4. RESULTS AND OBSERVATIONS

Taxonomy of the species:

A total number 89 species of fern and fern allies belonging to 51 genera under 30 families were enumerated in the present study (Table 1).

1. Systematic position of Huperzia phlegmaria Roth.

   Class - Lycopsida
   Order - Lycopodiales
   Family - Lycopodiaceae
   Genus - Huperzia
   Species - phlegmaria

Habit: Epiphyte.

Geographical distribution in Shevaroys hills: Shevaroyan temple, Rosie land estate.

Altitude: Above 1500 msl

Distribution level: Rare

Taxonomic description:

Stem pendulous, up to 46 cm long, up to 3 cm wide with leaves, 0.8 cm wide without leaves at the base, isodichotomously forked up to five times. Leaves lax, 1-5 mm apart, subpatent; sessile or subsessile, ovate lanceolate, up to 1.5 x 0.5cm, acuminate, entire, base broadly cuneate and midrib slightly distinct above and below, leaves dark green, glabrous, subcoriaceous. Cone terminal on the ultimate branches, up to 8x0.2 cm, slender, forked up to four times; sporophylls opposite decussate, adnate, appressed towards distal part; spreading at the basal part, broadly deltoid, up to 1 x 1.5 mm, thin, apex subacute, margin entire. Sporangia borne at the axil of the sporophyll, reniform, yellowish; spores trilette, tetrahedral, triangular ash-grey colour (Plate 2).

Economic importance:

Not yet found.

   Class    -    Lycopsida
   Order    -    Lycopodiales
   Family   -    Lycopodiaceae
   Genus    -    Lycopodiella
   Species  -    cernua

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Brook line estate, Pear’s cave estate, Rosie land estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

   Main stem erect, up to 125 x 0.6 cm, terete, bearing branched roots at the base; entire branching system above the unbranched main stem up to 70 x 20 cm, main branches subopposite, decussate, about 7 cm apart, up to 14 x 9 cm, forked two to three times into secondary branches which bear up to five times forked, about 5 x 3 cm tertiary branches. Leaves sparse on main stem, dense on the rest, spreading or slightly ascending, adnate, linear, up to 3 x 0.4 mm; acuminate, entire, pale green, stiff, herbaceous. Cones terminal on the ultimate branches, epudunculate, pendent, cylindrical up to 10 x 3 mm; sporophylls yellowish-green, thin, broadly ovate, up to 2 x 1 mm, acuminate, base peltate, margin fimbriate; sporangia reniform, pale brown; spore trilet, pale green (Plate 2).

Economic importance:

   It is cultivated as an ornamental plant in the Philippines. In Malaysia a decoction of the paint is used as a lotion in beri-beri and also for coughs and uneasiness in the chest. An embrocation of the ashes in vinegar is recommended for skin eruptions. Cernuine (C16 H26 ON2, m.p.106) and small quantities of nicotine and uncharacterized base L33 (m.p.218) have been isolated from the plant.

Class - Lycopsida
Order - Selaginellales
Family - Selaginellaceae
Genus - Selaginella
Species - wightii

Habit: Lithophyte.

Geographical distribution in Shevaroys hills: Konganmalam, Manjakuttai, Malai Easwarar temple.
Altitude: Above 1500 msl.
Distribution level: Common.

Taxonomic description:

Small plants, about 12 x 6 cm; stem terete, up to 1 mm in diameter without leaves, bearing roots occasionally all over the main stem which bears many main branches; main branches branched again many times unequally and irregularly. Leaves dense, spirally arranged, greenish-black, linear, up to 2.5 x 0.2 mm, apex long acuminate, margin with membranaceous, ciliate border. Cones borne on ultimate branches, very slightly distinct from sterile branches, more or less quadrangular, up to 10 x 1.5 mm, sporophylls uniform, spirally arranged, ovate, up to 1.5 x 1.5 mm, apex acuminate, base cordate, margin denate, midvein distinct, two short ligule present at the subbasal region; microsporangia and megasporangia borne on the same spike, spherical, up to 1.5 mm in diameter; microspore trilete, yellowish brown with prominent, megaspores dark brown (Plate 2).

Economic importance:

Not yet found.
4. Systematic position of Selaginella involvens (Sw.) Spring

Class - Lycopsida
Order - Selaginellales
Family - Selaginellaceae
Genus - Selaginella
Species - involvens

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Ghat Road, pattipadi, kondaiyanoor, manjakuttai.

Altitude: 500-1000 msl.

Distribution level: Frequent.

Taxonomic description:

Stem erect, rooting at the base only, up to 2 mm thick, terete, up to 20 cm long without branches, stramineous; branched portion up to 28 x 12 cm, quadri- pinnate, lateral branches about eight pairs, alternate, up to 5 cm apart, ascending lanceolate, about 8 x 3.0 cm, bearing secondary and tertiary branches; leaves on main stem uniform, scattered, appressed, broadly ovate, up to 3 x 2 mm, acute, entire, leaves on distalmost part of the main axis and on lateral branches dimorphic; lateral leaves ovate-lanceolate, slightly oblique, 2 x 1 mm, acute, entire. Leaves pale green to dark green; cones terminal on ultimate branches, up to 6 x 3 mm, quadrangular; sporophylls uniform, ovate, 1 x 1 mm, acuminate, entire; microspores reddish-brown in mass (Plate 2).

Economic importance:

Ladies use spore powder as substitute to vermilion powder. (‘Sindoor’ in Napali language). Plnat considered help to rejuvenate life also used in the prolapsed of rectum, prevents cough, pleading piles, gravel amenorrhoea and as an antibacterial (Singh HB 1999, Manandar PN 1996).
5. Systematic position of Selaginella radicata (Hook. & Grev.) Spring

- **Class**: Lycopsida Order
  - Selaginellales
- **Family**: Selaginellaceae
- **Genus**: Selaginella
- **Species**: radicata

**Habit**: Terrestrial.

**Geographical distribution in Shevaroys hills**: Sengadu, Puthur, sengalathupadi.

**Altitude**: 500-1000 msl.

**Distribution level**: Seldom.

**Taxonomic description**:

Plants up to 20 x 10 cm; irregular in shape, stem prostrate, rooting occasionally all over. Leaves at the base of main stem uniform, ovate, up to 3 x 2 mm, acute, entire, leaves on the rest of the part of the main stem and lateral branches diamorphic, median leaves ascending, ovate, up to 1.5 x 1.5 mm, ciliolate; lateral leaves patent, narrowly ovate, apex subacute, margin finely denticulate; leaves pale green, cones 7 x 3 mm, four sided, sporophylls uniform, 1.5 x 1 mm, broadly ovate, dentate, megasporangia borne at the basal region, microsporangia borne towards the distal part of the cone; microspores pale brown, triangular with rounded corners, megaspore three per sporangium, pale green, more or less spherical, exine almost smooth in nature (Plate 2).

**Economic importance**:

Fronds are used as an antibacterial agent (Singh HB 1999).
6. Systematic position of Selaginella inaequalifolia (Hook. & Grev.) Spring

Class - Lycopsida
Order - Selaginellales
Family - Selaginellaceae
Genus - Selaginella
Species - inaequalifolia

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakambadi, Puthur.

Altitude: 500-1000 msl.

Distribution level: Seldom.

Taxonomic description:

Stem scandant, few feet long, main stem up to 4 mm thick, stramineous, glabrous or with scattered leaves, rhizophores borne at the axis of primary branches, about 10 x 2 mm, bearing roots at the basalmost part, primary branches alternate, about 5 cm apart, patent or slightly ascending, lanceolate or oblanceolate, up to 25 x 6 cm, tripinnate. Leaves scattered on main stem, arranged in four rows on other branches, dark green, lateral leaves 5 x 2 mm, ovate-lanceolate, slightly oblique, acute, entire, median leaves 1.5 x 1 mm, acuminate, cones borne on ultimate branches, about 5 x 2 mm, quadrangular, sporophylls uniform, ovate, 2 x 1 mm, acuminate entire, mega spores yellowish-brown, microspores dark brown (Plate 2).

Economic importance:

Not yet found.

7. Systematic position of Selaginella tenera (Hook. & Grev.) Spring

Class - Lycopsida
Order - Selaginellales
Family - Selaginellaceae
Genus - Selaginella
Species - tenera
Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Sengkadu, kondaiyanoor, sonappadi.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Stem erect, rooting at the base only, up to 3 mm thick without leaves, up to 7 mm wide with leaves, green to pink colour when fresh, stramineous to pink colour when dry, entire plant up to 30 x 15 cm, with about five primary, alternate branches which bear several times branched secondary branches. Leaves dimorphic throughtout, continuous on main stem and on axis of primary branches, spreading and dense on the rest of the branches, lateral leaves 3 x 1.5 mm, oblong-ovate, obtuse or subacute, denticulate on the acrosopic margin, entire on the rest, base unequal, median leaves ovate, 1 x 0.5 mm, aristate, arista less than half the length of the leaf, margin dentate, cones dorsiventral, about 1 x 0.25 cm, sporophylls dimorphic, lateral sporophylls bear magasporangia, others with microsporangia; microspores brick red in mass (Plate 2).

Economic importance:

Not yet found.

8. Systematic position of Equisetum ramosissimum Desf.

Class - Sphenopsida
Order - Equisetales
Family - Equisetaceae
Genus - Equisetum
Species - ramosissimum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Manjakuttai, Nagaloor.

Altitude: Above 1500 msl.

Distribution level: Rare.
Taxonomic description:

Rhizome long creeping, subterranean, branched, dark brown, terete with ridges and furrows, up to 0.8 cm thick with nodes and internodes, bearing fibrous roots and aerial stem, internodal length up to 3 cm, each node bears up to 0.5 cm tall cylindrical sheath. Aerial stem up to 150 x 1 cm, distinguished into nodes and internodes; internodal regin tubular, up to 8 cm long, surface with many ridges and furrows, nodal region not distinguishable, concolorous with internodal part, the dark brown upper edge of the nodal sheath apparently looking like the node; lateral branches one to five, borne around the nodes at the base of the nodal sheath, erect or pendent, up to 30 x 0.3 cm, similar to the main stem; leaves scale-like, borne on the upper edge of the nodal sheath, up to 8 x 1 mm, narrowed, dark and opaque with a thin, membranaceous border at the basal half, margin incised at the distal half; aerial stem pale green, glabrous, coriaceous. Cones borne at the tip of the main stem or branches, about 1 x 0.4 cm; sporngia borne on underside of closely fitted, peltate sporophylls with sporophore; spores homosporous, green (Plate 2).

