Classification

Class - Filicopsida

Subclass - Marattidae

Order - Marattiales

Family - Marattiaceae

(1) Angiopteris evecta.(Forst.) Hoffman.

(Plate I : 1)

The spores are trilete, tetrahedral with circular amb, 24 x 15.5 μ in size. They show swelling on acetolysis. Exine 1.8 μ in thickness, with granulose ornamentation. Perine absent. Aperture crassimarginate. Length of aperture is 13.8 μ. A faint irregular perinous cover sticking to the spore surface.

Subclass - Osmundae

Order - Osmundales

Family - Osmundaceae

1) Osmunda regalis.Linn.

(Plate I : 2)

The spores are globose, trilete, tetrahedral with circular amb. Average size is 64.8 μ. Exine subverrucate, 3.6 μ in thickness. Perineless. Incospicuous trilete laesura having short arms.

Explanation of Plate-I :

(All photographs magnified 1100 x times.)

1) Angiopteris evecta
Slide No.9

2) Osmunda regalis
Slide No.3

3) Gleichenia linearis
Slide No.21.

4) Lygodium flexuosum
Slide No.1

5) Drynaria quercifolia
Slide No.30

PLATE - I

1

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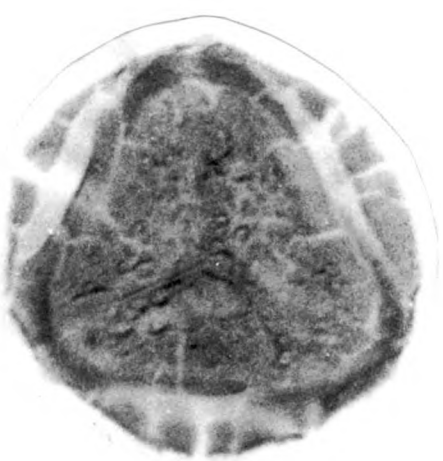

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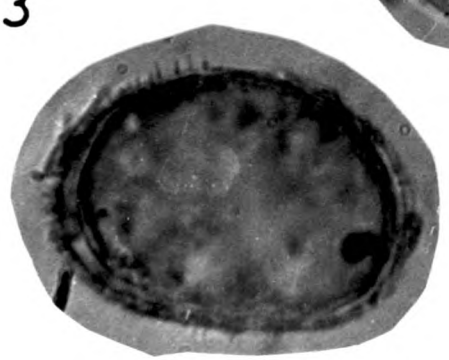

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Classification

Subclass - Filicidae

Order - Gleicheniales

Family - Gleichenlaceae

1) Gleichenia linearis.Burm.

= Dicranopteris dichotoma.Thumb.

= Gleichenia dichotoma.Willd.

(Plate I : 3)

Spores trilete, tetrahedral with triangular amb. Size of the spore is 36 μ. Perine absent. Exine smooth. Aperture tenuimarginate. Trilete arms reaching upto the boundary.

Order - Schizaeales

Family - Schizaeaceae

1) Lygodium flexuosum.(L.) Sw.

(Plate I : 4)

The spores are trilete tetrahedral with triangular amb, with convex sides and proximal side flattened, 111.6 to 117.6 μ in size. The corners rounded. Exine verrucose, 7.2 μ in thickness, Perineless. Aperture crassimarginate. The trilete arms reaching upto the boundary of spores. The proximal side is granulose to verrucate whereas the distal side bears large elongated tubercles. These tubercles are arranged transversely

so as to form an interrupted collar like ridge. This ridge seperates the proximal and distal halves of the spore.

Order - Polypodiales

Family - Polypodiaceae

1) Drynaria quercifolia.(Bory.) J. Sm.
(Plate I : 5)

The spores monolete, bilateral with circular amb. They show swelling on acetolysis. Perine absent. Spores 64.8 x 39.6 μ in size. Exine spinulose. The spines are aggregated in irregular patches with sparsely spinulose areas in between. The spinules are blunt. The aperture tenuimarginate, extending upto the margin.

2) Pyrrosia adnascens. Ching.
= Polypodium adnascens. Forst.
= Pyrrosia lingua. Farewell.
= Niphobolus adnascens. Kaulf.
(Plate II : 1)

The spores monolete, bilateral with circular amb, devoid of perine. Exine densely verrucate. The thickness of exine is 3.6 μ. Spores measuring 39.6 x 25.2 μ in size. Aperture tenuimarginate, 1.8 μ in length.

Explanation of Plate-II :

(All photographs magnified 1100 x times).

