On Line Study Material (e-Content)

College — S.S. College, Jehanabad
Department — Botany
Subject — Pteridophyta
Topic — Classification of Pteridophyta
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Teacher's Name — Dr. S.S. Sharma
Class — B.Sc. Part-I
Bot. H & Biotech. S.

CLASSIFICATION OF PTERIDOPHYTA

Various types of classification of Pteridophytes have been given by various scientists. The main cause is the availability of rich fossil records of Pteridophytes together with archegonia and Telome theory.

On the basis of Telome theory, Eames (1936); Evans (1939), Takhtajan (1953), Reimers (1951 in Englers syllabus der Pflanzen familien) and Smith (1955) gave their classification. Pteridophyta was given the rank of — Division.

* A balanced classification given by Reimers (1951) is as follows :—

The division Pteridophyta was divided into 05 classes and 19 orders which are as follow —

Sl. No.	Class.		Orders.
1.	* Psilophytopsida	—	* 1. Psilophytales
2.	Psilotopsida	—	1. Psilotales.
3.	Lycopsida	—	* 1. Protolepidodendrales
			2. Lycopodiales
			* 3. Lepidodendrales
			4. Isoetales
			5. Selaginellales.

[* Any lycopod with legule will be heterosporous or we may say that any plant with heterospory will have Legule.]

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Sl. No.	Class	Orders.
4.	Sphenopsida —	* 1. Hyeniales
		* 2. Sphenophyllales
		* 3. Calamytales
		4. Equisetales
5.	Pteropsida —	
	Sub-class- a) Primofilices —	* 1. Cladoxylales
		* 2. Coenopteridales
	b) Eusporangiatae —	1. Marattiales
		2. Ophioglossales
	c) Osmundidae —	1. Osmundales
	d) Leptosporangiatae —	1. Filicales
		2. Marsileales
		3. Salviniales

Note — * Mark indicate Extict Groups.

* Bank (1968) divided Pteridophyta (Div.) into seven Sub-divisions. those are —

1. Rhyniophytina
2. Zosterophyllophytina
3. Trimerophytina
4. Psilophytina
5. Lycophytina
6. Sphenophytina
7. Pterophytina.

Bierhorst (1971); Taylor (1982); Stewart (1983); Mayon (1987) and Bold et. al. (1987)

have followed Bank's classification with minor alterations.

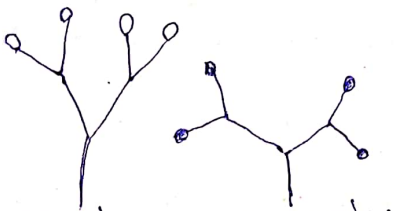
* Prof. B.D. Sharma of Jodhpur University has classified whole pteridophytes in 7 classes —

i) Rhiniopsida
ii) Zosterophyllopsida
iii) Trimerophytopsida
iv) Psilotopsida
v) Lycopsida
vi) Sphenopsida
vii) Pteropsida.

} Earlier these ~~four~~ three classes were kept under one class — Psilophytopsida.

* Characteristic features of the classes :—

(i) Rhiniopsida :- Sporangia are found on terminal dichotomy. 2 families - Rhyniaceae and cooksoniaceae. A/c to Edwards (1988) conducting tissues in Rhynia and cooksonia are not pteridophytic because they lack lignification.



Rhynia Cooksonia.

(ii) Zosterophyllopsida — Sporangia are lateral in position. It is a pteridophytic group with 2 families —

a) Zosterophyllaceae
b) Gosslingoferaceae

Lateral sporangi.

(iii) Trimerophytopsida :- Terminal bunches of sporangia are found. Typical haplostelic condition. Common genera are →

Fig. Terminal bunch of sporagia.

a) Trimerophyton

b) Psilophyton — It is treated as Progenitor of Progymnosperm.

class — (iv) Psilotopsida :— The common genera are — Psilotum and Tmesipteris. A/c to Bleshoots (1971) these are very near to the fern 'schizaeales' due to similarities in gametophytes.

class — (v) Lycopsida :— Presence of single sporangia in the axis of leaf is the characteristic feature of Lycopsida. This class is divided in to 5 orders. Such,

a) Protolepidodendrales — Plants are herbs & Homosporous.

b) Lepidodendrales — Heterosporous condition.

c) Lycopodiales — Plants homosporous, herbaceous, with microphyllous leaves. Ab. of sec. growth. Biflagellate sperms, Protostelic or siphonostelic (Phylloglossum). Single megaspore in megasporangia. Two living genera — Lycopodium and Phylloglossum.

d) Selaginellales — Single family Selaginellaceae with single genera — Selaginella. Microphyllous and ligulate leaves. Strobili distinct with heterosporous condition.

e) Isoetales :— Sporophyte corm like, leaves small & ligulate, Sec. growth present. Heterosporous condition. Megaspore is tritil spore (△) while microspores are monolit (○). The 2 living genera are — Isoetes & Stylites.

Class (vi) Sphenopsida :— Known from lower Devonian. Here, primary branch is monopodial while sec. branch is dichotomously branched. This class is divided into 5 orders —

a) Sphenophyllales

b) Hyeniales

c) Sphenophyllales — Sphenophyllum has largest tracheids in sec. wood. It is nearly 50 mm in size.

d) Calamitales ≠ Calamostachys — Heterosporous & homosporous are produced in same sporangia

e) Equisetales — This order is represented by only one living genera — Equisetum.

(vii) Class. Pteropsida — It was further divided into 03 subclasses and 11 orders. These are —

• Sub-class — a) Primofilicales — orders. 1. cladoxylales
2. Coenopteridales

b) Eusporangiate — orders - 1. Ophioglossales
2. Marattiales

c) Leptosporangiate — orde - 1. Osmundales
2. Gleichenales
3. schizaeales
4. Hymenophyllales
5. Cyatheales
6. Polypodiales
7. Hydropteridales.