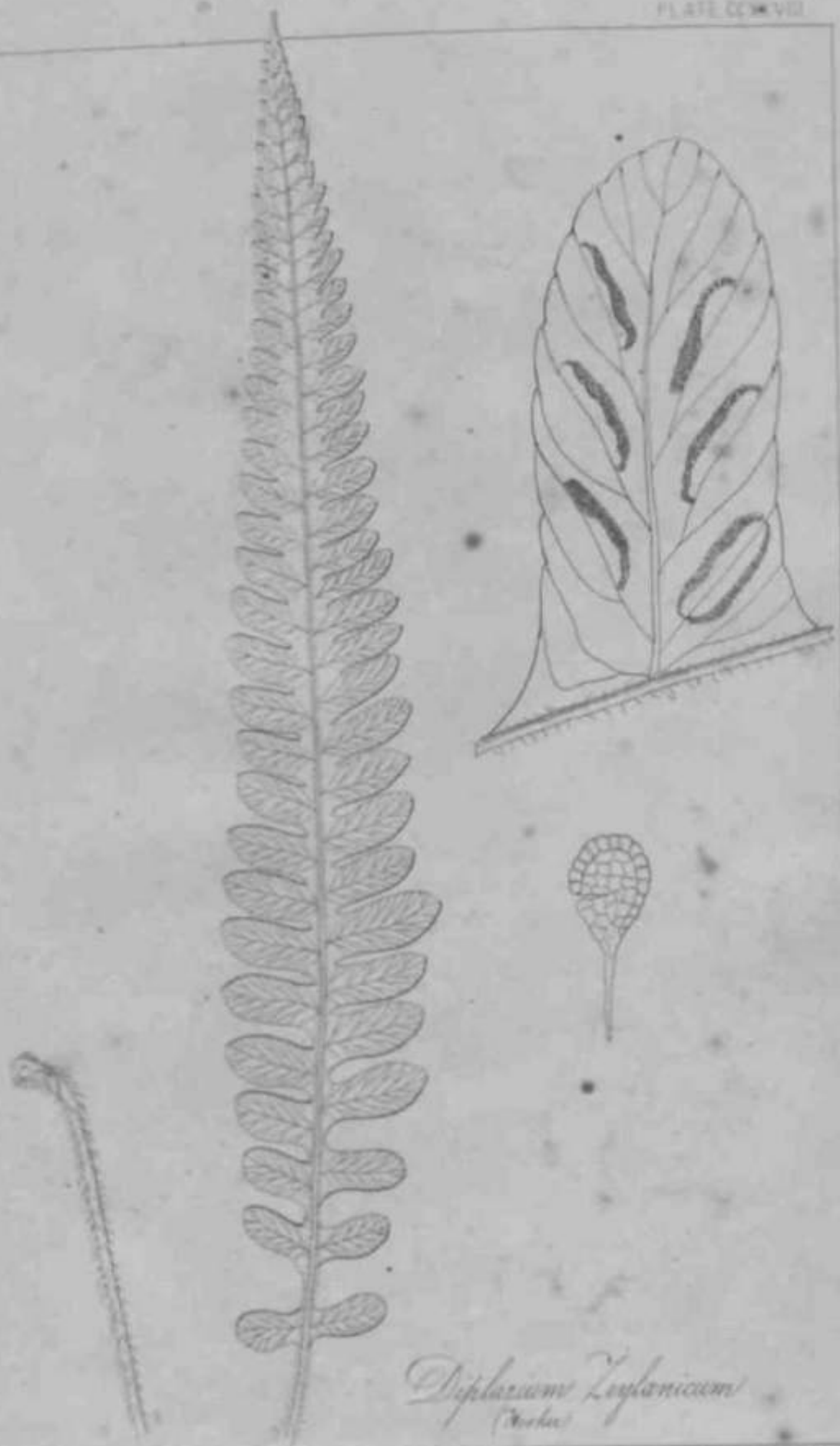


Asplenium spatulatum
(L.) Schreb.



Diplazium lancium
(Thunb.)

J. Richardson del. & J. Smith sculp.



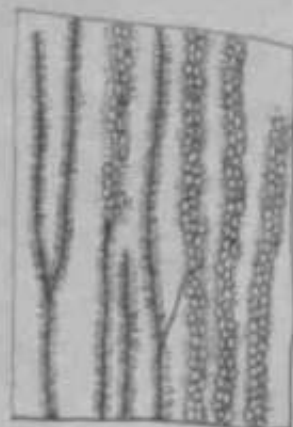
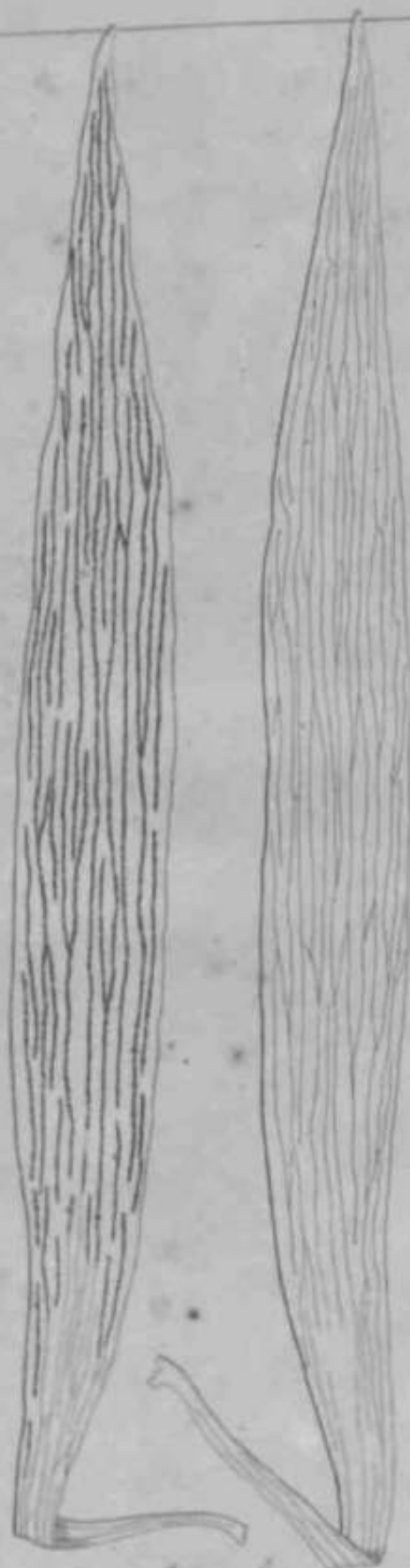
Diplazium Zeylanicum
(Asch.)