Economic importance:

Powdered stem dissolved in water is used for enema during stomach disorders in children. Barren women drink rhizome decoction to facilitated fertilization in South Africa. Equisetum in general is used as a mineral indicator. They are used to clean utensils and polishing wood. E. debile is given as a cooling medicine and sometimes for gonorrhea (Dixit and Vohra 1984). Plant is known to have diuretic, haemostatic, haemorpritic, antirhematic, antifungal and antiviral properties. Paste of branches with some other leaves is used as local application for the treatment of fracture and the dislocation of bones (May LW, 1978; Das K, 1997).

<table>
<thead>
<tr>
<th>Class</th>
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<tbody>
<tr>
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<td>Family</td>
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<td>Genus</td>
<td>Psilotum</td>
</tr>
<tr>
<td>Species</td>
<td>nudum</td>
</tr>
</tbody>
</table>

Habit: Epiphytic.

Geographical distribution in Shevaroys hills: Vellakadai, Asambur, Brooklyn Estate, Anna Park.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome short, creeping, branched, up to 2 mm thick, terete, dark brown, densely covered by dark brown, slender, unicellular, tubular, deciduous hairs; roots absent. Stem erect or arching, main unbranched stem up to 25 x 0.3 cm, more or less tetragonal with few grooves and ridges, iso or aniso dichotomously branched, up to eight times at the distal part to form semiorbicular of about 30 x 15 cm shoot system, ultimate unbranched segment about 8 x 0.1 cm, apex acuminate with or without scale leaf; true leaf absent; scale leaves regularly arranged in alternate pairs throughout the branches, pale green, up to 2 x 1 mm, narrowly triangular to lanceolate; stem dark green, flexuous when fresh, glabrous all over except the presence of scale leaves. Sporogia trilocular, synangia, borne at the axis of scale leaves, sessile, up to 2 mm in diameter, dehisced by vertical slit; spore numerous, monolete, elongated, reniform, oblong or ellipsoid (Plate 3).

Economic importance:

In Hawaii the herb is used to prepare a kind of a tea which is administered to children suffering from thrush. The oily spores are given to infants to arrest diarrhoea. The juice of the herb showed antibacterial activity againts micrococcus phygenes and pseudomonas aerugionsa. It is also used as a purgative. The shoots yield a phenolic psilotin. The plant contains the following biflavones-apigenin, acacetin, genkwannin, amentoflavone and hinokiflavone (Manickam & Irudayaraj 1992).
10. Systematic position of Botrychium lanuginosum Wall. ex Hook. & Grev.

Class - Filicopsida
Subclass - Ophioglossidae
Family - Ophioglossaceae
Genus - Botrychium
Species - lanuginosum

Habit: Lithophytic.

Geographical distribution in Shevaroys hills: Brooklyn estate, Honey Rock Estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizomes erect solitary or tufted; young bud arising from the matured rhizome, densely clothed by about 5 mm long, pale yellowish-brown, unicellular hairs. Stipe about 20 x 1 cm, ensheathed by withered stripes at the base, pale green, terete, fleshy, plicate when dry, sparsely covered by unicellular hairs. Lamina angulate-ovate or deltoid-ovate, 20 x 30 cm, usually divided into three primary sterile branches, each sterile branch bipinnatifid or tripinnatifid, broadly ovate, up to 20 x 10 cm with up to 3 cm long stalk, ultimate pinnae oblong or narrowly deltoid, acute, up to 2 x 1 cm, margin lobed about half way to the costule; margin of the lobes serrate, veins slightly distinct, forked up to five times, free, not reaching the margin, lamina pale green; texture soft herbaceous; main rachis, costa and costules densely covered by deciduous unicellular, soft hairs; fertile branch arising from the stalk of the middle sterile branch, tripinnate or quadripinnate; up to 10 x 7 cm with up to 9 cm long pedicel. Sporangia borne in groups or in two alternate rows on the ultimate segments, up to 1 mm in diameter, spherical, sessile, dehisced by vertical slit, spores pale green, globoid in distal view, bearing dense knob-like protuberances (Plate 3).

Economic importance:

Plant is anti dysenteric and anti bacterial, some species are used as a good vulnerary and also used in dysentery in India (Singh HB, 1999).
11. Systematic position of Botrychium daucifolium Wall.

Class - Filicopsida
Subclass - Ophioglossidae
Family - Ophioglossaceae
Genus - Botrychium
Species - daucifolium

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Brooklyn estate, Honey Rock estate.
Altitude: Above 1500 msl.
Distribution level: Rare.

Taxonomic description:

Rhizome erect, cylindrical, up to 1.5 cm thick, glabrous, bearing thick fleshy, glabrous roots. Common stalk up to 30 cm long, 1.5 cm thick, ensheathed at the base of withered stalk, terete, branching into a fertile or sterile segment. Sterile stalk up to 7 cm long, forked twise, resulting in a three branches each bearing bipinnatifid, transversely broad angulate-ovate blade. Entire lamina up to 18 x 22 cm, middle branch larger, up to 18 x 17 cm, basal pinnae of each branch stalked, angulate-ovate, upper pinnae up to five pairs, decurrent, oblong-lanceolate, lobed more than half way to the costa; lobes 2.5 x 1 cm, ovate-oblong, irregularly serrate, apex rounded or acute, costa and costules narrowly winged above, veins obscure or slightly distinct, lamina dark green; texture herbaceous, pinnules sparsely hairy beneath, glabrous above. Fertile stalk arising from the common stalk 5 cm below the first forking point, up to 15 cm long 3 cm thick, bearing 15 cm long tripinnate spike, ultimate segment bearing two compact rows of spherical sporangia, dehiscing by a median slit reaching the base on either side; spores trilete, pale green (Plate 3).

Economic importance:

Not yet found.
12. Systematic position of Ophioglossum reticulatum L.

- Class: Filicopsida
- Subclass: Ophioglossidae
- Family: Ophioglossaceae
- Genus: Ophioglossum
- Species: reticulatum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, cylindrical, tuberous, up to 1 x 0.5 cm, bearing long, thick fleshy roots and one to two fronds; petiole up to 6 x 0.2 cm, dark green, terete, fleshy, few ovate, about 2.5 x 1.5 mm, uniformly pale brown, entire, acute scales present at the very base of the petiole; glabrous above, leaf blade simple usually cordate, rarely ovate, up to 5 x 4 cm long, subacute or acute or rounded, entire, distinct midrib absent, up to 12 veins passing to the base of the blade; veins copiously anastomosing in the sterile blade to form many sided areoles with one or two included excurrent and/or recurrent veins; areoles at the centre of the blade are large and elongated and gradually becoming smaller in size towards periphery, the extreme narrow margin of the blade free from venation; blade dark green, glabrous above and below; texture herbaceous. Spike arising from the base of the sterile blade, oblong- lanceolate, about 3 x 0.2 cm with about 6 x 0.2 mm long stalk, terminated with 2-3 mm long triangular sterile tissue, provided with distinct midvein. Spore sacs arranged in two alternate compact rows, dehisced by horizontal slits; spores spherical, trilete, pale green (Plate 3).

Economic importance:

Fleshy fronds are eaten as vegetable curry (Dixit and Vohra 1984). Ophioglossum in general is used as a cooling agent and in the treatment of inflammations and wounds. Fronds are used as a tonic and styptic used in contusions
and haemorrhages (Singh, HB 1999). 'Green oil of charity' is used in England as a vulnerary and remedy for wounds (Dixit, 1959).

13. Systematic position of Angiopteris evecta (Forst.) Hoff.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida Sub</th>
</tr>
</thead>
<tbody>
<tr>
<td>class</td>
<td>Marattiidae</td>
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<tr>
<td>Family</td>
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<td>Genus</td>
<td>Angiopteris</td>
</tr>
<tr>
<td>Species</td>
<td>evecta</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Rosie land estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, cylindrical, about 24 cm in diameter, apex densely covered by dark brown hairs. Stipes up to 160 cm long, 5 cm thick stipular at the base, abaxially rounded, adaxially flattened; bearing whitish linear streaks all over, glabrous. Lamina deltoid up to 230 x 150 cm, bipinnate, pinnae up to 16 pairs, subopposite with about 3 cm long stock, up to 15 cm apart, oblong-lanceolate, up to 60 x 22 cm, with a terminal pinnule similar to the lateral ones, base truncate; pinnules up to 25 pairs, subopposite, shortly stalked, 2 cm apart, oblong-lanceolate, up to 14 x 2 cm, apex acuminate, base subtruncate or broadly cuneate, margin serrate in the distal part of the pinnae, crenate in the rest, costa slightly raised and rounded above and below; veins distinct and slightly raised above and below, simple or forked once, free the margin; pinnae dark green; glabrous except the occurrence of few small, pale brown, soft, laciniate scales on the costa below, texture herbaceous. Sori submarginal, ellipsoid, sporangia up to six pairs in two rows, compact, free; spores trilete, pale green (Plate 3).
Economic importance:

The massive stem is cooked and eaten by the tribals of Assam; an intoxicating drink called ‘ruchshi’ is also made out of it. The stem is widely used as a base for transporting orchids (Dixit and Vohra 1984). The plant yields an aromatic oil and is used for perfuming coconut oil in South Sea Islands (May, LW 1978). Leaf extract is used in the treatment of dysentery. Spores are effective in the treatment of leprosy and other skin diseases (Mathew, PJ 1996; Kirtkar, KR 1935). Swollen caudex used as starvation food in highland, lowland areas of Papua New Guinea (Schieffenhovel, W 1970). The rhizoms are used for Scabies in India (Vasudeva, SM 1999).


