6. KEYS TO THE GENERA OF PTEROPSIDA

OPHIOGLOSSACEAE

1. Sporangia in two rows, embedded in an almost terete spike . . . . . **Ophioglossum**
1. Sporangia on branches of the fertile segment of a frond.
2. Fertile segment of frond compact, with many short branches; sterile segment tripartite, each part with few leaflets . . . . . **Helminthostachys**
2. Fertile segment of frond amply branched with spreading branches; sterile segment (in Malaysian species) pinnately branched with many small divisions . . . . . **Botrychium**

MARATTIACEAE

1. Sporangia in each group along the veins near margins of leaflets; veins free.
2. Sporangia in each group united laterally . . . . . **Marattia**
2. Sporangia in each group almost free.
3. Fronds bipinnate; sporangia in each group commonly 8–12, less often to 20 . **Angiopteris**
3. Fronds simply pinnate; sporangia in each group much more numerous . . **Macroglossum**
1. Sporangia in each group united laterally to form a small circle, the circular groups scattered over the surface; veins anastomosing . . . . . **Christensenia**

OSMUNDACEAE

1. Fertile pinnae quite different from sterile, lacking a green lamina; lamina of sterile pinnae not translucent . . . . . **Osmunda**
1. Fertile pinnae not different from sterile in shape; lamina very thin and translucent **Leptopteris**

SCHIZAEACEAE

1. Fronds of adult plant dichotomously branched or simple, the fertile lobes at the end of a frond or of its branches . . . . . **Schizaea**
1. Fronds of adult plants scandent (rachis twining) with very short primary rachis-branches bearing leafy secondary branches . . . . . **Lygodium**

GLEICHENIACEAE

1. Rhizome and resting apices of fronds bearing multicellular hairs which are branched near the base; veins always at least twice forked . . . . . **Dicranopteris**
1. Rhizome and resting apices of fronds bearing flat scales, rest of fronds usually also stellate hairs (one cell to each ray); veins simple or forked once . . . . . **Gleichenia**

HYMENOPHYLLACEAE*

1. Lips of indusium always well developed, broader and longer than the hollow basal part; receptacle usually much shorter than the lips of the indusium (an elongate receptacle in *Meringium* PRESL). **Hymenophyllum**
1. Indusium tubular or trumpet-shaped, sometimes with two-lipped mouth; receptacle usually elongating considerably and protruding from old sori . . . . . **Trichomanes**

MATONIACEAE

1. Fronds erect, branching pedate-dichotomous . . . . . **Matonia**
1. Fronds drooping, elongate, pinnately branched with apices of some branches dormant. **Phanerosorus**

CYATHAEACEAE

Note. Probably all species will be united in the genus *Cyathea* (see HOLTTUM, Kew Bulletin 1957, pp. 41–45).

POLYPODIACEAE

1. Rhizome bristly or hairy, stipes not jointed to it; terrestrial.
2. Fronds dimorphous; fertile fronds narrow, acrostichoid . . . . . **Cheiropleuria**
2. Fronds uniform; sori small and round . . . . . **Dipteris**
1. Rhizome scaly, stipes usually jointed to it; mostly epiphytes.
3. Young sori protected by umbrella-shaped paraphyses.
4. Sporangia acrostichoid on a constricted apical part of the frond . . . . . **Belvisia**
4. Sporangia in separate sori, or whole fertile frond narrow and acrostichoid.
5. Sori somewhat elongate, close to and parallel with edge of lamina . . . **Paragramma**

* For a much fuller subdivision of this family, see COPELAND, Genera Filicum (1947) pp. 31–44.