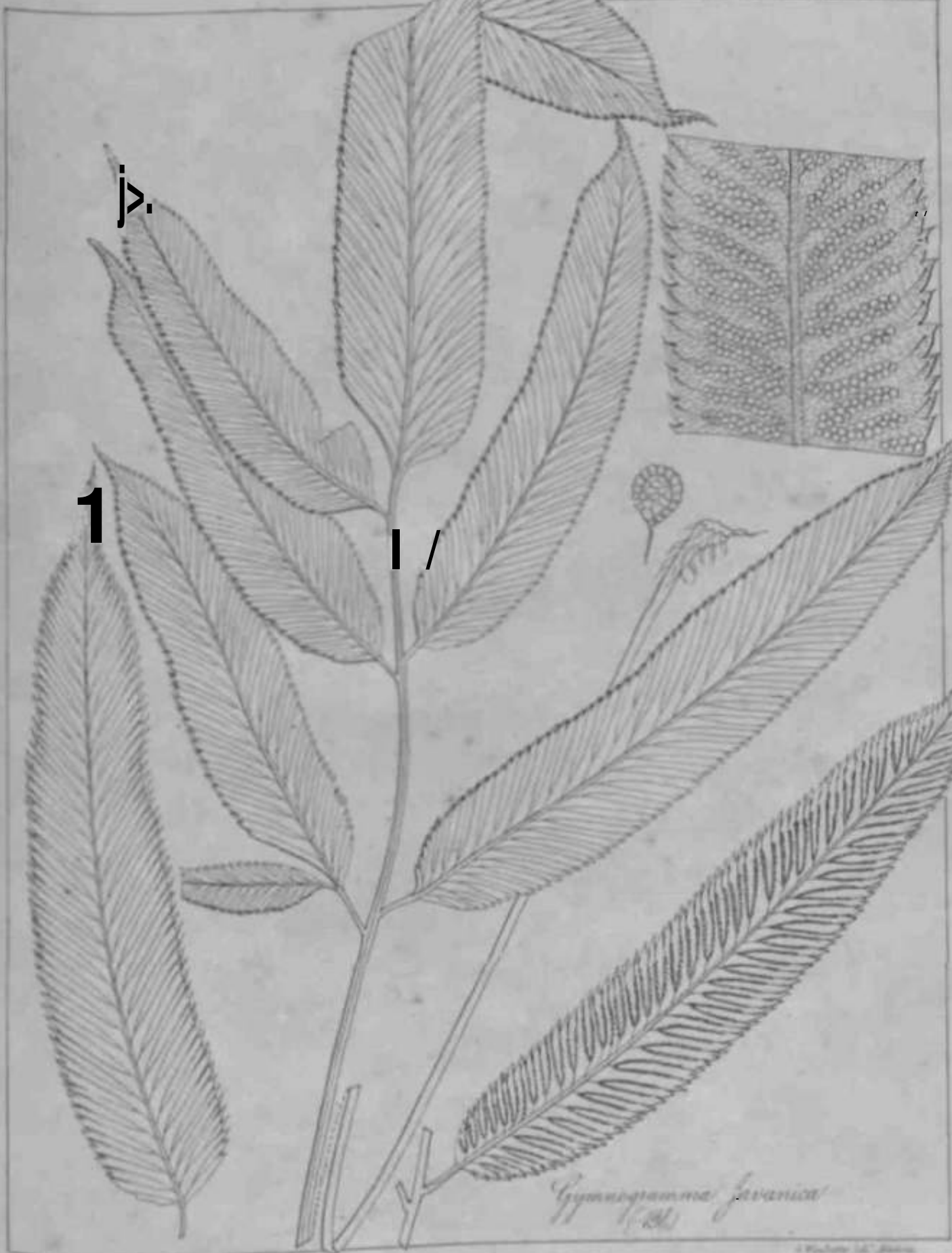
Diplazium decurrens
(Kuhnianum)



Diplazium Schubertii
Mitt.



Antrophyum reticulatum
(Rault)



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l /

Gymnogramma javanica
(Bl.)



Calymene natans
(Pach.)



P.



Polypodium Walkeri
(Zola)



Polypodium Walkeri
 Hook. & Grev. (Hall)