- Class: Filicopsida
- Sub class: Filicidae
- Order: Schizaeales
- Family: Schizaeaceae
- Genus: Anemia
- Species: wightiana

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Near Fire Service Office, Konganmalan, sengadu, sanyasi karadu, shevaroyan temple etc.,

Altitude: Above 1500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome erect or sub-erect, about 4 cm thick, densely clothed by about 5 mm long, thin, soft, multicellular, woolly, ferruginous, deciduous hairs all over. Stipes tufted up to 35 x 0.5 cm in fertile fronds, up to 25 x 0.5 cm sterile fronds, abaxially rounded, grooved adaxially with short revolute margin, stramineous, densely covered by hairs similar to those in rhizome; rachis similar to stipe, fronds monomorphic, ternately divided, two lateral branches fertile, terminal one sterile,
sterile branch 25 x 15 cm, bipinnate, apex acuminate, base broadly cuneate, pinnae about eight pairs, slightly ascending, opposite or subopposite, shortly stalked, up to 3.5 cm apart, largest pinnae 10 x 5 cm, oblong-lanceolate, apex acute, base subtruncate or broadly cuneate; pinnules up to eight pairs, patent or slightly ascending, adnate, basal pairs ovate; others oblong, apex subacute or rounded, margin entire or subcrenate, rarely shallowly lobed, basiscopic base decurrent, connecting the acroscopic base of adjacent pinnule; costa raised and rounded above, not raised, flattened below; veins slightly distinct below, raised and well distinct above, flabellate, close, free, raching the margin, pinnae dark green, short unicellular or bicellular, stiff, hairs densely distributed on costa, costules and veins both above and below, intervenal area almost glabrous both above and below, texture thick herbaceous, fertile branches two, much contracted, borne below the sterile lamina, about 10 x 1 cm, with about 3.5 cm long stalk, sporangia borne on the surface of the lobes (Plate 3).

Economic importance:
Not yet found.

15. Systematic position of Lygodium microphyllum (cav.) R.Br.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
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<tr>
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<tr>
<td>Genus</td>
<td>Lygodium</td>
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<tr>
<td>Species</td>
<td>microphyllum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.
Geographical distribution in Shevaroys hills: Kakasolai.
Altitude: Above 1500 msl.
Distribution level: Rare.
Taxonomic description:
Rhizome long creeping, covered by dark hairs. Fronds 2-3 m tall, up to 15 cm wide, stipes and rachis brown, 1.5 mm thick, adxially flattened, abaxially
rounded, glabrous. Primary braches borne up to 10 cm apart on adaxial side of the rachis, up to 5 cm long, 1 mm thick, bearing a dormant apex with dense, short hairs; a pair of secondary branches borne subapically, secondary rachis up to 1 cm long, 1 mm thick, secondary rachis branches pinnate, 6 x 3 cm, oblong, geniculate, terminated by a terminal pinnule similar to the lateral ones or forked equally or unequally. Secondary rachis and stalk of the pinnules narrowly winged above; lateral pinnules up to four pairs, alternate, up to 0.8 cm, apart, sterile pinnule up to 2 x 1.5 cm, fertile ones up to 15 x 1 cm, cardate, margin finely crenate in sterile pinnules, apex rounded; veins distinct both above and below, raised on the lower surface, flabellately branched, free, reaching the margin, pinnules pale green, glabrous above and below; texture herbaceous. Sporangia borne on the surfaces of the fingerlike lobes all round the margin of the pinnules except at the cordate base, up to six pairs in two rows per lobe, each borne on each vein end, each one covered by an indusium, spores trilete (Plate 3).

Economic importance:

In Liberia the stems are used for catching fish by making fence or weir across a small stream. The slender graceful fern is cultivated in gardens to cover pillars and bowers. The young leaves are eaten in Java. A decoction of the leaves is given in dysentery. It is used in many lotions. Leaves are applied in the form of poultics for skin diseases and swelling. Old stems which become tough are used for binding, basket-making and plaiting. Crushed leaves are used to cure hiccups in Ivory Coast (Manickam and Irudayaraj 1992).

16. Systematic position of Pteris vittata L.

<table>
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<tbody>
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<tr>
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<td>- Pteris</td>
</tr>
<tr>
<td>Species</td>
<td>- vittata</td>
</tr>
</tbody>
</table>
Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Pottukadu, Kardiyur, Kolagoor, Sonappadi.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description

Rhizome suberect, 5 cm thick, covered by scales at the apex, scales ovate-lanceolate, 7 x 8 mm, thin, membranaceous, pale brown, concolorous apex, acuminate, margin entire. Stipes tufted, 20 cm long, 8 mm thick, abaxially rounded, adaxially grooved, pale brown, scaly at the base, minute, scattered, persistent bases of scales distributed above. Lamina lanceolate, up to 80 x 25 cm, simply pinnate, pinnae up to 30 pairs opposite or subopposite, 1.5-2 cm apart, sessile, linear lanceolate, 18 x 0.6 cm, apex acuminate, base broadly cuneate, margin serrate in the distal non-soral part, entire in the rest, up to 6-10 pairs of basal pinnae progressively reduced to deflexed auricles; veins obscure, simple or forked once, wide apart; pinnae pale green, glabrous; texture herbaceous; sori all along the margin up to the base except the apex. Spores yellowish-green with tangled threadlike thickenings (Plate 3).

Economic importance:

The plant extract is used as demulcent, hypotensive, tonic, antiviral and antibacterial (Singh HB, 1999).
17. Systematic position of Pteris multiaurita Ag.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
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<td>Pteris</td>
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<tr>
<td>Species</td>
<td>multiaurita</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kaka sholai, Kakampadi.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description

Rhizome short creeping, 1 cm thick, densely scaly at the apex; scales lanceolate, 4 x 0.70 mm, pale brown and translucent at the periphery, dark at the centre, apex long acuminate, margin flimbriate or ciliate. Stipes compact, 18 cm long, 2 mm thick, dark brown, glossy, scaly at the base, stramineous with or without few long, soft, slender, whitish hairs, abaxially rounded, adaxially grooved. Lamina 21 x 20 cm, ovate, simply pinnate, pinnae up to 10 pairs, sessile or subsessile, opposite or sub-opposite, spaced up to 3 cm, spreading or slightly ascending, basal pair of pinnae bipartite at the base, not reduced; largest pinna 10 x 0.6 cm, oblong-lanceolate, apex acuminate, base cuneate, margin serrate in the distal part of the pinnae, entire in the basal part, costa slightly raised above and below, forked once or twice; often spinules present on the costa above; texture submembranceous; pinnae pale green, glabrous all over. Spores dark brown (Plate 4).

Economic importance:

Not yet found.
18. Systematic position of Pteris biaurita L.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
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<tr>
<td>Order</td>
<td>Pteridales</td>
</tr>
<tr>
<td>Family</td>
<td>Pteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Pteris</td>
</tr>
<tr>
<td>Species</td>
<td>biaurita</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Nagaloor, Kundur, Vellkadi, Muluvi, Velur, Sengadu, etc.,

Altitude: 500-1000 msl.

Distribution level: Frequent.

Taxonomic description

Rhizome erect, up to 3 cm in diameter, densely covered by scales at the apex, scales lanceolate, 3 x 0.75 mm, pale brown, translucent at the periphery, dark brown and opaque at the centre, apex acuminate, hairy margin. Stipes tufted, numerous, 35-70 cm long, 3-6 mm thick, pale brown at the base, stramineous above, abaxially rounded, adaxially grooved, scaly at the base, glabrous above. Lamina lanceolate, up to 70 x 40 cm, bipinnatifid, pinnae up to 13 pairs with one or two accessory branch on the basal basiscopic side of the basalmost pair, subopposite, lanceolate, shortly stalked, apex acuminate, base broadly cuneate, margin lobed within 3 mm from the costa, lobes oblong, slightly falcate, up to 3.2 x 0.7 cm, apex rounded, margin entire; veins distinct both above and below, basal veins of adjacent costules forming an arc along the costa with five to seven excurrent veins passing to the sinus base, other veins forked once and reaching the margin; pinnae pale green; texture subcoriaceous, small spinule borne at the base of each costule. Sori borne all along the margin except at the base of the sinus and at the apex of the lobes, spores dark brown (Plate 4).

Economic importance:

Not yet found.
19. Systematic position of Pteris argyrea T. Moore

Class - Filicopsida
Sub class - Filicidae
Order - Pteridales
Family - Pteridaceae
Genus - Pteris
Species - argyrea

Habit: Terrestrial.

Geographical distribution in Shevaroy hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, 1.5 to 4 cm thick, covered by scales at apex, scales lanceolate, 4.2 x 0.6 mm, pale brown at the periphery, dark at the centre, apex acuminate, margin fimbriate. Stipes tufted, numerous, 19.5-80 cm long, 2-5 mm thick, pale brown and scaly at the base, stramineous and glossy above. Lamina 14-70 x 14-34 cm, broadly or narrowly deltoid, bipinate; pinnae up to nine pairs, opposite, subopposite, alternate, 7.5 cm apart, oblong- lanceolate, up to 22 x 5 cm, apex acuminate, base broadly cuneate, margin lobed four-fifth to the costa; lobes 2.5-3 x 0.4-0.6 cm, oblong- lanceolate, entire, apex rounded; veins pinnate up to 14 pairs, distinctly raised both above and below except few minute costal spinules above, spores brown (Plate 4).

Economic importance:

Not yet found.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
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</thead>
<tbody>
<tr>
<td>Sub class</td>
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<td>Pteridaceae</td>
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<tr>
<td>Genus</td>
<td>Pteris</td>
</tr>
<tr>
<td>Species</td>
<td>linearis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai, Sengaluthupadi.

Altitude: 1000-1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome erect, up to 4 cm thick; scales linear-lanceolate, up to 7 x 1 mm, pale brown and translucent at the periphery, dark brown and opaque at the centre, apex long acuminate, margin fimbriate and ciliated. Stipes 9 x 0.7 cm, chestnut brown at the base, stramineous above, densely scaly at the very base, glabrous above. Lamina ovate, 75 x 30 cm, bipinnate, pinnae up to 10 pairs, opposite or subopposite, shortly stalked or subsessile, 11 cm apart, largest pinna 35 x 6 cm, oblong-lanceolate with 7 cm long acuminate apex, margin pinnatifid up to 2-3 mm to the costa, base broadly cuneate, unequal, basalmost pair of pinnae bear an accessory branch on the basal acroscopic side; pinnules up to 25 pairs, oblong, 2.5 x 0.6 cm, slightly ascending, margin entire, apex rounded; costules and veins slightly raised above and below, inter costules distance up to 1 cm, veins up to 20 pairs, all the veins except a few pairs in distal part of the pinnule forked once, basal basiscopic veins arising from the costa while the acroscopic one arising from the axis of costa and costule, basalmost pair of veinlets of adjacent pinnules reaching the base of the sinus independently, small spinnules present at each junction of costa and costule, sinus tooth absent, pinnae pale green, texture coriaceous, pinnae and rachis glabrous above and below. Sori all along the margin except at the apex of the pinnule; sori along the margin of the basal part of the adjacent pinnule meet but do not fuse at the sinus base, sori dark brown; indusia rigid, pale brown, opaque, spores yellowish-green (Plate 4).
Economic importance:

Not yet found.