1) Pyrrosia adnascens

Slide No.33

2) Lepisorus nudus

Slide No.34

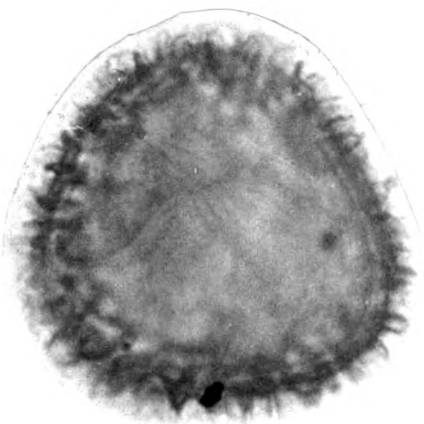
3) Microsorium membranaceum

Slide No.26

4) Sphenomeris chinensis

Slide No.39

PLATE - II



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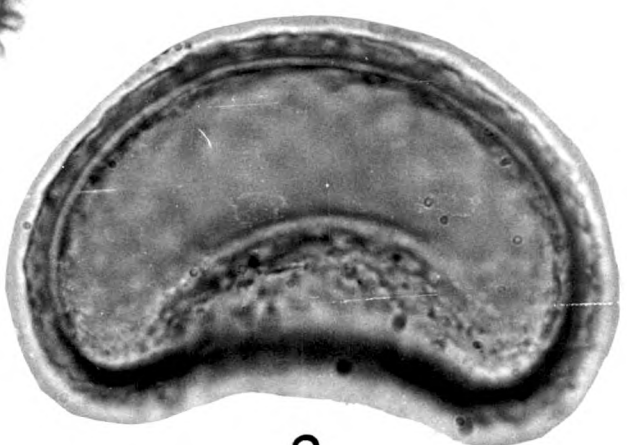

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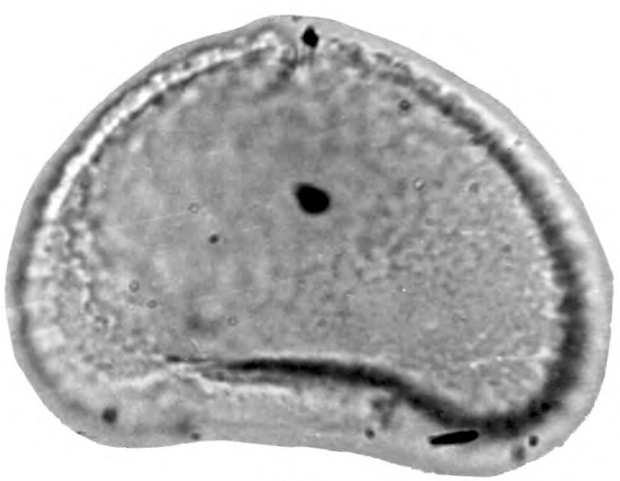

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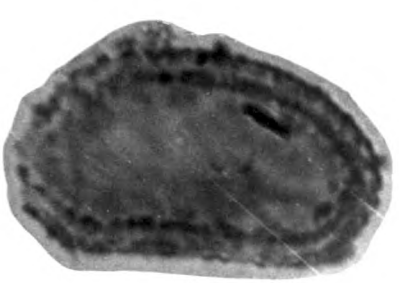

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3) Lepisorus nudus. (Hook.) Ching.

= Lepisorus linearis.Ching.

= Pleopeltis linearis.Moore.

= Pleopeltis wightiana. Bedd.

(Plate II : 2)

The spores monolete, bilateral with circular amb. They are 72 μ x 46.8 μ in size. Perine absent. Exine with cleavate projections, 3.6 μ in thickness. The length of projection is 3.6 μ. Aperture crassimarginate, 3.6 μ in thickness and 36 μ in length.

4) Microsorium membranaceum.Ching.

= Pleopeltis membranaceum.Bedd.

= Polypodium membranaceum.Don.

(Plate II : 3)

The spores are monolete, bilateral with circular amb. Devoid of perine. The spores measuring 64.8 μ x 42.2 μ in size. Exine is finely granulose. The aperture is crassimarginate and 1.8 μ thick. The length of aperture is 45.8 μ.

Order - Cyatheales

Family - Cyatheaceae

1) Cyathea glabra.Bedd.

= Cyathea gigantea.Holtt.

= Alsophila glabra. R. Br.

Spores trilete, tetrahedral. 34 - 36 μ in size. Devoid of perine. Exine thick and granulose. Thickness of exine is 2 to 3.6 μ. Aperture crassimarginate, 3.6 μ thick. Length of trilete arm is 19.8 μ.

2) Cyathea spinulosa. Wall.

The spores are trilete, tetrahedral with circular amb. Perine absent. Spores measuring 28.8 to 32.4 μ in size. Exine smooth. Aperture crassimarginate. Thickness of aperture is 5.4 μ. Trilete arms of aperture reaching upto the boundary.

Order - Dicksoniales

Family - Lindsaeaceae

1) Sphenomeris chinensis.

= Stenoloma chinensis.Bedd.

= Stenoloma clavatum.Maxon.

= Stenoloma chusara.Ching.

= Davallia chinensis.