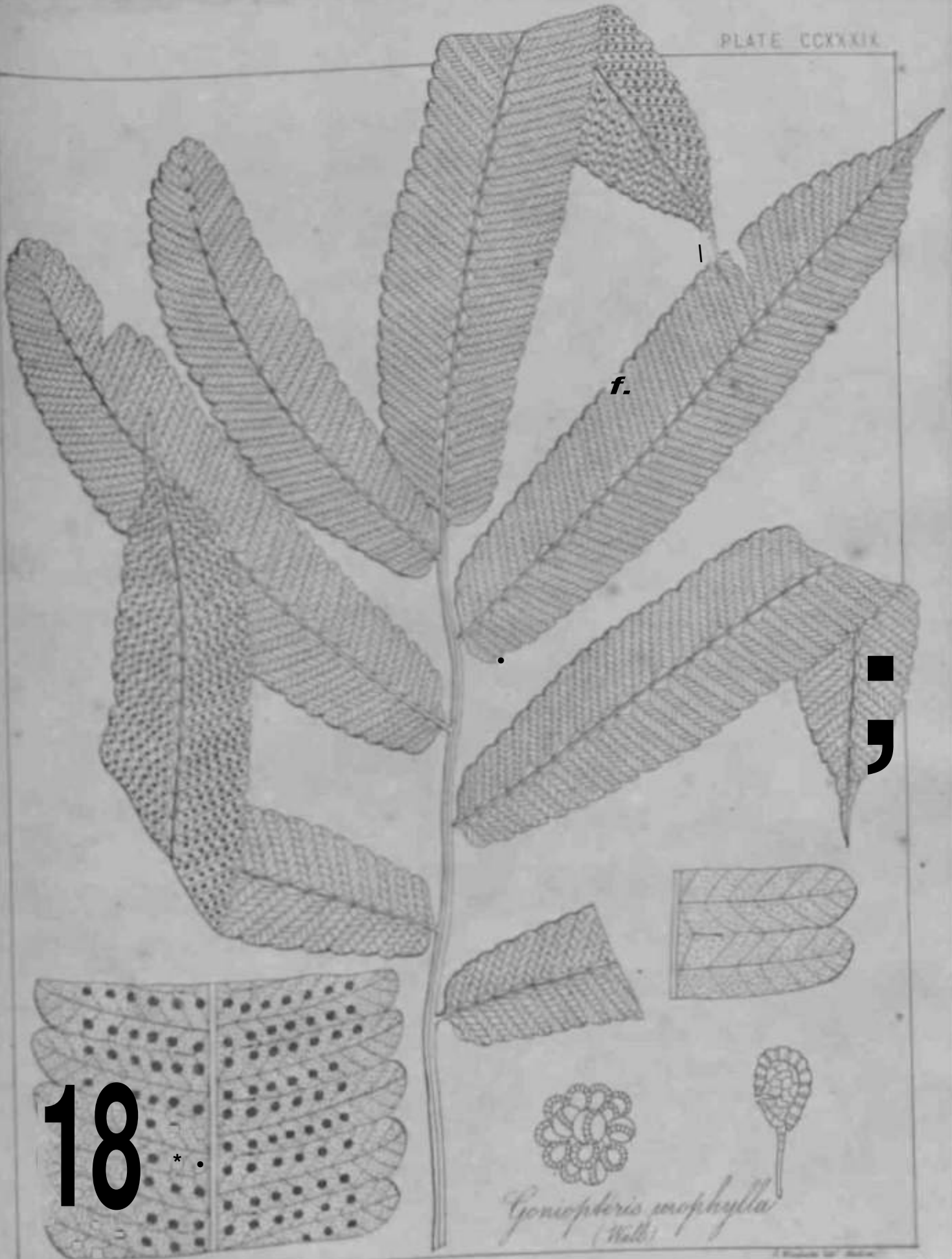


Polygodium rufescens
(L.) Presl



Polypodium Zeylanicum
(Mutter)



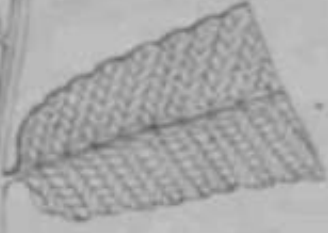
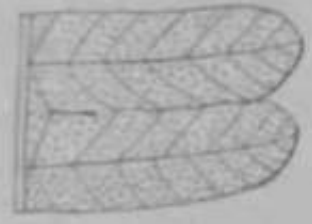


Goniopteris urophylla
(Wall.)

18

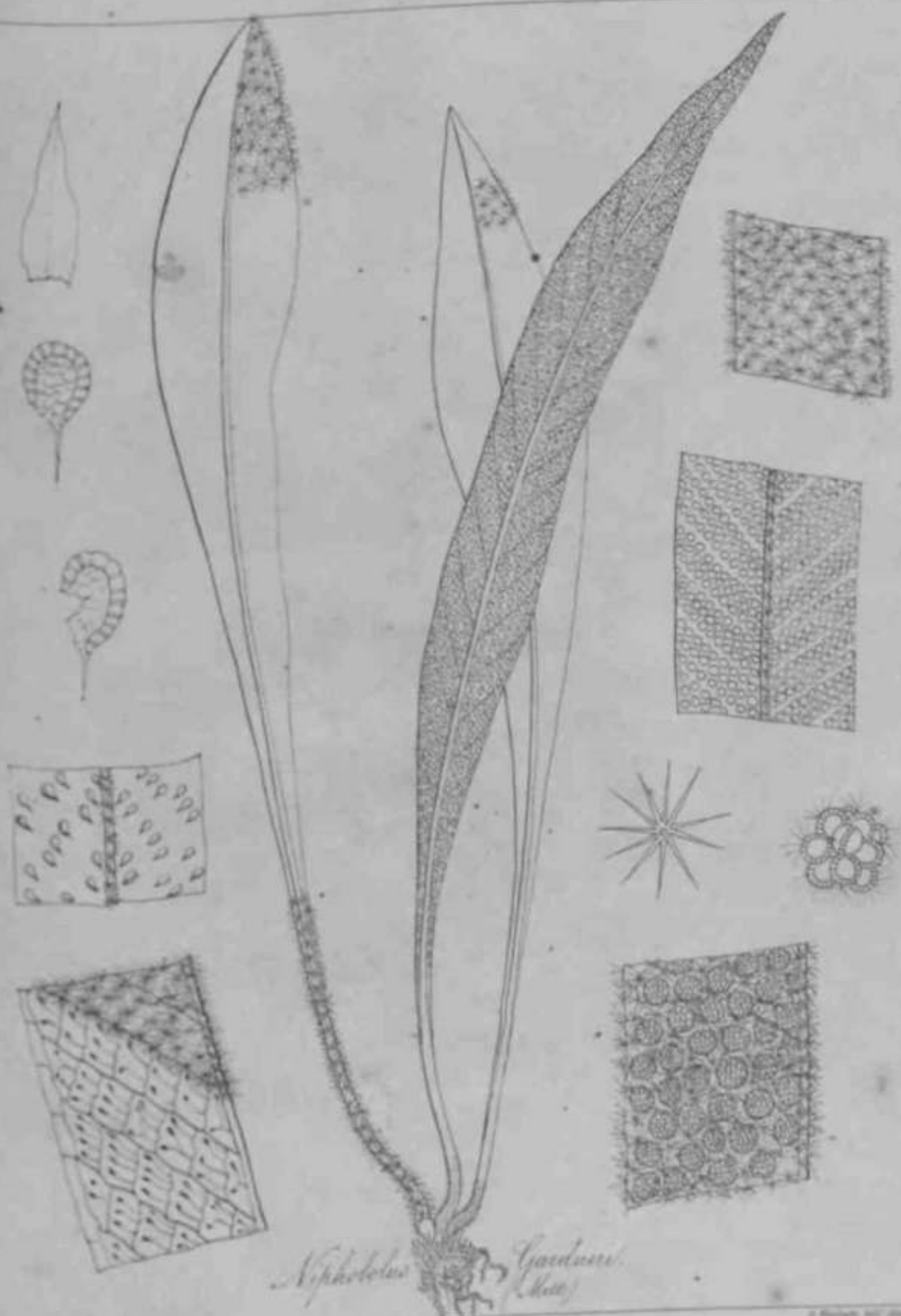
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Nipholobos Lingua
(L.)



Aporosa Gardneri
(Lam.)

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Sagaria subtriphylla
(Hook.)



Sagenia gigantea
var. *minor* (Bl.)

It;



Lycopodium Thwaitesii
C. Chr.