21. Systematic position of Actiniopteris radiata (Sw.) Link

Class - Filicopsida
Sub class - Filicidae
Order - pteridales
Family - Actiniopteridaceae
Genus - Actiniopteris
Species - radiata

Habit: Terrestrial, Epiphyte or Lithophyte.

Geographical distribution in Shevaroys hills: Ghat road, Retreat.

Altitude: 500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome suberect, subglobase, 1-2 cm thick, densely covered by scales; scales lanceolate, 7 x 1 mm, dark at the centre, pale brown at the periphery, apex acuminate, pointed, margin entire. Stipes numerous, tufted, up to 15 cm long in fertile fronds, up to 10 cm long in sterile ones, up to 2 mm thick, abaxially deeply grooved, adaxially rounded, edges of the groove reflexed, pale brown at the base, pale green above; pale brown, soft, thin, transparent scales distributed on the stipes sparsely all over. Laminae flabellate, semicircular or wedge-shaped, up to 3 x 5 cm, repeatedly, dichotomously divided up to six times, segment rachiform, up to 2 mm wide, apex acute, margin entire; veins obscure in mature frond, slightly distinct in younger ones, subparallel, costa and veins indistinct; lamina pale green; texture coriaceous, soft, pale brown, scales distributed densely in younger laminae, sparsely in older ones especially at the basalmost part. Sporangia borne in intramarginal grooves throughout, protected by the reflexed margin of the segments; spores trilete, dark brown (Plate 4).

Economic importance:

Plants are used as styptic and anthelmintic; fronds are chewed for sore throat and rhizome is boiled to cure dandruff in West Indies (Dixit and Vohra 1984). Plant
is bitter having the properties like styptic, anthelmintic, astringent sweet, cooling, acid and ferbrifuge. It is used in the treatment of severe conditions of kapha and pitta, diarrhea, dysentery, helminthiasis, haemopstysis and fever (Warrier et al., 1996).

22. Systematic position of Cheilanthes farinosa (Forssk.) Kaulf.

- Class: Filicopsida
- Subclass: Filicidae
- Order: Pteridales
- Family: Sinopteridaceae
- Genus: Cheilanthes
- Species: farinosa

Habit: Lithophyte.
Geographical distribution in Shevaroys hills: Shevaroyan temple, Thangamalai.
Altitude: Above 1500 msl.
Distribution level: Rare.
Taxonomic description:

Rhizome erect, about 2 cm thick, densely scaly all over; scales lanceolate, about 4 x 1 mm, pale brown or reddish-brown with dark band at the centre, opaque, apex acuminate with distinct cells, margin entire. Stipes tufted, up to 15 x 0.25 cm, dark chestnut brown, terete, sparsely scaly throughout or at the basal region, glossy. Laminae bipinnatifid, ovate-lanceolate, up to 30 x 11 cm, apex acuminate, base cordate; pinnae up to 10 pairs, slightly ascending, opposite, sessile, up to 4.5 cm apart, largest pinnae 7 x 3.5 cm ovate-lanceolate, acroscopic base truncate, basiscopic base broadly cuneate; pinnules up to eight pairs per pinna, alternate, adnate, up to 3 x 0.8 cm ob lanceolate apex subacute or rounded, margin crenate; costa and costules slightly distinct above, veins indistinct above, slightly distinct below, forked once or twice, free, reaching the margin, rachis deeply grooved above, glabrous, pinnae dark green, glabrous above, covered by silvery or yellowish waxy powder; texture subcoriaceous. Sori submarginal, discrete when young, continuous when in mature, up to 1 mm wide, protected by false indusium, indusia pale brown with erose margin, spores ovoid or spherical, dark brown to honey coloured (Plate 4).
Economic importance:

Roots are used to treat eczema and stomachache; fronds are used to treat menstrual disorders (Jain SK 1991).

23. Systematic position of Cheilanthes mysurensis Wall. ex Beddome

<table>
<thead>
<tr>
<th>Class</th>
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</thead>
<tbody>
<tr>
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<tr>
<td>Genus</td>
<td>Cheilanthes</td>
</tr>
<tr>
<td>Species</td>
<td>mysurensis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial, Lithophyte.

Geographical distribution in Shevaroys hills: Thangamalai (kaverypeak), Kuthumuthal, Malai Easwar Temple.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, up to 3 cm thick, densely scaly at the apex; scales linear-lanceolate, 2 x 0.5 mm, uniformly dark brown, opaque with indistinct cells, margin entire, apex acuminate. Stipes tufted, 6 cm long, 2 mm thick, castaneous, glossy, brittle, densely scaly at the base, sparsely above with persistent bases of scales, rounded below, flattened above with a narrow wing at both edges. Lamina linear-lanceolate, 35 x 4 cm, narrowed towards both ends, bipinnatifid; pinnae up to 25 pairs, opposite, up to 1 cm apart, few pairs of basal pinnae reduced to deflexed auricles; largest pinna 2 x 1 cm, ovate, sessile, apex acute or rounded, base truncate; pinnules up to seven pairs, alternate up to 5 x 3 mm, oblong, adnate with the costa, apex rounded, margin lobed more or less half way to the costule; apex of the lobe truncate, margin entire, vein in distinct above, very slightly distinct below, repeatedly forked, free, not reaching the margin, pinnae dark green, glabrous above and below, texture herbaceous; rachis sparsely covered by dark brown, linear scales and persistent bases of scales. Sori semicircular, up to 0.75 mm, solitary or in pairs on the margin of each lobe; spores monolet, globose, yellowish-brown (Plate 4).
Economic importance:
Not yet found.

24. Systematic position of Cheilanthes tenuifolia (Burm. f.) Sw.

<table>
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<tr>
<th>Class</th>
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</thead>
<tbody>
<tr>
<td>Sub class</td>
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<tr>
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<tr>
<td>Genus</td>
<td>- Cheilanthes</td>
</tr>
<tr>
<td>Species</td>
<td>- tenuifolia</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Thangamalai, Vellakadai, kuttumuthal, Malai easwar temple.

Altitude: Above 1500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome short creeping, about 1 cm thick, densely scaly at the apex, scales, lanceolate, up to 2 x 0.25 mm, uniformly pale brown, acuminate, entire. Stipes crowded, up to 40 x 0.2 cm, dark brown or reddish brown, rounded below, grooved above, glabrous, glossy. Lamina ovate-lanceolate, up to 30 x 10 cm, quadripinnate below, tripinnatifid or tripinnate at the middle, bipinnatifid or bipinnate above, apex acuminate, base cuneate; primary pinna about five pairs, ascending, opposite or subopposite, up to 9 cm apart, distinctly stalked, obliquely ovate-lanceolate, about 8 x 5 cm, secondary pinnae larger on the basiscopic side, about five pairs, tertiary pinnae about 1 x 0.4 cm, pinnatifid, up to the midrib; ultimate lobes ovate, subacute, entire of shallowly lobed; veins slightly distinct, forked once or twice, free; pinnae dark green, glabrous above and below, texture thin herbaceous. Sori marginal on each ultimate lobe, protected by reflexed margin. Spores dark brown (Plate 4).

Economic importance:

Rhizome and roots are used by tribals as a general tonic (Dixit 1959). The Santhals prescribe a preparation from the roots for sickness to witchcraft or the evil.
25. Systematic position of *Doryopteris concolor* (Langsd.et Fisch.)Kuhn

Class - Filicopsida
Sub class - Filicidae
Order - Pteridales
Family - Sinopteridaceae
Genus - Doryopteris
Species - concolor

Habit: Terrestrial, Lithophyte.

Geographical distribution in Shevaroys hills: Ghat road, Shervaroyan temple, Nagaloor. Nadur, etc.,

Altitude: 500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome erect or suberect, up to 2 cm thick, covered by scales all over, scales lanceolate, 3.5 x 1 mm, pale brown, opaque at the centre, transparent at the periphery, apex acuminate, margin entire. Stipes tufted, up to 20 cm long, 3 mm thick, dark brown to blackish, polished and shallowly grooved above or flattened with thin brownish ridges along the margin, abaxially rounded, densely scaly at the base, very few scales distributed above. Lamina simple, cordiform, ternate, pedate, up to 8 x 16 cm; primary lobes broad lanceolate, bipinnatifid or pinnatifid, lateral lobes longer than the median lobe; terminal segments up to 12 pairs, ovate lanceolate, up to 2.5 x 0.5 cm, obtuse, sinuses; costa distinct, dark, polished and raised below, indistinct, pale brown and grooved above; veins indistinct both above and below; pinnae dark green, glabrous above and below. Sori marginal, continuous, about 2 mm wide, concolorous with the lamina surface; spores trilete, globose, perine with minute triangular flaps, spores pale brown (Plate 5).

Economic importance:

Not yet found.

Class - Filicopsida
Sub class - Filicidae
Order - Pteridales
Family - Parkeriaceae
Genus - Ceratopteris
Species - thalictroides

Habit: Aquatic.

Geographical distribution in Shevaroys hills: Kutaru, Sonappadi.

Distribution level: Rare.

Altitude: 500 msl.

Taxonomic description:

Aquatic plants, stock, erect or suberect, bearing thick fibrous or fleshy, long roots densely on the abaxial side, apex covered by scales; scales soft, uniformly pale brown, about 2 x 4 mm, ovate, acute, entire, comprising small, curved cells all over. Fronds arranged in rosette; stipes up to 20 x 1.5 cm, terete, fleshy, pale green, densely ridged all over with few scattered scales. Lamina dimorphous, sterile lamina bipinnatifid or tripinnate, ovate, about 30 x 20 cm, acute, cuneate, primary pinnae about five pairs, slightly ascending, alternate, up to 8 cm apart, distinctly stalked, up to 10 x 6 cm, secondary pinnae about four pairs, alternate, shortly stalked, broadly deltoid or ovate, about 4 x 4 cm, pinnatifid about 2-3 mm to the costa, ultimate lobes linear, oblong or variously shaped, about 1.5 x 0.7 cm, apex acute, margin entire, veins slightly distinct above and below, copiously anastomosing to form rectangular to hexagonal, elongated areoles up to 0.5 x 2 mm. Lamina glabrous above and below, pale green, texture soft herbaceous. Fertile lamina ovate, up to 40 x 20 cm, tripinnate, ultimate segment needle like, up to 6 x 0.2 cm, acute, margin reflexed and completely covering the lower surface on which two rows of larger sporangia are borne; spores trilete, pale green (Plate 5).
Economic importance:

The plants are used as poultice in skin complaints and in China as tonic and styptic. Fresh leaves are used as vegetable curry (Dixit and Vohra 1984; Singh HB 1999). It is ploughed in as part of green manure in rice fields.