(Plate II : 4)

Spores monolete, bilateral with circular amb. The size of spore is 25.2 x 50.4 μ. Exine thick and densely granulose. Aperture tenuimarginate.

2) Schizolegnia heterophylla.Alston.

The spores are trilete, tetrahedral with triangular amb. They are 18-21 μ in size. Exine granulose. Perine absent. Aperture crassimarginate, 1.8 to 3.6 μ in thickness.

3) Schizolegnia ensifolia. Alston.
(Plate III : 1)

Spores trilete tetrahedral with rounded corners. Size of spore is 25.2 to 36 μ. Perine absent, exine granulose, 1.8 μ in thickness. Aperture crassimarginate, 3.6 μ thick, Trilete arms reaching upto the boundary.

4) Schizolegnia sawantwadiensis - Bole & Almeida.
(Plate III : 2)

The spores are trilete tetrahedral with triangular amb, measuring 25.2 to 29.4 μ in size. Perine absent. Exine finely gramulose. Aperture crassimarginate, 2.4 μ thick. Length of trilete arm is 10.8 μ.

Order - Pteridales

Family - Pteridaceae

1) Acrostichum aureum. Linn.
(Plate III : 3)

The spores trilete, tetrahedral. The triangular amb

Explanation of Plate-III :

(All photographs magnified 1100 x times)

1) Schizoloma ensifolia

Slide No.24

2) Schizoloma sawantwadiensis

Slide No.A-14

3) Acrostichum aureum

Slide No.12

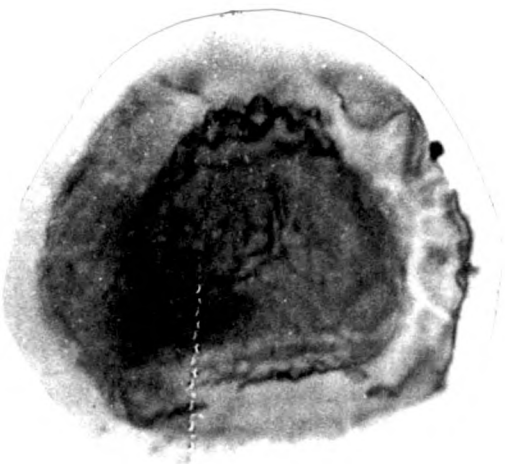
4) Pteris quadriaurita

Slide No.14

5) Pteris pelluscens

Slide No.16

PLATE - III



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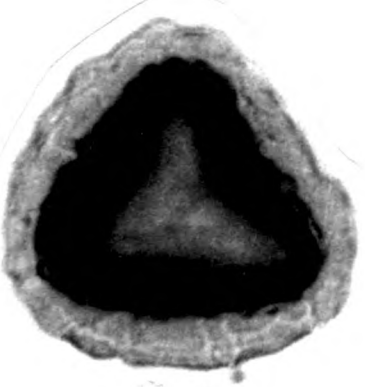

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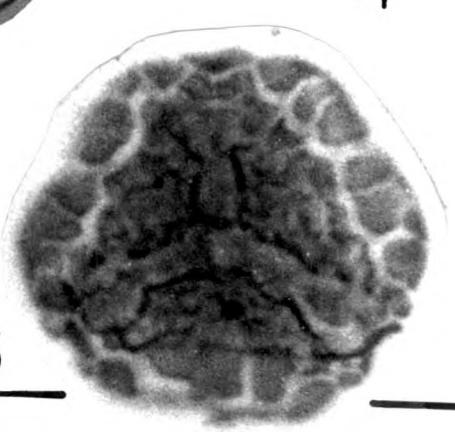

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with concave sides and broadly rounded corners. Size of spore is 43.2 μ to 57.6 μ. Exine densely and prominently granulose, 3.6 μ in thickness. Length of trilete arm is 18 μ. Aperture tenuimarginate.

2) Pteris quadriaurita var. setigera, Hook.
= Pteris asperula.J. Sm.
(Plate III : 4)

Spores trilete, tetrahedral with triangular amb. Perine absent. The spore size is 39.6 to 46.8 μ. They posses a projecting ridge like thickened equatorial collar. The exine sparsely verrucose. The trilete arms are 18 μ in length. The equatorial collar is thin.

3) Pteris pellucens.Agardh.
(Plate III : 5)

The spores are trilete, tetrahedral with triangular amb, measuring 40.2 μ. Perine absent. The exine is verrucose. The aperture is tenuimarginate. Length of trilete arm is 18 μ. The spore possesses a thin equatorial collar.

4) Pteris pellucida.Presli.
(Plate IV : 1)

Spores trilete tetrahedral with triangular amb. Size is

23.2 to 26.8 μ. Perine absent. Exine thick, verrucose, 1.8 μ in thickness. Aperture crassimarginate 3.6 to 5.4 μ thick. Spores show swelling on acetolysis. Presence of equatorial collar on the spore.

5) Pteris vittata. Auett.