5. Sori otherwise.
6. Fronds small, fertile ones (or fertile parts) contracted . . . . . **Lemmaphyllum**
6. Fronds larger, not dimorphous . . . . . **Lepisorus** and **Neocheiropteris**
3. Young sori not so protected.
7. Fronds bearing stellate hairs.
8. Fronds simple, entire.
9. Sori continuous along margin of narrow fertile frond or between margin and midrib. **Drymoglossum**
9. Sori separate, round, variously distributed . . . . . **Pyrrosia**
8. Fronds branched dichotomously, sporangia acrostichoid on part of surface of fertile frond. **Platycerium**
7. Fronds not bearing stellate hairs.
10. Sori at the ends of free veins (veins conspicuous).
11. All veins free . . . . . **Thylacopteris**
11. Some veins anastomosing . . . . . **Goniophlebium**
10. Sori not at ends of free veins (veins often inconspicuous).
12. Veins anastomosing to form only one series of areoles along costae . . **Polypodiopsis**
12. Veins more copiously anastomosing.
13. Rhizome swollen and ant-inhabited.
14. Rhizome not scaly; sori on distinct small lobes . . . . . **Lecanopteris**
14. Rhizome copiously scaly; sori not on distinct lobes . . . . . **Myrmecophila**
13. Rhizome not ant-inhabited.
15. Fertile fronds (or fertile parts) acrostichoid, usually much reduced as compared with sterile.
16. Fronds pinnate or pinnatifid, lower pinnae or lobes always sterile.
17. Fronds pinnate, sterile pinnae jointed to rachis . . . . . **Photinopteris**
17. Fronds pinnatifid . . . . . **Merinthosorus**
16. Fertile fronds wholly fertile.
18. Fronds strongly trilobed . . . . . **Christiopteris**
18. Fronds simple.
19. Fronds thin, all veins visible.
20. Fronds c. 10 cm long; terrestrial . . . . . **Dendroglossa**
20. Fronds c. 30 cm long; rock-plants or epiphytes . . . . . **Leptochilus**
19. Fronds coriaceous, at most main veins visible.
21. Sterile fronds narrow . . . . . **Oleandropsis**
21. Sterile fronds circular to broadly lanceolate.
22. Sterile fronds circular . . . . . **Pycnoloma**
22. Sterile fronds longer than wide, apex acute . . . . . **Grammatopteridium**
15. Fertile fronds (or fertile parts) not acrostichoid.
23. Fronds pinnate or pinnatifid, pinnae or segments jointed to rachis.
24. Separate short humus-collecting fronds present . . . . . **Drynaria**
24. Separate humus-collecting fronds lacking.
25. Bases of fronds broad, humus-collecting.
26. Fronds on special branches of rhizome . . . . . **Thayeria**
26. Fronds not on special branches . . . . . **Aglaomorpha**
25. Bases of fronds not humus-collecting.
27. Fronds dimorphous . . . . . **Holostachyum**
27. Fronds not dimorphous . . . . . **Arthromeris**
23. Fronds simple or pinnatifid, segments not jointed to rachis.
28. Separate humus-collecting fronds present . . . . . **Dendroconche**
28. Separate humus-collecting fronds lacking.
29. Sori elongate, oblique, parallel to main lateral veins.
30. Fronds thin, all veins visible . . . . . **Colysis**
30. Fronds fleshy or leathery, at most main veins visible.
31. Main lateral veins distinct; scales not clathrate . . . . . **Selliguea**
31. Main lateral veins not distinct; scales clathrate . . . . . **Loxogramme**
29. Sori otherwise.
32. Sori elongate, near margins of thin frond . . . . . **Diblemma**
32. Sori otherwise.
33. Fronds very narrow, not dimorphous; sori elongate, close to costa . **Holcosorus**
33. Fronds otherwise; sori round.
34. Fronds always coriaceous; edges usually notched; scales not clathrate. **Crypsinus**
34. Fronds not always coriaceous; edges not notched; scales clathrate **Microsorium**

GRAMMITIDACEAE

1. Fronds simple and entire or with somewhat undulate edges.
 2. Sori round or obliquely elliptical, separate . . . . . **Grammitis**
 2. Sori elongate parallel to costa and edge, or confluent near apex of frond.
  3. Sori in grooves between margin and costa.
   4. Fronds almost terete apart from widened apical fertile part . . . . . **Nematopteris**
   4. Fronds of about uniform width throughout . . . . . **Scleroglossum**
  3. Sori more or less confluent near apex, not in grooves . . . . . **Oreogrammitis**
1. Fronds pinnately lobed to bipinnately lobed.
 5. One vein (sometimes forked) and one sorus on each lamina-lobe.
  6. Fertile lobes flat.
   7. Sori superficial . . . . . **Xiphopteris**
   7. Sori deeply sunk in submarginal pockets . . . . . **Prosaptia**
  6. Fertile lobes partly reflexed, protecting the sori.
   8. Lobes thin, only basiscopic margin reflexed . . . . . **Calymmodon**
   8. Lobes coriaceous, both margins reflexed towards apex and enclosing the sorus **Acrosorus**
 5. Veins in lobes pinnately branched, each lobe with more than one sorus.
  9. Sori superficial, or sunk in cavities perpendicular to the surface . . . . . **Ctenopteris**
  9. Sori deeply sunk in submarginal pockets not perpendicular to the surface . . . **Prosaptia**