27. Systematic position of Hemionitis arifolia (Burm.) Moore

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
</tr>
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<td>Order</td>
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<tr>
<td>Family</td>
<td>Hemionitidaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Hemionitis</td>
</tr>
<tr>
<td>Species</td>
<td>arifolia</td>
</tr>
</tbody>
</table>

Habit: Terrestrial, Lithophyte.

Geographical distribution in Shevaroys hills: Ghat road, Nagaloor, Muluvi, Karadiyur, etc.,

Altitude: 500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome erect when young, short, creeping when mature, up to 2 cm thick, densely covered by scales; scales ovate-lanceolate 3.5 x 0.5 mm, dark at the centre, whitish at the periphery and entire, about one-third part of the scale towards the distal part is completely whitish without median dark band. Stipes compact, numerous, black or dark brown; polished, brittle up to 30 cm long in fertile fronds, up to 22 cm in sterile ones, up to 2 mm thick, terete, densely scaly all over when young, sparsely so when mature. Lamina simple, diamorphic, cordiform, up to 9 x 6 cm, fertile ones up to 7 x 10 cm, deltoid, trilobed, entire, costa raised below, grooved above, densely scaly below; veins obscure both above and below, anastomosing closely, areoles seen as depressions is dry fronds; lamina pale green, texture chartaceous; long, soft, pale brown scales distributed all over the lower surface of the sterile laminae, very rare on adaxial side of fertile
and sterile laminae. Sori continuous along the veins filling the entire surface of the laminae when mature, intermixed with hairs and scales, spores trilete, dark brown (Plate 5).

Economic importance:

The fronds are used in the treatment of aches and as vermifuge (Dixit and Vohra 1984). In the Philippines, crushed juice from the fronds is used for burns.

28. Systematic position of Pityrogramma calmomelanos var. aureoflava (Hook.) Weath. ex Bailey

Class - Filicopsida
Sub class - Filicidae
Order - Pteridales
Family - Hemionitidaceae
Genus - Pityrogramma
Species - calmomelanos var. aureoflava

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Asambur, Rosie land estate, mining areas.

Altitude: Above 1500 msl.

Distribution level: Frequent.

Taxonomic description:

Rhizome erect, about 3 cm thick, densely scaly at the apex; scales lanceolate, dark brown, apex long acuminate, margin entire; stipes tufted, dark brown or black scaly at the very base, glabrous and glossy above, abaxially rounded, shallowly grooved above. Lamina lanceolate, bipinnate, apex acute or acuminate, base broadly cuneate; pinnae about 12 pairs, progressively reduced towards apes, opposite or subopposite, shortly stalked, ovate-lanceolate, apex acuminate, acrosopic base truncate or cuneate, basiscopic base decurrent; pinnae about 10 pairs, ovate, adnate with the costa, apex acute, margin entire; few pairs of basal pinnae auricled
on the acroscopic base; veins obscure, marked by faint grooves above, forked once or twice, reaching the margin; pinna dark green, glabrous and glossy above, covered by yellow powder on the under surface of the pinna, texture thin or thick herbaceous. Sori along veins, covered by entire surface when mature, spores trilete, honey coloured (Plate 5).

Economic importance:

Not yet found.

29. Systematic position of Adiantum caudatum L.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<td>Genus</td>
<td>Adiantum</td>
</tr>
<tr>
<td>Species</td>
<td>caudatum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Nagaloor, Sengkadu, Kerai kadu, velur, kommakadu etc.,

Altitude: 500-1000 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, up to 2 cm thick, densely covered by scales all over; scales lanceolate, up to 3 x 0.25 mm, dark brown at the centre, gradually become pale brown towards the margin; opaque, acuminate, entire. Stipes numerous, tufted, about 15 x 0.15 cm, dark brown, rounded below, grooved above, densely covered by long, pale brown, multicellular, uniseriate, slender hairs all over; fronds often proliferate. Lamina oblong-lanceolate or linear-oblong-lanceolate, about 35 x 3 cm, progressively narrowed towards, long wiry acuminate apex, simply pinnate; pinnae about 40 pairs, alternate sessile or subsessile, up to 1 cm apart, basal few pairs slightly reduced and deflexed, largest pinna about 1.5 x 0.5 cm, dimidiate, lower half completely excised, acroscopic base truncate, upper margin
lobed half way or more to the lower margin, apex subacute or rounded; veins very slightly distinct above and below, dichotomously branched, reaching the margin, pinnae pale green; texture herbaceous, long, soft, pale brown hairs sparsely distributed on the intervenal area both above and below, short hairs densely distributed all over the lower surface except on veins, rachis also densely covered by long and short hairs all over. Sori marginal reniform or orbicular, about 1 mm in diameter, indusia densely or sparsely pubescent above, spores pale brown (Plate 5).

Economic importance:

Fronds extract is effective in wound healing (Burkill IH, 1996). It is used in skin diseases, diabetes, cough and fever (Chopra et al., 1956; Jain SK, 1991).

30. Systematic position of Adiantum incisum Forssk.

Class - Filicopsida  
Sub Class - Filicidae  
Order - Pteridales  
Family - Adiantaceae  
Genus - Adiantum  
Species - incisum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Ghat road, Glaze brook Estate, Salaparai, Pattipadi etc.,

Altitude: 500 msl.

Distribution level: Common.

Taxonomic description:

Rhizome erect, 1-2 cm thick, densely covered by scales all over; scales lanceolate, about 2 x 0.25 cm, uniformly pale or reddish-brown, acuminate, entire. Stipes numerous, tufted, up to 7 x 0.1 cm, reddish brown to dark brown, glossy, rounded below, grooved above, sparsely covered by long, soft, slender, pale brown,
multicellular hairs. Lamina oblong-lanceolate, slender, up to 35 x 3 cm, not proliferate, simply pinnate; pinnae about 25 pairs, sessile or sub sessile, basal few pairs slightly reduced, deflexed, subopposite, distal most pairs progressively reduced and widely spaced, rest of the pinnae alternate, about 1-5 cm apart, largest pinna 2 x 1 cm, dimidiate, lower margin more or less perpendicular to the rachis, upper margin deeply lobed, upper base truncate and parallel to the rachis, apex rounded, veins slightly distinct above and below, repeatedly forked, flabellate, free, reaching the margin, pinnae pale green, glabrous above and below; texture herbaceous, adaxial side of the rachis densely or sparsely covered by hairs as on stipes. Sori marginal, oblong or reniform, about 2 x 1 mm; indusia dark brown, entire, glabrous; spores pale brown (Plate 5).

Economic importance:

Not yet found.

31. Systematic position of Adiantum lunulatum Burm.

Class - Filicopsida
Sub Class - Filicidae
Order - Pteridales
Family - Adiantaceae
Genus - Adiantum
Species - lunulatum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Poosari thottam stream line.

Distribution level: Rare.

Taxonomic description:

Rhizome erect or suberect, up to 2.5 cm thick; scales ovate-lanceolate, 3 x 0.5 mm apex acuminate, margin entire, pale brown at the periphery, dark at the centre. Stipes tufted, wiry, numerous up to 25 x 0.3 cm, dark brown or black, scaly at the basal-most part, glabrous above. Lamina lanceolate, up to 40 x 8 cm, simply pinnate, pinnae up to 10-18 pairs, alternate, 3 x 5 cm apart, distinctly
stalked, pinnae fan shaped, up to 45 x 25 cm, dimidiate, the lower edge nearly in line or oblique with the potiole, upper edge rounded, lobed, acrosopic base truncate, margin entire or subcrenate in sterile pinnae; veins distinct above and below, dichotomously, flabellately branched, free, reaching the margin; pinnae pale green, glabrous above and below; texture herbaceous. Sori continuous along the edge of the lobe, crescent-shaped, up to 2 mm wide, spores triangular, pale brown (Plate 5).

Economic importance:

Leaf and root decoction is used for the treatment of chest complaints in Malaya. It is used in blood related diseases in epileptic fits and in rabies; rhizome prescribed for strangery and in fever due to elephantiasis. Fronds are burnt in oil and applied to itch (Nayar BK, 1957).

32. Systematic position of Adiantum hispidulum Sw.

<table>
<thead>
<tr>
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</thead>
<tbody>
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<td>Sub Class</td>
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<td>Adiantum</td>
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<tr>
<td>Species</td>
<td>hispidulum</td>
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</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Near lake, G.H. road, Nagaloor, Velur etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Common.

Taxonomic description:

Rhizome short creeping, branched, interwoven compactly to give apparent look of an erect or suberect rhizome, densely covered by scales all over; scales stiff, 3 x 1 mm, ovate-lanceolate, apex acuminate, margin entire, uniformly dark brown, stipes compact, up to 30 x 0.3 cm, black, polished, triangular with flattened
side below, grooved on the lateral sides, scaly at the base, pale brown, appressed hairs distributed densely on the grooves, sparsely in the rest. Lamina obovate, up to 25 x 15 cm, bipartite pedately divided tripinnate, basal dichotomy equal or unequal, each primary branch forked to form an outer branch which forks once or twice and an inner branch which does not fork, innermost being longest, outermost branch shortest; rachis and petioles of pinnules densely covered by light brown appressed hairs all over; ultimate branches pinnate, oblong, acute, basal three to five pairs of pinnuules patent, edges not touching, upper pairs ascending and overlapping with the adjacent edges, pinnules up to 35 pairs, one to two pinnules usually borne on the stalk of the ordinary and secondary branches, alternate, shortly stalked, largest pinnule 1.7 x 0.5 cm, dimidiate, inner edges obliquely truncate, outer edge rounded, upper and lower edges parallel, outer and upper margin of the sterile pinnules deeply dentate, crenate in the fertile part of the pinnules; veins distinct above, dichotomously branched, reaching the margin, pinnae dull green, glabous above, lower interveinal area with dense, appressed light brown hairs; texture firm coriaceous. Sori on crescent-shaped, reflexed flaps of the outer and upper edges, indusia with numerous long, dark brown hairs on the upper surface, spores dark brown (Plate 5).

