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**CHAPTER : IV**  
**REVIEW OF**  
**LITERATURE**

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## Review

The anatomical researches carried on in India are summarised as follows :

### Schizaeaceae :

From this family following anatomical aspects were studied :

Saini, H.R. 1924 - The anatomy of the sporophyte and the development of the sporangium in Lygodium japonicum Sw.

Bhambie, S. and Madan, P. 1979 - Studied shoot apex organization in Lygodium flexuosum.

### Cyatheaceae :

From the family Cyatheaceae following anatomical aspects were studied :

Mehra and Singh, 1955 - Observations on the anatomy of Alsophilla glabra Hook.

Shah and Fotedar, 1974 - Sieve tube members in the stem of Cyathea gigantea.

Shah and Fotedar, 1975 - The phloem structure and development in Cyathea gigantea.

Davalliaceae :

From this family following anatomical aspects were studied :

Sahni, B. 1915 - The anatomy of Nephrolepis volubilis.

Sahni, B. 1916 - The vascular anatomy of the tubers of Nephrolepis.

Mahabale and d'Almeida 1953 - Studies on two species of Davallia.

Kachroo, P. 1955 - Morphology of Leucostegia immersa.

Kachroo, P. 1956 - Stellar structure in Leucostegia pallida.

Sen, T. and Sen, U. 1970 - A comparative study of the morphology and anatomy of Leucostegia and Araiostegia.

Sen, T.; Sen, U. and Holttum, R. 1972 - Morphology and anatomy of the genera Davallia, Araistegia and Davalloides.

Sen, U. and Sen, T. 1973 - Anatomical relationship between the Oleandra and Nephrolepis.

Aspleniaceae :

From the family Aspleniaceae the following anatomical aspects were studied :

Cheema, 1919 - The rhizome and frond of Goniopteris prolifera.

Bir 1957 - Stellar anatomy of Indian Aspleniaceae.

Bir 1969 - The stelar anatomy of Diplazium latifolium.

Bir 1969 - Role of anatomy in the taxonomy of asplenoid and athyrioid ferns.

Bir 1970 - Anatomical observations on some Indian members of asplenoid ferns.

Bir 1971 - Anatomy of some Himalayan species of Athyrium.

Bir 1975 - Anatomical observations on the Indian species of genus Diplazium.

Bir; Satija; Goyal and Jain 1980 - Stomatal studies in certain athyrioid ferns from India.

Chandra and Nayar B. 1975 - Vascular organization of the rhizome of spleenworts.

Blechnaceae :

From the family Blechnaceae, following anatomical aspects were studied :

Mehra and Chopra 1951 - The anatomy of Stenochlaena palustris.

Mehra and Soni 1975 - Length of tracheary elements in 110 species of ferns with remarks on their exceptional length in climbing stem of Stenochlaena palustris.

Kachroo 1955 - Anatomy of Blechnum orientale.

Fotedar and Shah 1975 - Phloem structure and development in Blechnum orientale.

Aspidiaceae :

From family Aspidiaceae following anatomical aspects were studied.

Khare, P. 1964 - On the morphology and anatomy of Tectaria cicutaria.

Chandra and Kaur 1976 - Contribution to the morphology of Tectaria : vascular organization of the rhizome.

Chandra 1977 - Epidermal studies in some species of Polystichum.

Khare 1978 - Epidermal structure and ontogeny of stomata in Dipteris wallichii.

Selaginellaceae :

From Selaginellaceae the following anatomical aspects were studied :

Bhora, Singh and Sharma 1980 - Ferns and fern allies of Rajasthan : On the occurrence of branched tracheids in Selaginella and Ophioglossum.

Majumdar 1931 - On the origin of a medullation of Selaginella sps. and the stelar theory.

Majumdar 1942 - On the origin of siphonostele in the species of Selaginella sps.

Mital, P.L. 1969 - Epidermal studies in the genus Selaginella.

Sinha 1929 - On the anatomy of certain Selaginella.

Equisetaceae :

From the family Equisetaceae - ex. Equisetum, the following anatomical aspects were studied.

Agashe, S.M. 1968 - Phloem studies in the Pteridophytes - Equisetum.

Bir 1978 - The anatomy of Equisetum diffusum tubers.

Bose 1931 - Golgi bodies in Equisetum.

Ghouse & Sabir 1973 - A simple technique to demonstrate three dimensional view of tracheary elements of Equisetum.

Pant and Kidwai 1968 - Development of stomata in Equisetum.

Saxena 1976 - Position of silica bands in stomata of E. ramosissimum.

Sen, T. and Sen, U. 1973 - Morphology and anatomy of Equisetum diffusum and E. ramosissimum.

Sharma and Bhora 1979 - On the vasculature of E. ramosissimum.

Trivedi and Kher 1973 - Abnormal stomata of Equisetum.

Ophioglossaceae :

From family Ophioglossaceae, on genus Ophioglossum, following anatomical aspects were studied.

Bhambie and Senger 1971 - Shoot apex organization in Ophioglossales.

Bohra; Singh and Sharma 1980 - Ferns and fern allies of Rajasthan : On the occurrence of branched tracheids in Ophioglossum.

Fotedar and Bir 1980 - Structure of phloem in two members of Ophioglossaceae from India.

Inamdar 1970 - Development of stomata in some Ophioglossum species.