REMAINING GENERA OF FERNS

ADIANTUM Group

1. Water plants; sporangia borne singly and protected by reflexed edges of the lamina. **Ceratopteris**
1. Land plants; sporangia in sori or more or less acrostichoid.
 2. Rigid hairs or bristles on rhizome and bases of stipes.
  3. Fronds bipinnate, leaflets more or less lobed . . . . . **Cerosora**
  3. Fronds simple or simply pinnate, or palmate with entire leaflets.
   4. Veins anastomosing only near edge of lamina; fronds simple or palmate; paraphyses (if present) with distinctive apical cell . . . . . **Syngramma**
   4. Veins anastomosing throughout lamina; fronds pinnate, trilobed or simple; paraphyses always abundant, hair-like, of many cells, apical one not different from the rest.
    5. Sori broad, elongate, parallel to costa and edge, or more or less spreading along the veins. **Taenitis**
    5. Sori in submarginal grooves, edges of grooves of equal thickness (*Schizoloma sensu* COPEL.). **Schizolepton**
 2. Scales on rhizome and bases of stipes.
  6. Lower surface of fronds covered with white or yellow powder.
   7. Sori along whole length of veins on lower surface . . . . . **Pityrogramma**
   7. Sori at ends of veins, protected by reflexed lobes of margin . . . . . **Cheilanthes**
  6. Lower surface of fronds not covered with such powder.
   8. Sori elongate (continuous or broken) along margins of lamina and protected by reflexed margin.
    9. Fronds much dissected, the ultimate lamina-lobes small and connected by a narrow wing.
     10. Fertile lobes much broader than sterile, the whole of each margin bearing a broad thin reflexed indusium . . . . . **Onychium**
     10. Fertile lobes not much broader than sterile, reflexed margin not continuous along larger fertile lobes nor very broad . . . . . **Cheilanthes**
    9. Fronds, if much branched, having quite distinct leaflets not joined by a wing.
     11. Fronds simple and lobed, or deeply pinnatifid; sori quite continuous along edge **Doryopteris**
     11. Fronds branched with distinct stalked leaflets . . . . . **Pellaea**
   8. Sori otherwise.
    12. Sori elongate along all or most of the veins.
     13. Fronds simple . . . . . **Hemionitis**
     13. Fronds pinnate or bipinnate . . . . . **Coniogramme**
    12. Sori otherwise.
     14. Sori on lower surface, spreading a little along the veins . . . . . **Anogramma**
     14. Sori at ends of veins.
      15. Sori on surface of reflexed marginal flaps . . . . . **Adiantum**
      15. Sori at ends of veins, sometimes more or less protected by reflexed marginal flaps **Notholaena**

ASPLENIUM Group

1. Sori short, on one-veined ultimate segments of much-divided fronds . . . . **Loxoscaphe**
1. Sori distinctly elongate along the veins; segments of frond usually with more than one vein.

5. Pinnate or bipinnate, all pinnae and pinnules jointed at base (except on some bathyphylls).
6. Fronds of high-climbing part of plant simply pinnate (bathyphylls sometimes bipinnate); only two rows of fronds on rhizome (two meristeles in internodes) . . . . **Teratophyllum**
6. Fronds of high-climbing part of plant usually bipinnate; more than two rows of fronds on mature rhizome (more than two meristeles in internodes) . . . . . **Arthrobotrya**
5. Pinnate; terminal leaflet not jointed at base.
7. Fertile pinnae fully acrostichoid . . . . . **Lomariopsis**
7. Fertile pinnae bearing separate exindusiate sori on small lobes at ends of veins. **Thysanosoria**
4. Veins anastomosing . . . . . **Lomagramma**

NEPHROLEPIS Group

1. Fronds pinnate, pinnae jointed to rachis.
2. Stipes jointed to rhizome or to outgrowths from rhizome . . . . . **Arthropteris**
2. Stipes not jointed to rhizome . . . . . **Nephrolepis**
1. Fronds simple . . . . . **Oleandra**

PLAGIOGYRIA Group

Single genus . . . . . **Plagiogyria**

PTERIS Group

1. Sori marginal or submarginal, more or less elongate, protected by a reflexed indusium.
2. Rhizome scandent . . . . . **Lepidocaulon**
2. Rhizome not scandent.
3. Sorus along one edge of ultimate lobes of lamina . . . . . **Hemipteris**
3. Sorus along both edges of ultimate lobes.
4. Sori joining many veins, usually one sorus along each edge of a lobe of the lamina. **Pteris**
4. Sori short, often more than one on each edge of a lobe; fertile margin thickened **Schizostege**
1. Sori acrostichoid.
5. Stock stout, erect; veins reticulate throughout; only distal pinnae fertile . . **Acrostichum**
5. Rhizome slender, long-creeping or climbing; veins forming one series of narrow areoles by costa (seen near apex of leaflet); fertile fronds normally wholly fertile . . . . **Stenochlaena**