(Plate IV : 2)

The spores are trilete, tetrahedral with triangular amb, without perine. They possess a projecting ridge like, thickened pale brown equatorial collar. The spores are pale brown with a more or less raised reticulum on the distal face having blunt spines. The trilete arms are nearly reaching the boundary. Spore size is 50.4 to 57.6 μ. Exine is 3.6 μ thick. Frill is 9.μ in thickness. Aperture crassimarginate. Length of the aperture is 28.8 μ.

6) Pteris setigera.Hoff.

(Plate IV : 3)

The spores trilete, tetrahedral with triangular amb. Average size 43.2 μ. Perine absent. Exine verrucose, 6 μ in thickness. Aperture crassimarginate 5.4 μ thick. Length of trilete arm is 18 μ. The equatorial collar present.

Explanation of Plate-IV :

(All photographs magnified 1100 x times)

1) Pteris pellucida
   Slide No.19

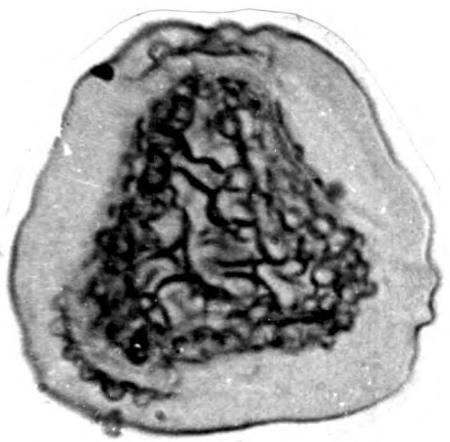
2) Pteris vittata
   Slide No.A-6

3) Pteris setigera
   Slide No.A-15

4) Cheilanthes tenuifolia
   Slide No.38

5) Aleuritopteris albomarginata
   Slide No.35

PLATE - IV



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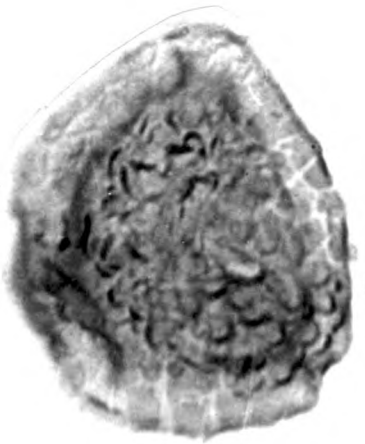

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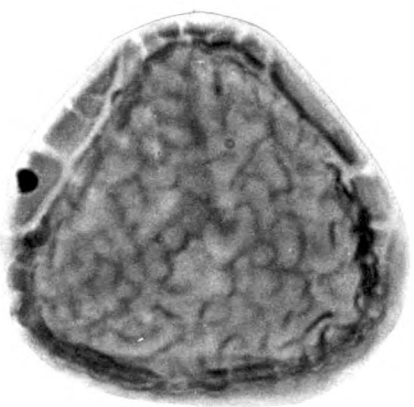

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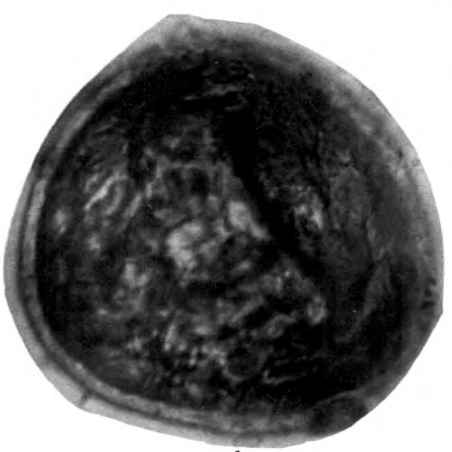

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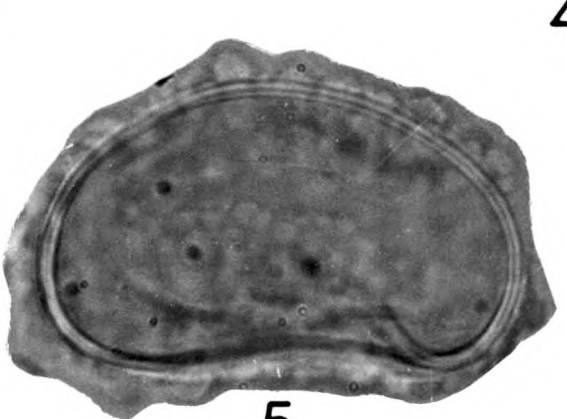

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7) Pteris longipinnula.Linn.

The spores trilete, tetrahedral, 50.4 to 54 μ in size without a perine. A pale brown equatorial collar measuring 4.4 to 7.2 μ in thickness. The exine possesses more or less raised reticulum with tubercles on the distal face. The length of trilete arm is 28.8 μ lined by tubercles.