Lycopodium proopus minus
(Balme)



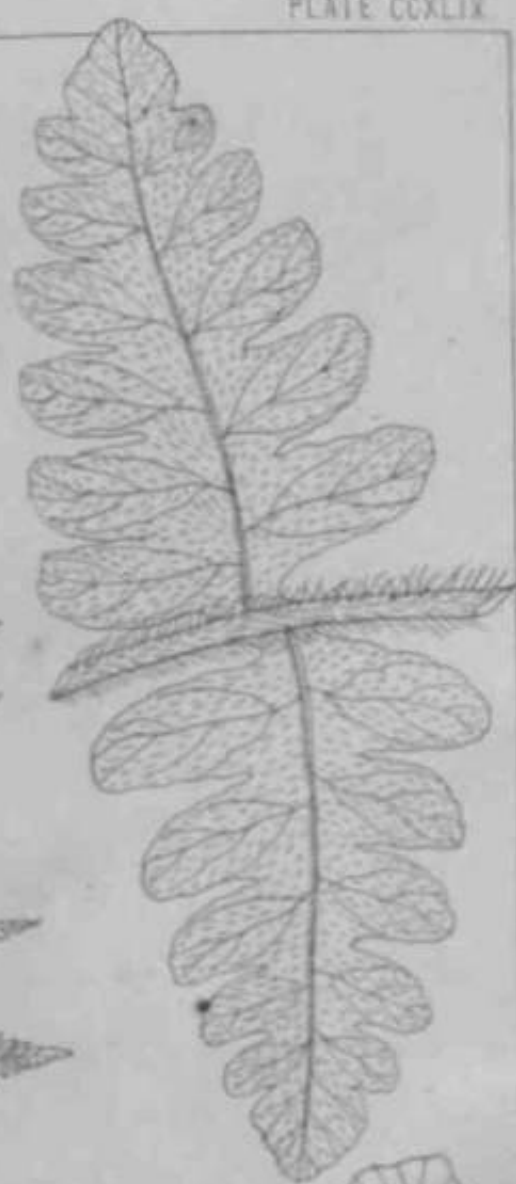
v

Lastuca concinna
(L.f.)

C. Moore del. R. Brown sculp.



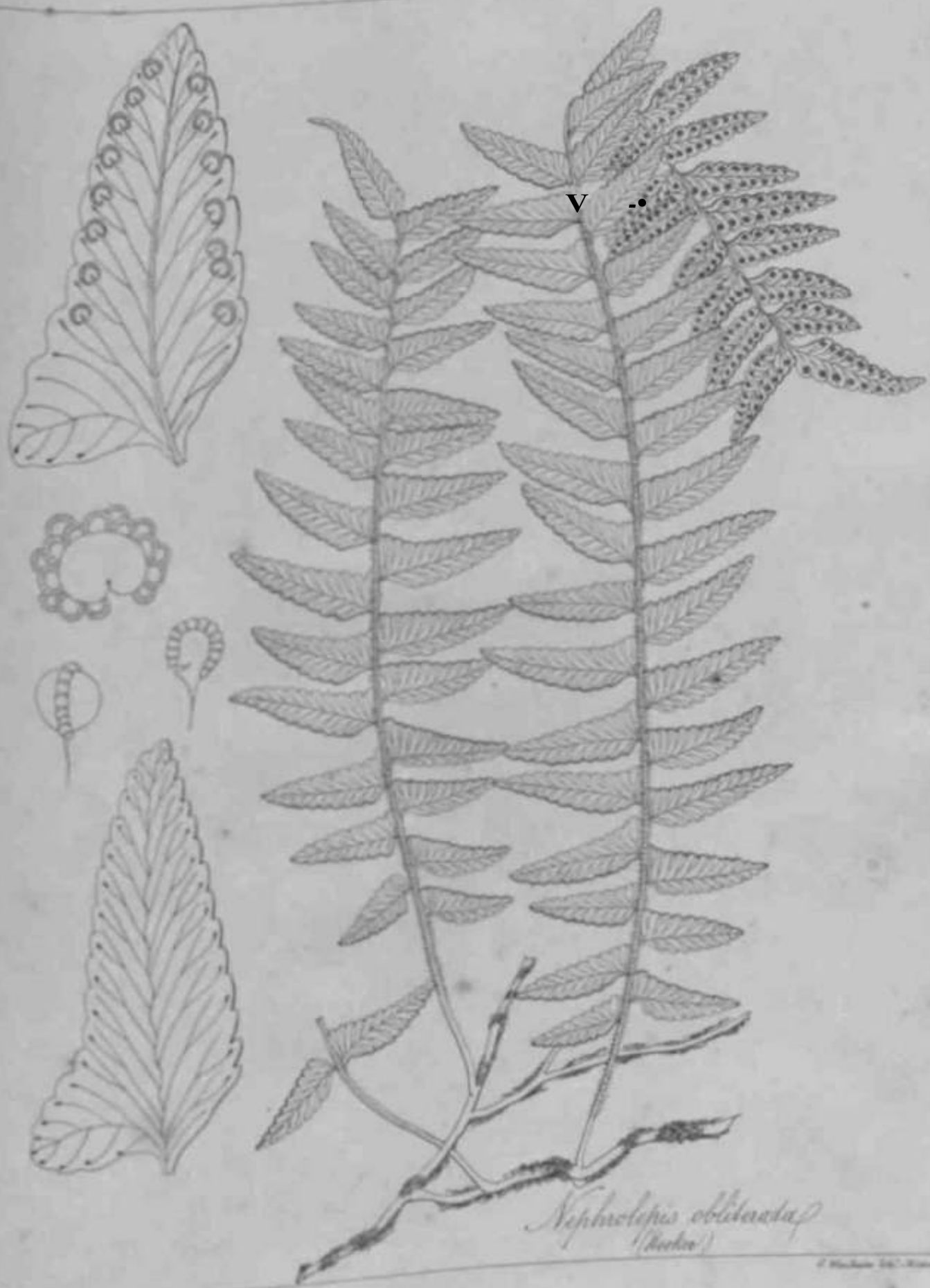
Lasioa deltoidea
(R. Br.)



Lastrea Plumii.
(Hook.)



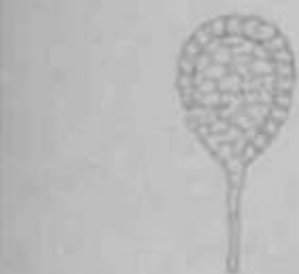
Lasiacis flaccida
(Hook.)