Economic importance:

Not yet found.
33. **Systematic position of Adiantum concinnum willd.**

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Pteridales</td>
</tr>
<tr>
<td>Family</td>
<td>Adiantaceae</td>
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<tr>
<td>Genus</td>
<td>Adiantum</td>
</tr>
<tr>
<td>Species</td>
<td>concinnum</td>
</tr>
</tbody>
</table>

**Habit:** Terrestrial.

**Geographical distribution in Shevaroys hills:** Sengkadu, Karadiyur, Muluvi, Nagaloor.

**Altitude:** Above 1000 msl upto the hill top.

**Distribution level:** Seldom.

**Taxonomic description:**

Rhizome erect or suberect, up to 2 cm thick, densely scaly at the apex, scales lanceolate, up to 4 x 0.5 cm, acuminate, margin entire. Stipes tufted, up to 28 cm long, 2.5 mm thick, slender, dark brown, abaxially rounded, adaxially shallowly grooved, sparsely scaly at the very base, glabrous and glossy above. Lamina oblong-lanceolate, up to 40 x 20 cm, bipinnate or tripinnate, apex acuminate, base broadly cuneate; primary pinnae up to 10 pairs, slightly ascending or spreading, alternate, up to 7 cm apart, stalked up to 1.5 cm, lanceolate, up to 15 x 4 cm, apex acute with a terminal pinnule similar to the lateral ones, base broadly cuneate, secondary pinnae up to 5 cm apart, stalked up to 1 cm, ovate or oblong-deltoid, up to 4 x 2 cm, apex acute with a terminal pinnule, base oblique, pinnules up to four pairs per secondary pinna, alternate, shortly stalked, fan-shaped, suborbicular, ovate or wedge shaped, up to 1.5 x 1.5 cm, base truncate or narrowly or broadly cuneate or acrosopic base truncate, basiscopic base slightly excised and narrowly cuneate, margin deeply lobed into two or three primary lobes which are again shallowly lobed. Veins slightly distinct above and below, repeatedly, flabellately forked, free, reaching the margin; pinnae pale green or dark green, glabrous above and below; texture thin herbaceous. Sori distributed all along the margin of the pinnule except acrosopic and basiscopic bases, reniform, up to 1 mm across; indusia reniform, glabrous, pale brown, papery, spores tetrahedral, pale brown (Plate 6).
34. Systematic position of Adiantum raddianum Presl

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<td>Adiantaceae</td>
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<tr>
<td>Genus</td>
<td>Adiantum</td>
</tr>
<tr>
<td>Species</td>
<td>raddianum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Sengkadu, Karadiyur, Muluvi, Nagaloor, Kommakadu etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome short creeping, up to 2 cm thick, scales ovate-lanceolate, 2.5 x 0.25 mm, uniformly pale brown, apex, acuminate, margin entire, stipes compact, up to 20 x 0.2 cm, dark brown to black, flexible if dark brown, brittle if balck, terete or shallowly grooved above, glabrous and glossy above, scaly at the base; lamina deltoid-ovate, 17 x 10 cm, usually tripinnate, very rarely quadripinnate; primary, secondary and tertiary pinnae alternate and anadromous. Pinnules obovate, obtriangular or parallelogram-like, 1 x 1 cm, base narrowly cuneate, margin rounded regularly, deeply bilobed or trilobed, primary lobes sometime lobed again, margin of the lobes serrulate when sterile; veins distinct, repeatedly, dischotomously, flabellately, branched, free, reaching the sinuses between the ultimate serrulature, three to six veins converging, texture thin herbaceous, Sori two to eight each pinnule, rounded or obreniform, borne at the semi-orbicular or circular notches; indusium translucent, spores pale brown (Plate 6).

Economic importance:

Not yet found.
35. Systematic position of Pteridium aquilinum (L.) Kuhn v. Deck

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
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</thead>
<tbody>
<tr>
<td>Sub class</td>
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</tr>
<tr>
<td>Order</td>
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</tr>
<tr>
<td>Family</td>
<td>Dennstaedtiaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Pteridium</td>
</tr>
<tr>
<td>Species</td>
<td>aquilinum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Throughout the study area.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Common.

Taxonomic description:

Rhizome long creeping, subterranean, up to 2 cm thick, densely covered by about 5 mm long, pale brown, multicellular, uniseriate, deciduous hairs all over. Stipes scattered, about 60 x 1 cm, dark brown to black and hairy at the base, pale brown to stramineous and glabrous above, abaxially rounded, adaxially grooved. Lamina deltoid-ovate, acute, broadly cuneate, about 160 x 85 cm, tripinnatifid at base, becoming bipinnatifid towards apex; primary pinnae about eight pairs, opposite or sub-opposite ascending, about 25 cm apart, with about 5 cm long petiole; largest primary pinna up to 60 x 30 cm, ovate-lanceolate, acuminate, acrosopic base truncate, basiscopic base cuneate; secondary pinnae up to 12 pairs per primary pinna, subopposite at the base, alternate above, catadromous, shortly stalked or subsessile, about 6 cm apart, largest secondary pinna up to 30 x 6 cm, oblong-lanceolate, acuminate, truncate or subtruncate; pinnules up to 20 pairs per secondary pinna, alternate, anadromous or isodromous, about 1cm apart, sessile about 35 x 1 cm, basal two to four acrosopic pinnules slightly smaller than the corresponding basiscopic ones, acute or acuminate, truncate or subtruncate, margin lobed 1-2 mm to costule, one-fourth to half distal part of the pinnule is entire and unlobed; lobes about 5 x 3 mm, deltoid, oblique, acute, entire margin up to 1 mm wide, pale brown, membraneous, transparent, fimbriate or wavy border, extrose when young, becoming reflexed and close to the surface of the pinnules when mature, costa and costules grooved above, costules, veins and veinlets slightly
raised below, marked by grooves above; veins forked once, free, soft, whitish, appressed hairs distributed densely on the secondary rachis, costa, costules and on lower surface of the pinnules, upper surface glabrous, lamina dark green; texture coriaceous. Sori linear, sub marginal, about 1mm wide, protected by pale brown, soft, fimbriate, reflexed margin above and thin small fimbriate membrane below light brown (Plate 6).

Economic importance:

Rhizome is astringent, anthelmintic and is useful in diarrhoea and inflammation of the gastric and intestinal mucous membranes. Decoction of rhizome and fronds is given in chronic disorder of viscera and spleen. Fronds are poisonous and sometimes fatal to the grazing animals (Dixit and Vohra 1985). Rhizome is boiled in oil and is made into an ointment for wounds. The juice of the plant is active against Gram-positive bacteria. Bracken fern is called ‘Strainer weed’ in Liberia because several layers of the fern woven criss-cross over the top a kettle serves the purpose of a strainer. It is also woven into the foundation shape of wreaths and floral decorations (Hartley 1962).

Throughout the world Pteridium aquilinum has been used as a dye plant. The colonists in Plymouth made an olive green dye out of bracken tops mordanted with alum and copper. The boiled roots of the bracken fern which turn black formed the chief black pattern materials among the Washo, Mono and yokut Indians. The untreated rhizome was the only strictly brown pattern material used in weaving by North American Indians.

Before the introduction of soda from sea salt and others, the alkali ashes of burnt bracken were used in glassmaking in Europe and the British Isles.

In times of scarcity, the rhizomes are boiled or roasted and eaten or ground into powder used for making bread. The bitterness due to the presence of starch is removed by washing. Brickled bracken fern called ‘Tsukemono’ is eaten as a side dish by the Japanese who are the largerest consumer of bracken in the world (May 1978). The starch has been extracted for medicinal use. Mixed with malt, the rhizomes are used for brewing a kind beer. They are also employed as a feed for stock, especially pigs. Bracken fern is reported to be used for tanning certain leathers. The tender fronds are used as vegetable and also employed in soups. The green fronds are used as fodder. But continuous feeding results in poisonous effect which essentially typical of thiamine.
deficiency due to the antithiamine facters: 1. A thermolabile enzyme thiaminase; 2. A thermostable facter comprising flavanoid pigments.

The dried fronds are employed as packing material. They have been tried as a source of paper pulp. Bracken is used as litter for cattle and horses in coffee plantations; the manure thus formed is rich in phosphoric acid and potash.

36. Systematic position of Histiopteris incisa (Thunb.) J. Sm.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
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<tr>
<td>Order</td>
<td>Dicksoniales</td>
</tr>
<tr>
<td>Family</td>
<td>Dennstaedtiaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Histiopteris</td>
</tr>
<tr>
<td>Species</td>
<td>incisa</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Shervaroyan temple, Mining area, Balmadies estate.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Seldom.

Taxonomic description:

Rhizome long creeping, subterranean, up to 1cm thick, densely covered by long, septate, dark brown, uniseriate or multiseriate hairs and or persistent bases of such hairs. Stipes scattered, up to 100 cm long, 1 cm thick, castaneous below, reddish-brown above, rounded below, slightly flattened above, glossy and glabrous all over. Lamina broadly deltoid, up to 40 x 70 cm, tripinnate at the base, bipinnate at the apex; primary pinnae up to three pairs, opposite, more or less perpendicular to the rachis, up to 22 cm apart stalk up to 12 cm, deltoid, up to 85 x 50 cm, apex acuminate, base truncate; secondary pinnae up to seven pairs in the largest basal primary pinna, opposite, up to 16 cm apart, stalk up to 3 cm, narrowly deltoid, up to 28 x 10 cm, apex acuminate, base truncate; tertiary pinnae up to seven pairs per secondary pinna, opposite, sessile at the base and becoming a adnate towards the apex, up to 4 cm apart, lanceolate, up to 7 x 2 cm, apex acuminate, margin lobed 0-
4/5 way to the costa, deeply lobed in the basal part of the lamina, base broadly cuneate, lobes deltoid with obtuse apex and entire margin, costa slightly raised below, stipule like reduced pinnule present at the axis of main rachis and primary pinna, secondary rachis and secondary pinna; veins obscure above, slightly distinct below, capiously anastomosing to form a series of areoles along the costa, areoles extending from one costule to the other; pinnae pale green, glabrous above and below, texture herbaceous. Sori linear, submarginal, all along the margin of the leaflets except at the apices, continuous, protected by reflexed margin, spores bilateral or reniform, pale green with slightly raised (Plate 6).