TECTARIA Group

1. A tooth present in each sinus between lobes of lamina, the tooth not in the plane of the lamina.
2. Vascular bundles in stipes numerous, not in a simple ring; veins more or less anastomosing.
3. Veins anastomosing in a single series of costal and costular areoles . . . . **Pleocnemia**
3. Veins more copiously anastomosing . . . . . **Arcypteris**
2. Vascular bundles in stipes in a simple ring; veins free . . . . . **Pteridrys**
1. No tooth present in sinuses between lobes of lamina.
4. Pinnae jointed to rachis . . . . . **Cyclopeltis**
4. Pinnae not jointed to rachis.
5. Fertile leaflets acrostichoid and very much contracted as compared with sterile ones.
6. Veins free; sterile frond much divided . . . . . **Psomiocarpa**
6. Veins anastomosing.
7. Fronds deltoid, the basal basiscopic lobe of basal pinnae largest . . . . **Stenosemia**
7. Fronds otherwise, basal basiscopic lobes of basal pinnae not largest.
8. Fronds small, trifoliate; apical leaflet largest, commonly 5 cm long . . . **Quercifilix**
8. Fronds larger and in most cases more divided.
9. Sterile fronds simple to deeply pinnatifid, not truly pinnate . . . . **Hemigramma**
9. Sterile fronds with at least one pair of free pinnae, usually several pairs **Heterogonium**
5. Fertile leaflets not acrostichoid.
10. Two vascular bundles in base of stipe, uniting upwards to form a single bundle; scales confined to swollen bases of stipes . . . . . **Hypodematium**
10. More than two vascular bundles throughout length of stipe; scales not so confined.
11. Veins free.
12. Basal basiscopic vein of a vein-group springing from the costule.
13. Indusia peltate . . . . . **Dryopolystichum**
13. Indusia reniform or absent.
14. Fronds usually much longer than wide; basiscopic margin of lamina-lobes not thickened. **Ctenitis**

14. Fronds usually about as long as wide; basiscopic margin of lamina-lobes thickened. **Lastreopsis**

12. Basal basiscopic vein of a vein-group springing directly from the costa.

15. Basal pinnae with basal basiscopic lobes longest . . . . . **Tectaria**

15. Basal pinnae with basal basiscopic lobes or pinnules shorter than middle ones. **Heterogonium**

11. Veins anastomosing.

16. Sori large, indusiate, terminal on a free vein, the receptacle elongate, fertile fronds narrow. **Luerssenia**

16. Sori various, indusiate or not, on free or netted veins; if indusiate, the receptacle not elongate, or fertile fronds not contracted as compared with sterile.

17. Basal pinnae deeply lobed, basal basiscopic lobe not largest; few free veins in areoles. **Heterogonium**

17. Basal pinnae lobed or not; if lobed, basal basiscopic lobe largest; many free veins in areoles. **Tectaria**

THELYPTERIS Group

1. Fronds bearing many buds on rachis . . . . . **Ampelopteris**

1. Fronds lacking buds.

2. Veins free (in some cases basal veins of adjacent groups just meet at the sinus). **Thelypteris**

2. Veins anastomosing.

3. Sori elongate along veins.

4. No indusia.

5. Venation as in Cyclosorus; veins from adjacent costules uniting to form a single excurrent vein. **Stegnogramma**

5. Venation irregularly anastomosing, often with additional enclosed areoles . . **Dictyocline**

4. Indusia present . . . . . **Sphaerostephanos**

3. Sori not elongate, or slightly so if without indusia (*Abacopteris* FÉE, *Haplodictyum* PRESL). **Cyclosorus**

VITTARIA Group

1. Frond very small, with one vein only; sorus near apex, along the vein . . **Monogramma**

1. Frond with lateral veins as well as a main vein.

2. Frond linear, sori one or more, on separate free branches, which run close to and parallel with main vein . . . . . **Vaginularia**

2. Fronds otherwise; veins anastomosing at least near the margin.

3. Sori linear, in marginal grooves or superficial and parallel to margin; veins forming one series of areoles, anastomosing only near the margin . . . . . **Vittaria**

3. Sori along veins, variously disposed; veins anastomosing copiously throughout the lamina. **Antrophyum**

MARSILEACEAE

Sole genus . . . . . **Marsilea**

SALVINIACEAE

1. Leaves less than 1 mm long, bilobed, with one lobe submerged . . . . . **Azolla**

1. Leaves at least 1 cm long, simple, floating with upper surface fully exposed . . . **Salvinia**