Family - Sinopteridaceae

1) Cheilanthes tenuifolia.Burn.
(Plate IV : 4)

The spores are trilete, tetrahedral with triangular amb, measuring 50.4 μ. The perine is absent. Exine is densely granulose with psilate cristate form of sporoderm. Aperture tenuimariginate. Length of trilete arm is 21.6 μ.

2) Aleuritopteris albomarginata.Ching.
(Plate IV : 5)

The spores trilete, oval with triangular amb. Spore size 46.8 to 54 μ. Exine reticulate with blunt spines. Perineless. Aperture crassimarginate. Trilete arms reaching upto the boundary.

3) Aleuritopteris farinosa. Fee

= Cheilanthes farinosa. Klf.

Spores trilete, tetrahedral with triangular amb measuring 46.8 to 61.2 μ. They have faint granulose perine closely adhering to the exine. Exine with regular flaps or foldings formed into incomplete reticulae. Aperture tenuimarginate. Length of trilete arm is 21.6 μ.

Family - Gymnogrammaceae

1) Pityrogramma calomelonos.(L.) Link.

= Gymnogramme calomelonos.(L.) Kaulf.

Trilete tetrahedral spores with triangular amb, having broadly rounded corners and nearly straight sides. Spores measuring 43.3 μ. Exine 3.6 μ thick and deep brown. It possesses regulae on the proximal side and reticulations of irregular muri and luminae on the distal side. The ridges are parallel and close to the equatorial collar on either surface.

Family - Adiantaceae

1) Adiantum lunulatum, Burm.

= Adiantum philippense.Linn.

(Plate V : 1)

Spores trilete, tetrahedral with triangular amb having

Explanation of Plate-V :

(All photographs magnified 1100 x times).

1) Adiantum lunulatum
   Slide No.17

2) Araistegia pulchra
   Slide No.31

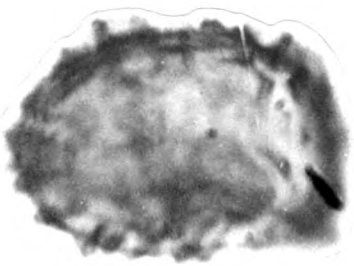
3) Nephrolepis acuta
   Slide No.A-5

4) Asplenium panicaule
   Slide No.A-12

5) Lastrea calcarata
   Slide No.43

6) Nephrodium truncatus
   Slide No.11

PLATE - V



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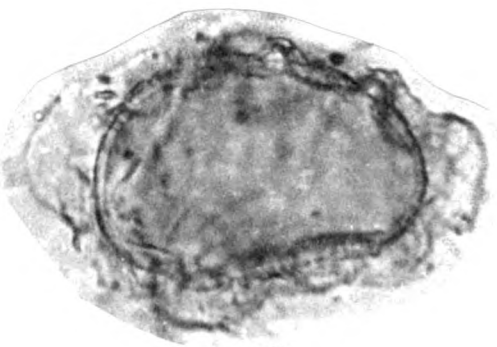

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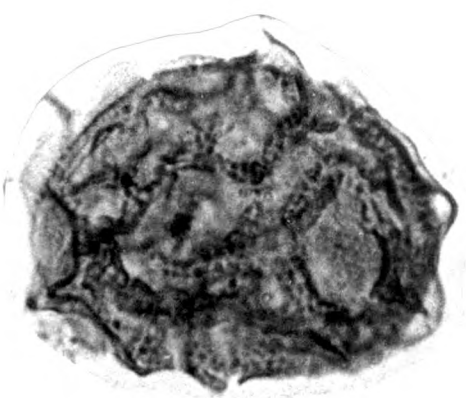

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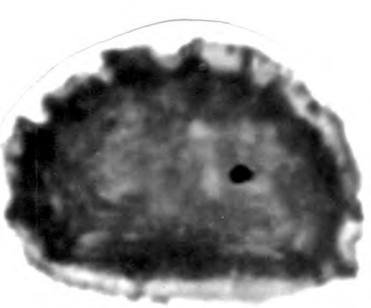

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broadly rounded corners and nearly straight sides. The size is 32.4 to 36 μ. Spores devoid of perine. Exine thick (2 to 3.6 μ in thickness) and dark brown in colour. It is granulose. Aperture tenuimarginate. Trilete arms reaching upto boundary.

Family - Parkeriaceae

1) Ceratopteris thalictroides.Brong.

The spores are trilete tetrahedral, devoid of a perine layer. Spore size is 90.8 to 115.2 μ. The laesural lips are raised and form rather prominent radiating ridges. These ridges meet at the corners of a triangular ridge surrounding the distal pole. There are three sets of concentric exinous ridges in addition to three radially placed laesural lips. The exine is finely pitted all over, 7.2 to 9 μ thick. Trilete arms 46.8 μ in length.