Economic importance:

Not yet found.

37. Systematic position of Odontosoria chinensis (L.) J. Sm.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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</tr>
<tr>
<td>Order</td>
<td>Dicksoniales</td>
</tr>
<tr>
<td>Family</td>
<td>Lindsaeaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Odontosoria</td>
</tr>
<tr>
<td>Species</td>
<td>chinensis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Way of shervarayan temple, Brook line Estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome short creeping, up to 0.5 mm, branched closely and irregularly, bearing roots on the abaxial side, two alternate rows of fronds on adaxial side, densely covered by hairlike scales all over, hairs up to 3 mm long, pale or dark brown, multicellular, uniseriate, throughout or biseriate at the base. Stipes scattered, 2-5 mm apart, patent, about 35 x 0.4 cm, terete or shallowly grooved above, pale or grey-brown to stramineous, densely scaly at the very base, globrous and polished
above. Lamina lanceolate, about 40 x 14 cm, cuneate, acuminate, about one-third of the distal part of the lamina progressively narrowed, tripinnatifid or quadripinnate with bipinnatifid distal part; primary pinnae about 10 pairs, ascending, basal one or two pairs subopposite, others alternate, about 6 cm apart, distinctly stalked, about 10 x 5 cm, ovate- lanceolate, straight or falcate, acuminate, acroscopic base truncate, basiscopic base cuneate, secondary pinnae about eight pairs per primary pinna, ascending, anadromous, shortly stalked, alternate, about 1 cm apart, about 3 x 1 cm, obliquely ovate, acute, acroscopic base truncate, basiscopic base cuneate; tertiary pinnae about three pairs, anadromous, alternate, shortly stalked, about 0.5 cm apart, obliquely obovate or obconical, apex rounded in outline, base cuneate, about 1 x 0.5 cm, deeply dissected into two to four lobes; lobes obconical, alternate, about 5 x 2 mm, sessile, entire, apex truncate, veins obscure above and below, forked, free, lamina pale green, brownish when dry, glabrous above and below; texture herbaceous. Sori submarginal at the vein end of each lobe, about 1.5 x 1 cm, uninerval or binerval; spores dark brown (Plate 6).

Economic importance:

It is used internally for chronic enteritis in Mauritins (Dixit and vohra 1984). It is used to produce red dye (Foseber 1942). The leaves contain protocatechualdehyde, protocatechuic acid, syringic acid and vitexin.

38. Systematic position of Araioiostegia pulchra (Don) Copel.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Davalliales</td>
</tr>
<tr>
<td>Family</td>
<td>Davalliaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Araioiostegia</td>
</tr>
<tr>
<td>Species</td>
<td>pulchra</td>
</tr>
</tbody>
</table>

Habit: Terrestrial, Epiphytic.

Geographical distribution in Shevaroys hills: kondaiyanur, Sonappadi and Thangamalai.

Altitude: Above 1500 msl.

Distribution level: Rare.
Taxonomic description:

Rhizome up to 7 mm thick branched; scales ovate, up to 3 x 1.5 mm, uniformly pale brown with a dark brown spot just above the base, translucent, membranaceous, apex obtuse, margin entire. Stipes up to 2 cm apart, up to 17 x 0.3 cm, usually stramineous, rarely pale brown, abaxially rounded, adaxially grooved with a narrow wing either side, densely scaly at the very base, glabrous above. Lamina ovate, 40 x 28 cm, progressively narrowing towards the distal part, apex acute, base narrowly cuneate, tripinnatifid; primary pinna up to 10 pairs, ascending, stalked up to 1 cm, subopposite at the base, alternate above, up to 6 cm apart, obliquely ovate-lanceolate, up to 25 x 10 cm, apex acuminate, base cuneate; secondary pinna 12 pairs in the basalmost pair of primary pinna of the largest frond, ascending, unequal in the basal part especially in the basalmost part of primary pinnae, shortly stalked, alternate, ovate, up to 8 x 3 cm, apex acute, acrosopic base truncate, basiscopic base cuneate; tertiary pinna up to 10 pairs, alternate, shortly stalked, ovate, up to 1.5 x 1 cm, apex acute usually with a bifid lobe, acrosopic base truncate, basiscopic base cuneate; pinnules up to four pairs per tertiary pinna, alternate, adnate, apex with bifid or simple lobe, apex acute, base cuneate, margin deeply lobed; lobes two or three on the acrosopic side, one or two on the basiscopic side, elliptic, acute, bifid or simple, veins slightly distinct above and below, forked in accordance with a lobing of the pinnules, free, not reaching the margin, lamina pale green, glabrous above and below; texture chartaceous, rachis, rachules and rachilets narrowly winged. Sori seated on the veins at the ultimate forking point of each lobe, up to 1 mm in diameter, indusia semicircular, membranaceous, pale brown, glabrous, attached by base only, margin entire, spores reniform, yellowish brown (Plate 6).

Economic importance:

Not yet found.

39. Systematic position of Nephrolepis auriculata (L.) Trimen

| Class   | - Filicopsida |
| Sub class | - Filicidae |
| Order   | - Davalliales |
| Family  | - Oleandraceae |
| Genus   | - Nephrolepis |
| Species | - auriculata |
Habit: Epiphytic, Lithophytic.

Geographical distribution in Shevaroys hills: Kiliyur water-falls, Sengadu, Balmadis estate, Vsambadi Estate.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome erect, about 2 cm thick, densely scaly all over; scales lanceolate, about 5 x 1 mm, uniformly pale brown, acuminate, margin fimbriate, rhizome bearing thick wiry roots which bears about 1 cm diameter, spherical, fleshy, densely scaly tubers. Stipes tufted, about 20 x 0.3 cm, densely scaly below, glabrous or sparsely scaly above. Lamina linear-oblong-lanceolate, about 70 x 7 cm, progressively narrowed towards base and apex. Pinnae about 30 pairs, spreading, alternate, sessile, about 1 cm apart; largest pinna up to 4 x 1 cm, along, apex subacute or rounded, base unequal, cordate, acroscopic base auricled and overlapping the rachis and adjacent pinna, margin crenate; costa and veins distinct above and below; veins forked once, free, not reaching the margin, ending with a hydathode, pinnae pale green, glabrous above and below, texture herbaceous, soft, linear, pale brown hairs sparsely distributed all over the rachis. Sori submarginal in two rows, about 10 pairs, seated on the acroscopic veinlets, reniform, up to 1 mm in diameter, indusia reniform, dark brown at the cordate base, pale brown towards the edge, entire, glabrous, spores reniform or planoconvex, yellowish-brown (Plate 6).

Economic importance:

A decoction of the fresh fronds is given as a drink for coughs in Philippines. Tubers are used as vegetable curry in Garhwal, Darjeeling and Bhutan (Dixit and Vohra 1984).

40. Systematic position of Nephrolepis multiflora (Roxb.) Jarret

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
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<tbody>
<tr>
<td>Sub class</td>
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<tr>
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<td>Oleandraceae</td>
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<td>Nephrolepis</td>
</tr>
<tr>
<td>Species</td>
<td>multiflora</td>
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</tbody>
</table>
Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Ghat road, Asambur, Sengkadu etc.,
Altitude: Above 1000 msl upto the hill top.

Distribution level: Common.

Taxonomic description:

Rhizome erect or suberect, about 2 cm thick with stipes, up to 0.5 cm thick without stipes, woody, densely covered by scales all over; scales appressed, about 3 x 1 mm, ovate-lanceolate, pale brown at the periphery, dark at the centre, apex acute or acuminate, margin fimbriate and ciliated. Stipes tufted, about 60 x 0.5 cm, grey-brown when dry, abaxially rounded, adaxially grooved, densely scaly at the base, sparsely scaly above. Lamina narrowly deltoid or oblong-lanceolate, about 80 x 13 cm, simply pinnate; pinnae about 25 pairs, spreading, subopposite or alternate, about 2 cm apart, sessile; basal few pairs progressively reduced and deflexed; largest pinna 10 x 1.5 cm, oblong lanceolate, acute or acuminate, base broadly cuneate and unequal, auricled on the acrosopic base, margin serrate; costa slightly raised above and below; veins well distinct in younger fronds, obscure in mature ones, forked up to three times, parallel, free, not reaching the margin, ending with a hydathode. Lamina pale green, texture herbaceous to chartaceous, pale brown, linear, fimbriate scales mixed with hair distributed sparsely all over the lamina. Sori submarginal at the vein end, one per two or three veinlets, distributed all over the pinna, leaving more or less one-third of the distal part, up to 1.5 mm in diameter, reniform, indusia dark brown when dry, reniform, glabrous; spores reniform or planoconvex, yellowish-brown (Plate 6).

Economic importance:
Not yet found.
41. Systematic position of Hymenophyllum denticulatum Sw.

Class - Filicopsida
Sub class - Filicidae
Order - Hymenophyllales
Family - Hymenophyllaceae
Genus - Hymenophyllum
Species - denticulatum

Habit: Epiphytic, Lithophytic.

Geographical distribution in Shevaroys hills: Vaniyar Stream line, Kutararu, Kiliyur water- falls.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome up to 0.5 mm thick, terete, sparsely covered by multicellular, uniseriate, pale brown hairs. Stipes about 1 - 5 cm apart, 3 x 0.4, cuneate, rachis winged; primary pinnae about five pairs, slightly ascending, about 1-5 x 1 cm, ovate or variously shaped, acute, acrosopic base truncate, about 5 x 2 cm, apex obtuse or rounded; margin of the segments and wing of the stipe and rachis cm, blackish, rounded above and below, narrowly winged, covered by hairs as on rhizome, lamina ovate or ovate-lanceolate, about 6 x 2 cm, bipinnatifid or bipinnate, acute undulate and sharply denticulate; costa and veins well distinct and slightly raised above and below, not reaching the apex of the segments; frond pale green with brown tingeing along the margin of the segments, glabrous above and below. Sori borne on the tip of the basal acrosopic segments, obovate, up to 3 x 2 mm, involucre two lipped, free more than half way to the base, apex rounded, margin denticulate, few blunt spine-like outgrowths seen on the upper surface, receptacles extruded in younger once (Plate 7).