Nephrolepis oblita (Hooker)



Asophorus affinis.
(Zinn)



Humula scandens
(Blume)



Macropis / *praxinalis*
(Blume)



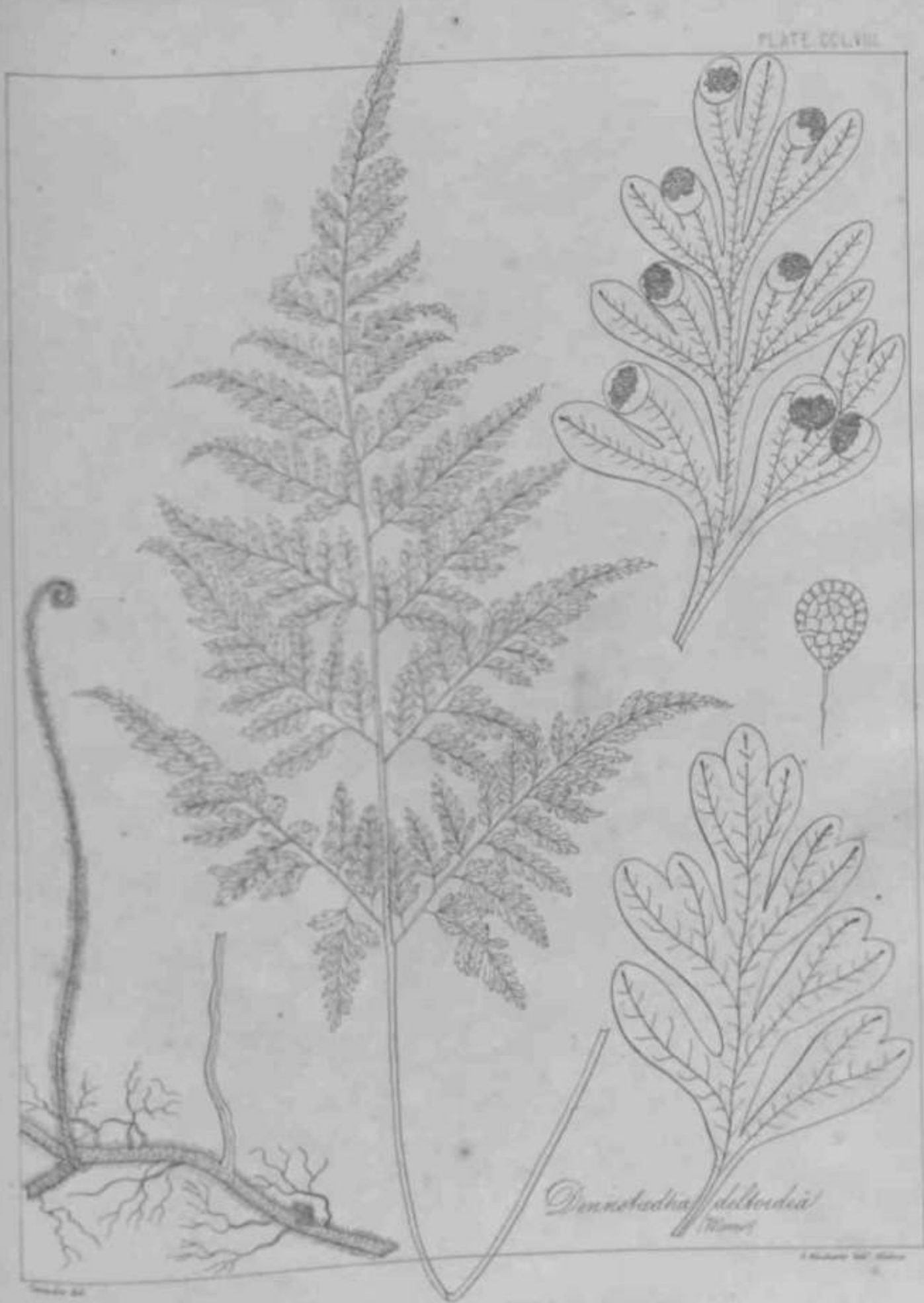
Adiantum strigosum
(Lam.)



Microlepia hirsuta
(Hook.)



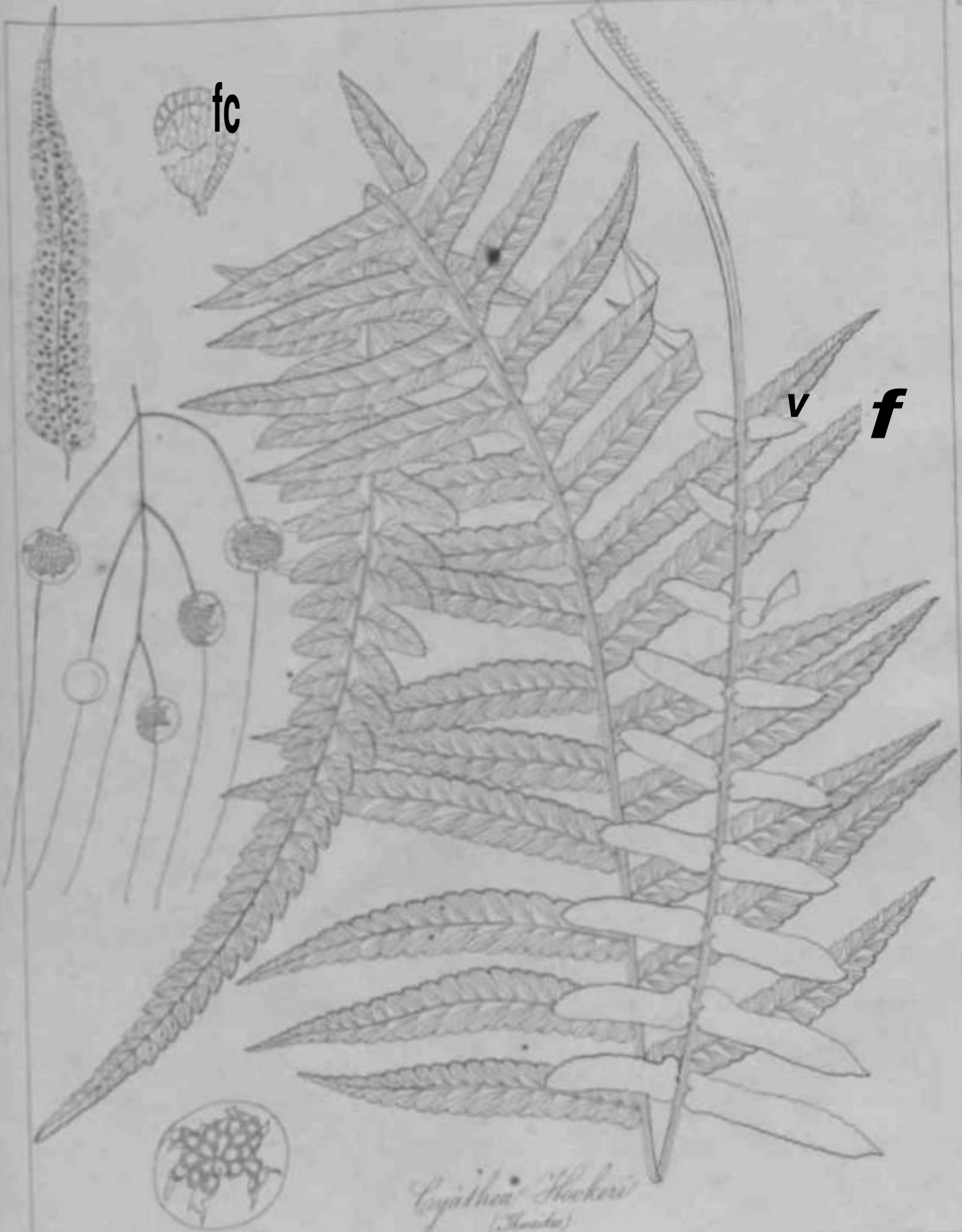
Diacalpis aspidioides
(Blume)