Order - Davalliales

Family - Davalliaceae

1) Araistegia pulchra.(Don.) J. Sm.

= Leucostegia pulchra. J. Sm.

(Plate V : 2)

The spores are monolete bilateral with circular amb. The spore size is 28.8 μ x 36 μ. Perine absent. Exine 3 to 4 μ thick and granulose. Aperture is tenuimarginate.

Family - Oleandraceae

1) Nephrolepis acuta.Linn.

(Plate V : 3)

The spores monolete bilateral with circular amb. They are 21.6 x 36 μ in size. Perine tightly adhered to exine. Exine finely granulose with warty projections. Thickness of exine is 2 to 3.6 μ. Aperture tenuimarginate. Length of aperture is 14.4 μ.

Order - Aspidiales

Family - Aspleniaceae

1) Asplenium panicaule. Wall.

(Plate V : 4)

The spores monolete, bilateral with circular amb. The size of spore is 43.2 to 54 μ x 32.4 to 36 μ. Perine granulose with foldings forming incomplete reticulum. Irregular frill present, 1.8 to 3.6 μ in thickness. Exine smooth. Aperture tenuimarginate, reaching upto the boundary.

Family - Thelypteridaceae

1) Lastrea calcarata var. Ciliata Bedd.

= Lastrea falciloba. Bedd.

= Thelypteris ciliata. Ching.

(Plate V : 5)

The spore are trilete, tetrahedral and globose. Spore size is 36 μ, swelling on acetolysis. Perine present. Exine finely granulose. Aperture tenuimarginate.trilete arms reaching upto the boundary.

2) Lastrea ornata.Ching.

= Phegopteris ornata.Bedd.

The spores are trilete, tetrahedral with triangular amb. Perine present. Exine is deeply granulose. The spores are 36 to 39.6 μ in size. The aperture is tenuimarginate.

3) Nephrodium truncatus.Presl.

= Cyclosorus truncatus.Poir.

(Plate V : 6)

The spores monolete, bilateral with circular amb. The spore size is 36 to 39.6 μ x 21.6 to 25.7 μ. Perine present with blunt spine like projections. Exine thick, 1.8 μ in thickness, granulose. Aperture is tenuimarginate.

4) Nephrodium molle. R. Br.

= Cyclosorus parasitica. Farewell.

= Cyclosorus parasiticus (L.) Farewell.

(:Plate VI : 1)

Spores are monolete, bilateral with circular amb (46.8 μ x 25.7 μ). Perine present. Exine thick, finely granulose. Aperture tenuimarginate. Trilete arms reaching upto the boundary.

5) Nephrodium pteroides.Retz.

=

The spores monolete, bilateral with circular amb. They are 39.6 x 28.8 μ in size. Perine present, granulose. Exine smooth and thin. Aperture crassimarginate, 1.8 μ in thickness.

6) Cyclosorus dimorpha.Link.

(Plate VI : 2)

Spores monolete and bilateral with circular amb, measuring 39.6 to 43.2 x 25.2 to 28.8 μ in size. Perine present, granulose with minute but sharp spicules. Perine wrinkled, folded, forming incomplete reticulations. Exine smooth. Aperture tenuimarginate. No swelling on acetolysis.

7) Cyclosorus truncatus. Poir.

The spores are monolete, bilateral. Size of spore is 36 x 21.6 μ. Perine present, granulose with minute sharp

Explanation of Plate-VI :

(All photographs magnified 1100 x times).

1) Nephrodium molle

Slide No.13

2) Cyclosorus dimorpha

Slide No.A-4

3) Athyrium fulcatum

Slide No.5

4) Athyrium hohenkerianum

Slide No.7

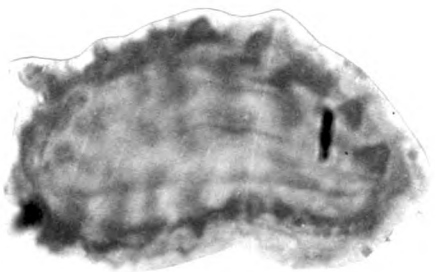
5) Diplazium latifolium

Slide No.22

6) Diplazium esculentum

Slide No.41

PLATE – VI



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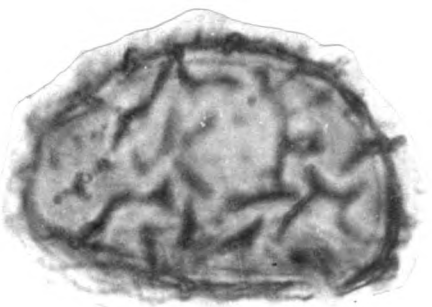

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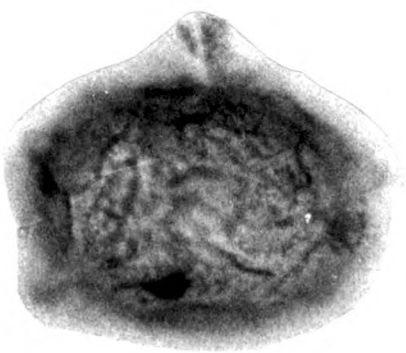