Khandelwal and Goswami 1977 - Stomata in O.palmatum.

Madan and Bhambie 1979 - Tracheary elements in Ophioglossaceae.

Sen,U. 1968 - Morphology and anatomy of O.reticulatum.

Vasisht 1929 - The comparative anatomy of O.aitchisoni and O.vulgatum.

Yadav,B.L. and Bhardwaja,T.N. 1980 - Morphology and histochemistry of stomata of Ophioglossum.

#### Isoetaceae :

From this family following anatomical aspects were studied :

Bhambie 1957 - Studies in Pteridophytes : The shoot apex in Isoetes coromandelina.

Bhambie 1962 - Morphological and anatomical studies in Isoetes and other related genera.

Sharma and Bohra 1978 - Isoetes in Rajasthan, India - anatomy of rhizomorph of Isoetes coromandellina.

Sharma; Bohra and Singh 1980 - Transfusion cells in I. coromandelina.

Sharma, U. 1961 - further contribution to our knowledge of Isoetes sampathkumarani.

Venkatanathan, T.N. 1933 - Anatomical studies on I. coromandelina.

Gymnopteris :

Kaur, S. 1964 - Development of the stellar cylinder in the rhizome of Bolbitis and Egenolfia.

Mahabale and Biswas 1953 - Anatomy and prothallia of Gymnopteris quercifolia Bernh.

Pteridaceae :

From family Pteridaceae the following anatomical aspects of ferns were studied :

Mehra 1934 - The anatomy of rhizome of Pteris wallichiana.

Shah and Fotedar 1974 - Structure and development of phloem in the rachis of Pteris longifolia.

Nair and Das 1977 - Studies on the venation pattern in Pteris vittata. They have also described the venation in Adiantum incisum (1978).



Maheshwari, P. and Bhargava, H. 1935 - A solenostelic  
Lindsaya.

Gopal and Bhambie 1965 - A contribution to the anatomy  
of Actinopteris radiata (Sw.)

Sen, U. and Mittra, D. 1966 - The anatomy of Cystodium.

Chandra and Hashim 1974 - Epidermal studies in some  
species of Adiantum L.

Singh, R.; Bhora, D. and Sharma, B. 1978 - Vessels in  
the rhizome of Actinopteris radiata.

Purohit, S.N. and Sharma, B.D. 1980 - Vessel elements  
in rhizome of Adiantum incisum.

Polypodiaceae : From this family following anatomical  
aspects were studied :-

Cheema 1918 - The leaf trace in Polypodiaceae.

Sahni, B. and Pande, S.K. 1924 - On the anatomy of a  
xerophytic fern Niphobolus adnascens from the Malaya  
Peninsula.

Pande, S.K. 1935 - On the anatomy of a xerophytic fern  
Niphobolus adnascens from Malaya Peninsula.

Chandra, P. 1962 - Ontogeny of peltate paleae in the  
polypodiaceae.

Khare, P. 1965 - On the morphology and anatomy of two species of Lepisorus (J. Smith) Ching - L. thunburgianus (Kaulf.) Ching and L. excavatus (Bory) Ching.

Srivastava, P. 1967 - Morphological and anatomical studies on Lepisorus subrostratus; L. macrosphaerus and L. kashyapii.

Nayar, B.K. 1972 - Leaf anatomical studies of Polypodium species.

Paliwal, G.; Kakkar, L. and Jain, S. 1974 - Leaf anatomical studies of Polypodium.

Trikha, C. and Bir, S.S. 1977 - Leaf blade anatomy of certain Himalayan Polypodiaceous ferns.

Trikha, C. and Bir, S. 1977 - Stomatal patterns in certain Himalayan polypods.

Patel et al. 1975 - Structure and histochemistry of stomata and epidermal cells in five species of Polypodiaceae.

The epidermal structure and ontogeny of stomata in Dipteris has been studied by Khare 1978, 1979.

#### Water ferns :

From the water ferns following anatomical aspects were studied from the different ferns as :

- Majumdar, G.P. 1944 - Preliminary studies on the origin of shoot-borne roots on adult internodes of Marsilea quadrifoliata L.
- Puri and Garg, 1953 - A contribution to the anatomy of sporocarp of Marsilea minuta L.
- Mehra and Soni 1971 - Morphology of the tracheary elements in Marsilea and Pteridium.
- Bhardwaja and Bajpai 1977 - Vessels in rhizome of Marsilea.
- Loyal and Maheshwari 1977 - Sieve cells vs sieve tube members in Marsilea a re-evaluation.
- Loyal and Singh 1978 - A further investigation of the morphology of vessels in Marsilea.
- Mahabale, T.S. 1949 - The laticiferous system of Regnellidium diphyllum.
- Rao, A.N. 1973 - Giant stomata in Regnellidium diphyllum.
- Tewari, R.B. 1975 - Structure of vessels and tracheids of Regnellidium diphyllum.
- Trivedi and Upadhyaya 1980 - Epidermal studies on R. diphyllum.
- Loyal, D.S. and Grewal, H.K. 1967 - Some observations on the morphology and anatomy of Salvinia with particular references to S. auriculata and S. natans.

The review of work done indicate that very little work has been done on the detail anatomy of pinnae of different ferns growing in W.Ghats. So a research project was undertaken to study leaf anatomy of ferns growing in different habitat. The same forms the subject matter of the dissertation submitted.