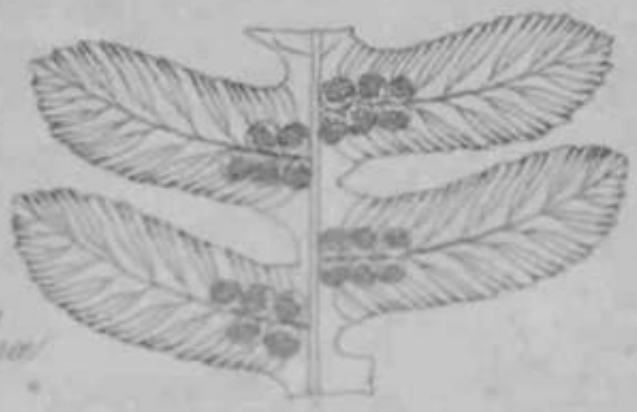
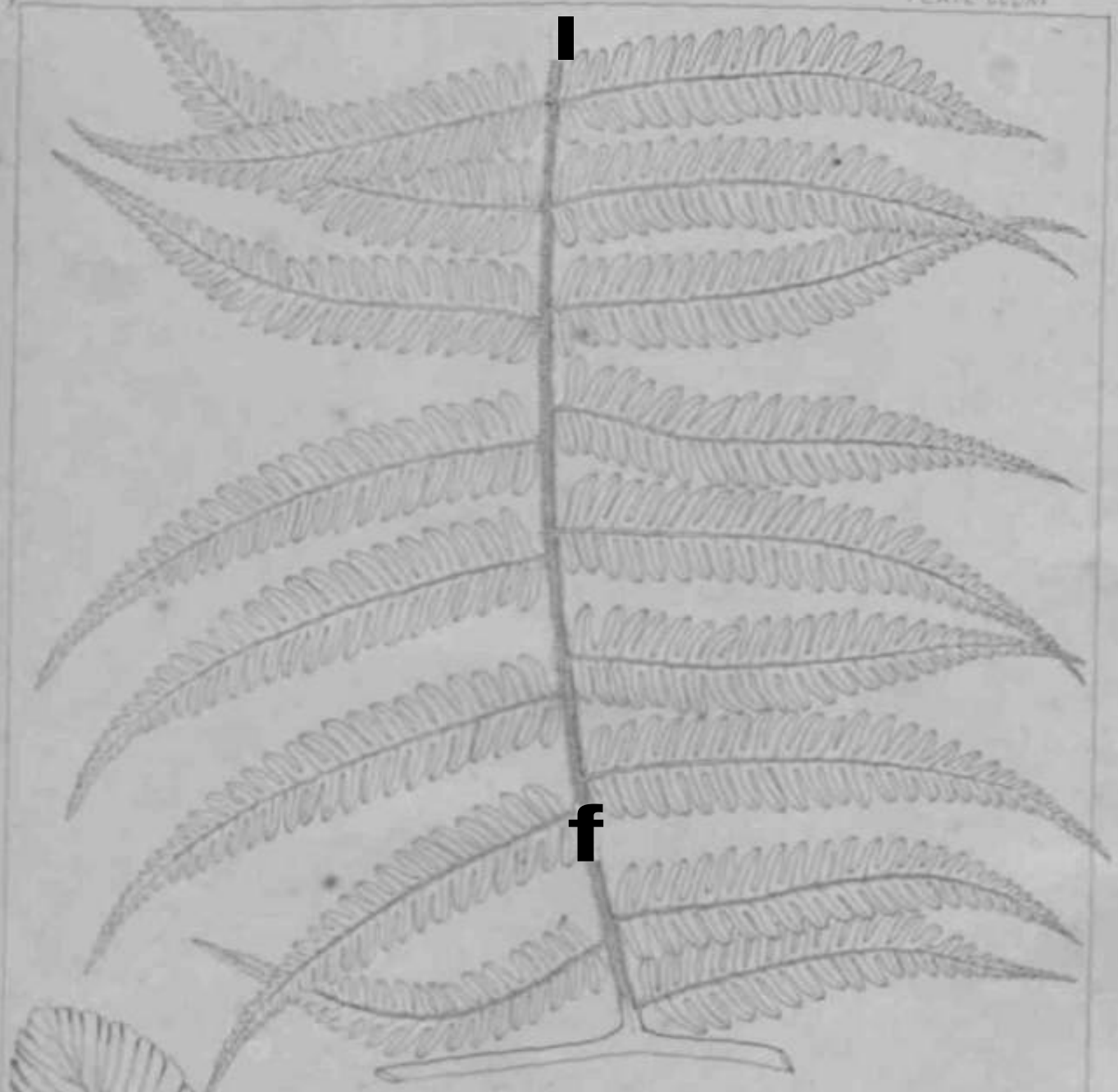
Dinnstedtia deltoidea
Munz



Cyathus acuminatus
(Corda)



Cyathia Hookeri
(Hooker)