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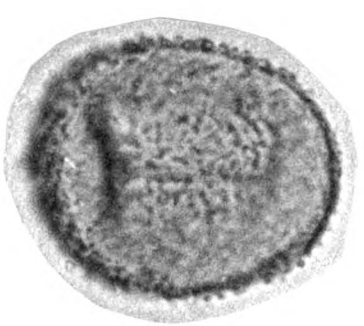

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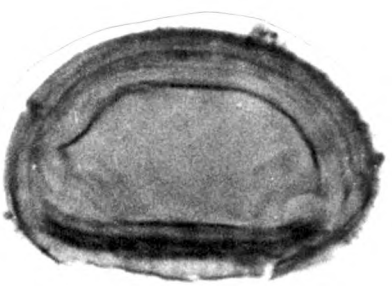

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spicules. Perine wrinkled, folded forming incomplete reticulations. Exine smooth. Aperture tenuimarginate.

8) Cyclosorus unitus. Non. R. Br.

= Cyclosorus gongyloides Link.

The spores are monolete, bilateral, swelling on acetolysis. Spores measuring 36 μ x 18 μ in size. Perine present with projections. Exine smooth. Aperture tenuimarginate, 32 μ in length.

Family - Athyriaceae

1) Athyrium fulcatum. Bedd.

= Asplenium drepanophyllum. Baker.

(Plate VI : 3)

The spores are monolete, bilateral with circular amb. They are 32.4 x 28.8 μ in size. Perine present, smooth. Exine smooth. Aperture tenuimarginate. Length of aperture is 18 μ.

2) Athyrium hohenkerianum. Bedd.

(Plate VI : 4)

Spores monolete, bilateral with circular amb. Perine folded and wrinkled. Exine smooth. Spore size is 43.2 x 32.4 μ. Aperture is tenuimarginate.

3) Diplazium latifolium. Moore.

= Diplazium maximum. Don. Chr.

(Plate VI : 5)

The spores are monolete bilateral with circular amb. The spore size is 42.2 x 36 µ. Perine present, finely granulose. Exine smooth. The aperture is tenuimarginate.

4) Diplazium esculentum. Sw.

= Anisogonium esculentum. Copel.

(Plate VI : 6)

Spores monolete, bilateral with circular amb. They measure 42.2 x 21.6 µ in size. Perine is finely granulose and exine smooth. Aperture is tenuimarginate. The length of aperture is 28.8 µ. The laesural lips are raided forming ridges.

Family - Aspidiaceae

1) Hypodimatium crenatum. Kunze.

= Nephrodium crenatum. Clarke.

= Lastrea crenata.(Fork.) Bedd.

(Plate VII : 1).

The monolete bilateral spores with perine. Perine granulose with folded projections. Exine smooth. The spores measuring 55 x 36 µ in size. The aperture is tenuimarginate.

Explanation of Plate-VII :

(All photographs magnified 1100 x times)

1) Hypodematium crenatum

Slide No.A-3

2) Dryopteris cocleata

Slide No.A-23

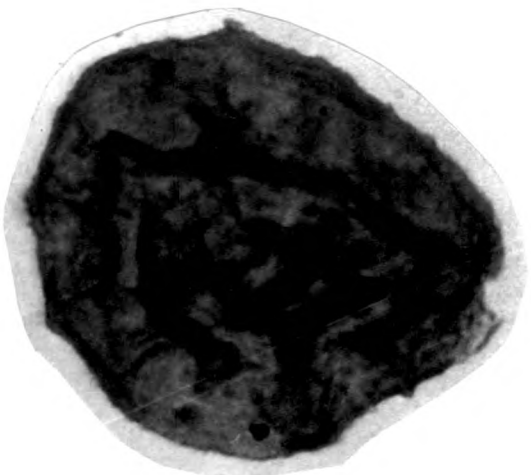
3) Tectaria macrodonta

Slide No.32

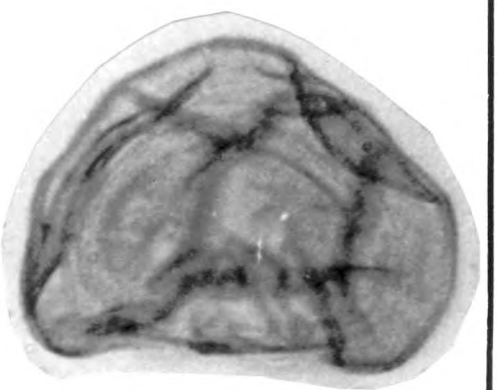
4) Eginolfia appendiculata

Slide No.8

PLATE - VII



1



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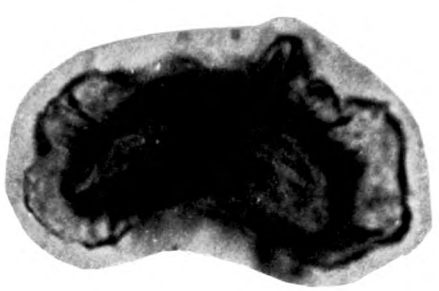


3

4

2) Dryopteris cocleata. C. Chr.

= Lastrea filix-max. Linn. Var. cocleata Don.

(Plate VII : 2)

The spores are monolete bilateral with triangular amb, measuring 36 μ to 18 μ. Perine present, smooth. Frill wavy, folded, 7.2 μ in thickness. Exine smooth, thick (1.8 to 3.6 μ in thickness). Aperture tenuimarginate.

3) Tectaria macrodonta. Fee.

= Aspidium cicutarium. Sw.

= Tectaria cicutaria. Copel.

(Plate VII : 3)

The spores are monolete, bilateral with circular amb. They are 39.6 x 25.2 μ in size. The perine is present, folded. Exine finely granulose. Aperture tenuimarginate.

Family - Lomariopsidaceae

1) Egenolfia appendiculata. Schott.

= Polybotrya appendiculata. Willd.

(Plate VII : 4)

The spores are monolete, bilateral with circular amb. They are 25.8 x 18 μ in size. The perine is present with spines. The length of spine is 5.4 μ. Exine is finely granulose. Aperture tenuimarginate.

2) Bolbitis virens. Wall.

= Gymnopteris contaminens. (Wall.) Bedd.

(Plate VIII : 1)

The spores are monolete bilateral with circular amb, measuring 32.4 to 36 x 25.2 to 28.8 μ. Perine is finely granulose and folded. Exine smooth. Aperture tenuimarginate. Length of aperture is 25 μ.

3) Gymnopteris subcrenata. Bernh.

= Bolbitis subcrenata. Ching.

(Plate VIII : 2)

The spores are monolete, bilateral with circular amb. They are 46.8 x 36 μ in size. The perine is finely granulose and folded. Exine smooth. Aperture tenuimarginate, reaching upto the boundary.

4) Gymnopteris presliana. Bedd.

= Bolbitis presliana.(Fee) Ching.

= Pacilopteris presliana.Bedd.

(Plate VIII : 3)

Spores monolete, bilateral with circular amb. Perine finely granulose, folded with spines, which are blunt. The spore size is 43.2 x 25.8 μ. Exine smooth, 1.8 to 3.6 μ in thickness. The aperture tenuimarginate, long, reaching upto the boundary.

Explanation of Plate-VIII :

(All photographs magnified 1100 x times)

1) Bolbitis virens

Slide No.6

2) Bolbitis subcrenata

Slide No.4

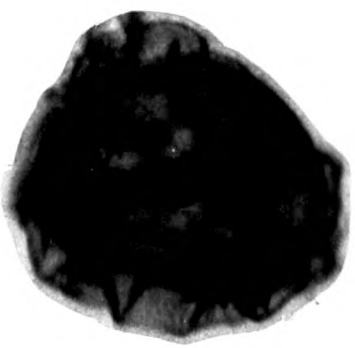
3) Gymnopteris prestiana

Slide No.25

4) Blechnum orientale

Slide No.2

PLATE - VIII



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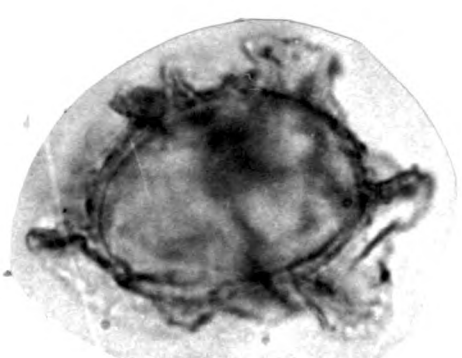
2



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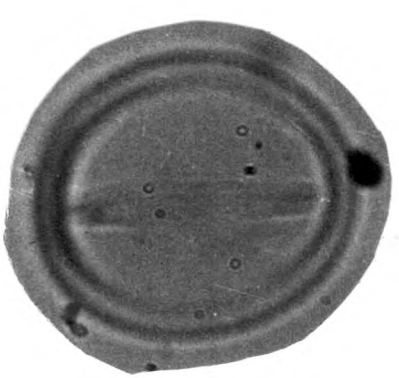

4

42

Order - Blechnales

Family - Blechnaceae

1) Blechnum orientale.Linn.

(Plate VIII : 4)

The spores are monolete, bilateral with circular amb. They are 28.8 x 14.4 μ in size. The perine is present, smooth. Exine smooth, 3.6 μ in thickness. Aperture is crassimarginate and 7.2 μ thick. The laesurae raised forming smooth lips. Perine distinct as loose foldings.