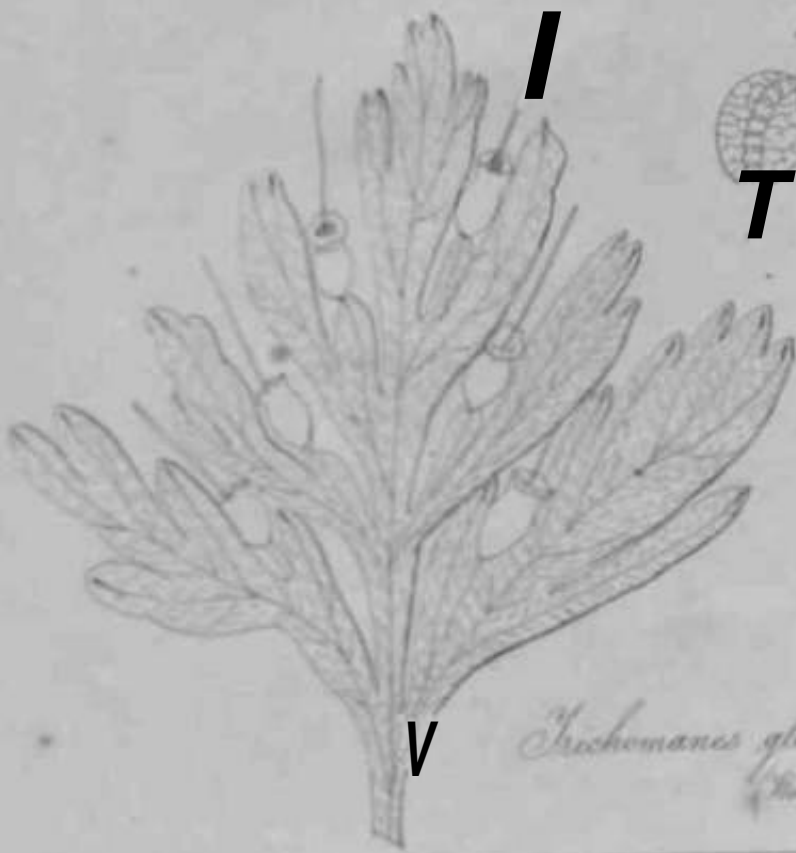


Cyathea Wilkesii
(Hook.)



f2v; f*-S2 & T

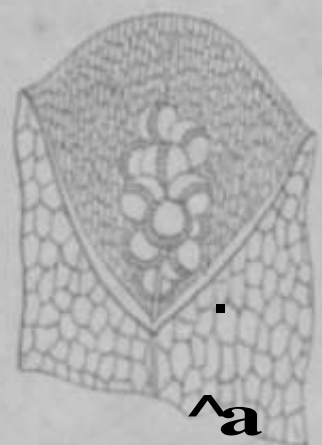
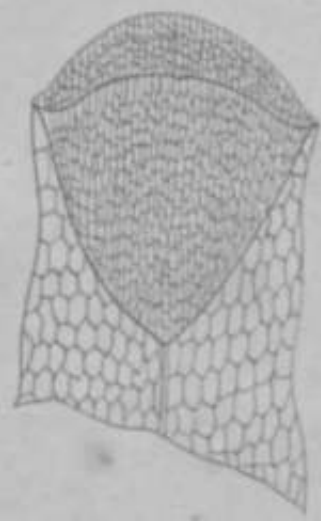
Trichomanes proliferum
(Blume)



Trichomanes glaucifolium
(Hook.)

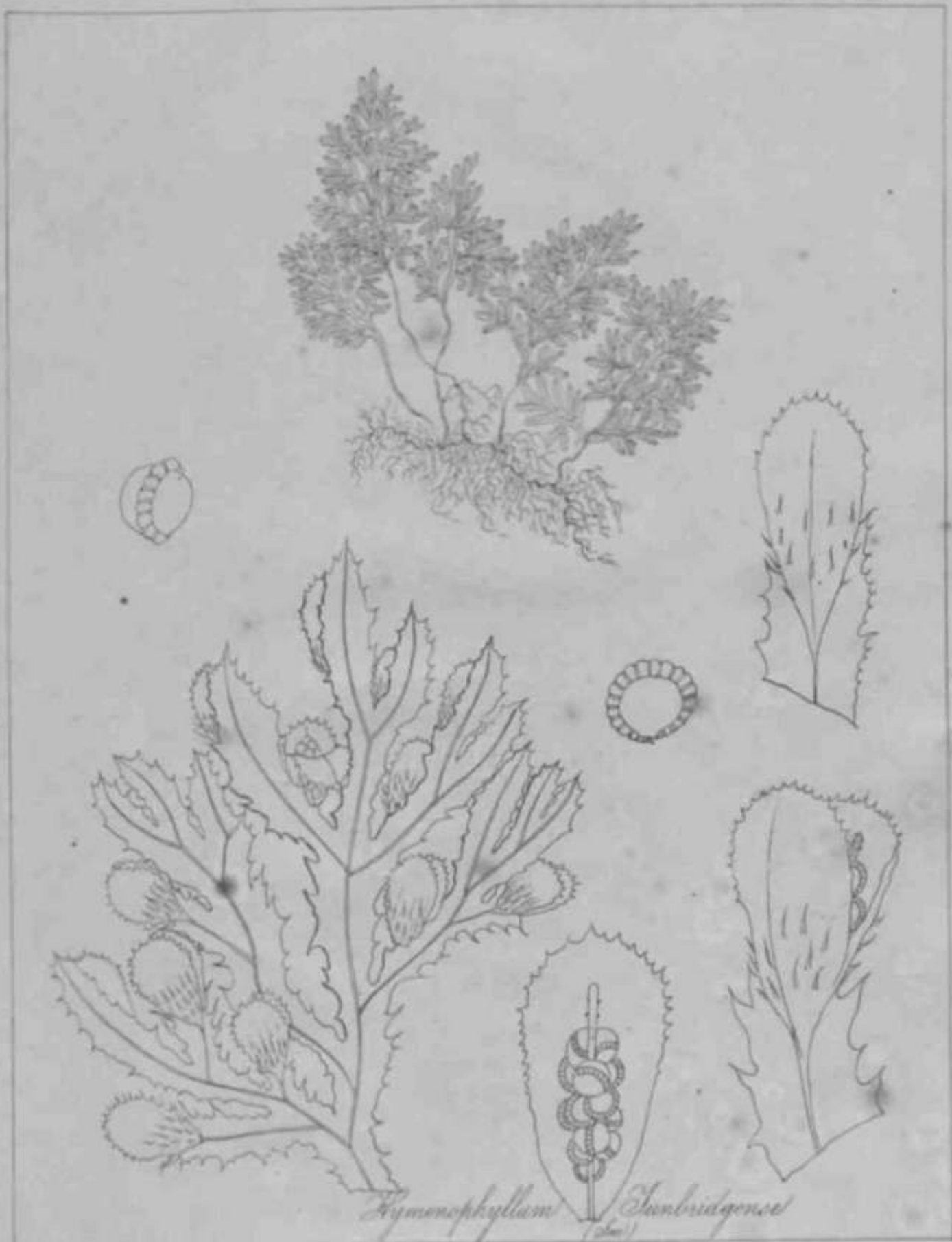


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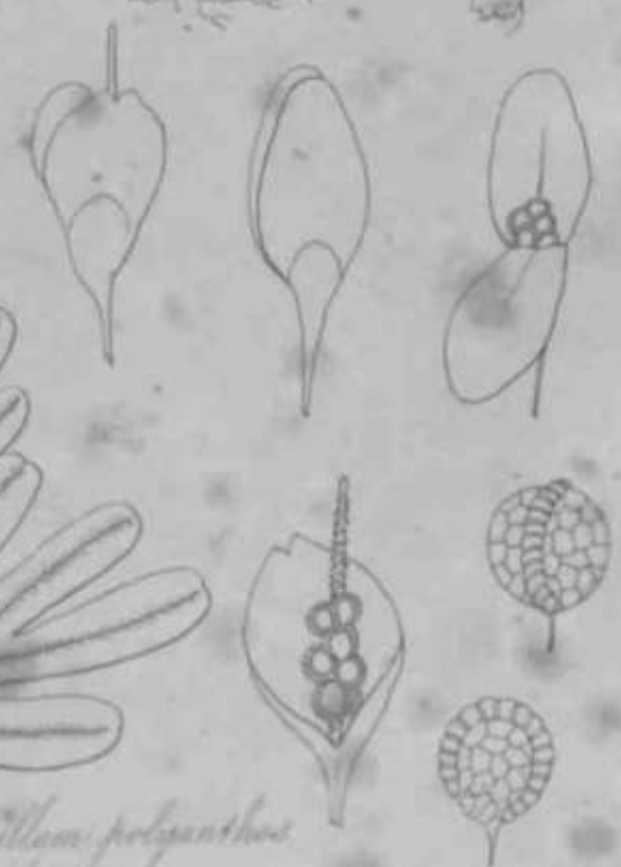
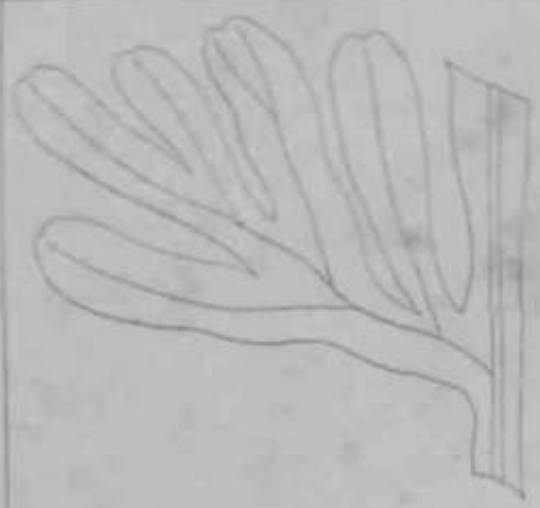
^a

Trichomanes corticola
(Hook.)





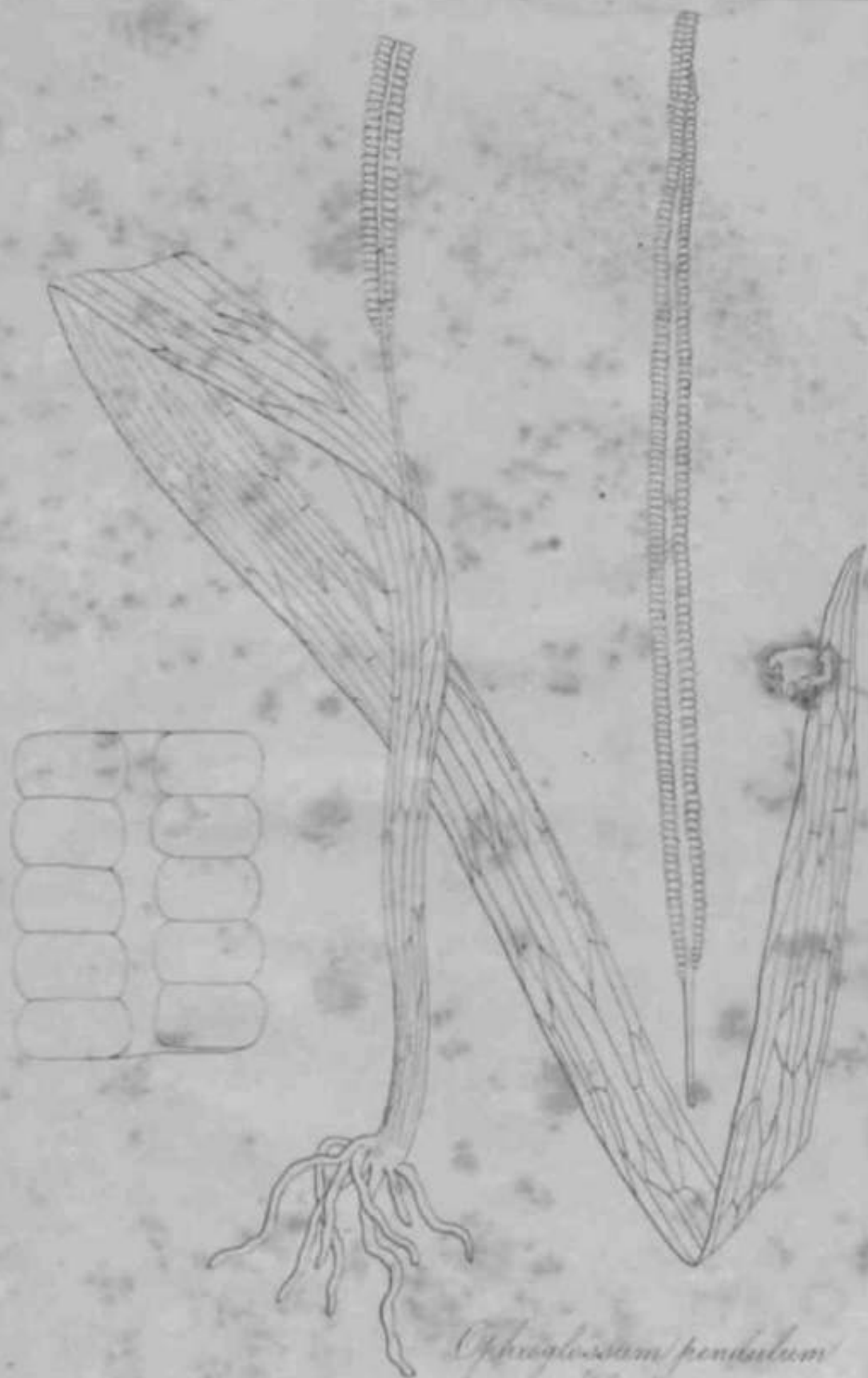
Hymenophyllum platanifolium
 (L.)



Hymenophyllum polyanthos
(L.)



Schizaea digitata
(L.)



Ophroglossum pendulum
(Lam.)



Gymnogramma leptophylla
(C. Chr.)



Lactuca nodulata
(Lamour.)

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