Economic importance:

Not yet found.
42. Systematic position of Hymenophyllum javanicum Spr.

<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Sub class</td>
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<td>Order</td>
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<tr>
<td>Genus</td>
<td>Hymenophyllum</td>
</tr>
<tr>
<td>Species</td>
<td>javanicum</td>
</tr>
</tbody>
</table>

Habit: Lithophyte.

Geographical distribution in Shevaroys hills: Vaniyar stream line, Kutaraaru, Kiliyur water- falls.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome about 0.5 mm thick, stipes about 1 cm apart, about 2 x 0.1 cm, wingless at the basal part, narrowly winged above, glabrous. Lamina oblong-lanceolate about 6 x 2.5 cm, bipinnatifid, ultimate segments oblong, about 5 x 2 mm, apex obtuse or rounded, rachis and costa broadly winged, margin of the wings and segments entire, undulate; veins distinct, not reaching the margin; lamina dark green, glabrous. Sori terminal on the ultimate segments, about 2 x 1 mm, elliptic or ovate, involucre bivalved, free up to the base, acute, entire; glabrous and receptacles not extruded (Plate 7).

Economic importance:

The dried fern mixed with garlic and onions is sometimes smoked by the local people to cure headache (Manickam & Irudayaraj 1992).

43. Systematic position of Trichomanes saxifragoides presl

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
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</thead>
<tbody>
<tr>
<td>Sub class</td>
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<td>Trichomanes</td>
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<tr>
<td>Species</td>
<td>saxifragoides</td>
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</tbody>
</table>
Habit: Epiphytic, Lithophytic.

Geographical distribution in Shevaroys hills: Vaniyaru, Kutararu, Kiliyur falls.
Altitude: Above 1000 msl upto the hill top.
Distribution level: Frequent.

Taxonomic description:

Rhizome wide creeping profusely branched, about 1 mm thick. Stipes scattered, about 1 cm apart, about 1-5 x 0.5 cm, not winged, non-proliferate, lower half dark and hairy, upper half pale green and glabrous. Lamina semi or suborbicular, rarely broadly obovate or wedge-shaped, about 1 x 1 cm, flabellate, ultimate segments oblong, entire, apex with sinus; veins distinct below, almost reaching the apex, bearing short, pale or dark brown trichomes sparsely below; lamina pale green, membranaceous. Sori immersed, about 2 x 1 mm, obconical, winged throughout, mouth truncate, dilated, receptacle extruded, spores spherical or ovoid, dark green (Plate 7).

Economic importance:

Not yet found.

44. Systematic position of Trichomanes plicatum (v.d.B.) Beddome

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Hymenophyllales</td>
</tr>
<tr>
<td>Family</td>
<td>Hymenophyllaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Trichomanes</td>
</tr>
<tr>
<td>Species</td>
<td>plicatum</td>
</tr>
</tbody>
</table>

Habit: Epiphytic, Lithophytic.

Geographical distribution in Shevaroys hills: Vaniyaru, Kutararu, Kiliyur falls.
Altitude: Above 1000 msl upto the hill top.
Distribution level: Frequent.

Taxonomic description:

Rhizome long creeping, up to 1 mm thick. Stipes up to 3 cm long, 1 mm thick, pale green, flattened with a narrow wing on either side from the base, bearing
short hairs along the margins at the basal part. Lamina oblong or ovate, 5 x 3.5 cm, 
tripinnatifid apex acute or rounded, base broadly cuneate; primary pinnae up to five 
pairs, alternate pairs of about 1 x 0.5 cm, secondary pinnae lobing again once or 
twice, ultimate lobe oblong, apex rounded, margin entire, costa and costules winged 
on either side; veins distinct above and below, reaching the margin, free; numerous 
flase veins scattered on either side of the true vein, membranaceous. Sori terminal 
on each lobe on either side of the pinnae, involucre free half-way to the base, bluntly 
triangular, margin entire, narrowly winged on the basal part, receptacle extruded, 
spores spherical, pale green (Plate 7).

Economic importance:
Not yet found.

45. Systematic position of Dicranopteris linearis (Burm. f.) Underwood

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Gleicheniales</td>
</tr>
<tr>
<td>Family</td>
<td>Gleicheniaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Dicranopteris</td>
</tr>
<tr>
<td>Species</td>
<td>linearis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Balmides estate, Shervaroyan 
temple, Rosie land estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome up to 0.5 cm thick, bearing wiry roots abaxially and laterally, 
covered by deciduous, rust brown hairs. Stipes scattered, about 10 cm apart, about 
160 x 0.6 cm, terete, dark or grey brown, hairy at the base, glabrous above. Lamina 
about 125 cm long, primary branches forked three or four times; stipules clasping 
the rachis, about 1 x 1 cm, ovate, entire or shallowly lobed; accessory branches 
borne at the fork; ultimate leafy branch about 18 x 4 cm, lanceolate or ob lanceolate, 
acute or acuminate, pinnatifid, 1-3 mm to the costa; segments about 2 x 0.5 cm,
oblong or narrowly deltoid, entire, apex notched; sinus widest at the apex, negligible below, gradually narrowing towards base; veins distinct above and below, forked three or four times, free, reaching the margin; lamina pale green or glaucous green, glabrous, texture chartaceous, sori submedian on the acrosopic veinlet, up to 1 mm in diameter, consisting about 16 sporangia (Plate 7).

Economic importance:

Rhizome is used as anthelmintic in Assam. Fronds are used asthma in Madagascar. Fluid extracted from fronds shows antibacterial properties. Stipes used for preparing school pens (Dixit and Vohra 1984). Rachis used for making mats, Chair, seats, Pouches, Cape, fishing trapes, baskets and belts. Fronds are used as an ingredient for making local beverages in Arunachala Pradesh (Sarnam Singh and Panigraghi 2005).

46. Systematic position of Cyathea nilgirensis Holttum

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Cyatheales</td>
</tr>
<tr>
<td>Family</td>
<td>Cyatheaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Cyathea</td>
</tr>
<tr>
<td>Species</td>
<td>nilgirensis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Sanyasi karadu, Marappalam, Balmadies estate, Rosie land Estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Trunk about 2 metre high, bearing crown of fronds at the apex, scales densely covering the younger fronds, about 8 x 1.5 mm, lanceolate, dark brown at the centre, orange coloured at the periphery, apex hair pointed, margin fimbriate. Stipes about 101 x 2 cm, swollen at the base, bearing very small; pale brown, bullate, appressed hairs throughout. Lamina bipinnate, oblong-lanceolate, about 190 x 100 cm, acute, pinnae about 12 pairs, patent, alternate, distinctly petiolate, about
15 cm apart, about 50 x 20 cm, oblong-lanceolate, acuminate, base truncate; basal few pairs slightly reduced; pinnules about 12 x 2.5 cm, acuminate, base truncate or subtruncate, margin pinnatifid up to the costa; ultimate lobes about 15 pairs, alternate, oblong, 1.5 x 0.4 cm, straight or slightly falcate, apex subacute or rounded, margin crenate, basalmost acroscopic lobe larger than the others; veins distinct well below, slightly above, all the veins except few distal pairs forked once, free, reaching the margin, pinnae pale green below, dark green above; texture herbaceous, pale brown, ovate or ovate-lanceolate, appressed scales distributed on lower surface of the costa throughout and on lower half of the costules below; about 1.5 mm long, ferrugineous hairs also distributed densely on upper surface of the costa and costules. Sori seated at the vein forks of the lower half of the segments, spherical, about 1.5 mm in diameter, exindusiate, spores trilate, dark brown (Plate 7).

Economic importance:

Not yet found.

47. Systematic position of Cyathea gigantea (Wall. ex Hook.) Holttum

<table>
<thead>
<tr>
<th>Class</th>
<th>- Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
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<tr>
<td>Family</td>
<td>- Cyatheaceae</td>
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<tr>
<td>Genus</td>
<td>- Cyathea</td>
</tr>
<tr>
<td>Species</td>
<td>- gigantea</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Rosie land Estate, Balmadies estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Trunk about 10 cm diameter, about a metre high with persistent swollen bases of stipes, bearing crown of fronds at the apex; trunk densely covered by scales, scales mixture of narrow, oblong, about 5 x 1.5 mm and lanceolate, about 10 x 2 mm scales, uniformly dark brown, glossy, long acuminate, entire. Stipes tufted,
about 74 x 2 cm, chestnut brown, glossy, abaxially rounded, adaxially grooved, densely scaly at the swollen base, glabrous above; elliptic to linear, about 5 x 1 mm streaks distributed all over the surfaces of stipes and rachis. Lamina bipinnate, deltoid about 160 x 102 cm, primary pinnae about 12 pairs, spreading, alternate, distinctly stalked, about 20 cm apart, oblong-lanceolate, about 50 x 20 cm, apex acuminate, base truncate; secondary pinnae about 20 pairs, catadromous, spreading, alternate, about 2 cm apart, truncate or subtruncate, margin usually lobed 2-5 mm to the costa, rarely crenate; lobes about 10 pairs oblong-broadly detoid, about 3 x 4 mm, apex rounded, margin crenate, costa and costules well distinct below, slightly distinct above; veins of the adjacent lobes reaching the side of the sinus independently; lamina dark green when fresh, brownish when dry; texture herbaceous, pale brown, soft, acicular hairs densely distributed on the adaxial side of the secondary rachis and costa in addition to few small, narrow, linear, pale brown scales; intervenal area almost glabrous above and below. Sori median on the veins, three to five and a half pairs, spherical 1 mm in diameter, forming two zigzag rows submarginally, exindusiate, sporangia numerous, compact, paraphyses mingled with sporangia, spores light brown (Plate 7).

Economic importance:

Not yet found.

48. Systematic position of Pseudocyclosorus tyloides (Kunze) Ching

| Class | - Filicopsida |
| Sub Class | - Filicidae |
| Order | - Aspidiales |
| Family | - Thelypteridaceae |
| Genus | - Pseudocyclosorus |
| Species | - tyloides |

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Nagaloor, Senkadu, Balmides Estate, Muluvi, Marappalam, etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.
Taxonomic description:

Rhizome erect, up to 5 cm thick, densely covered by scales at the apex; scales lanceolate, 5 x 2.5 mm, uniformly pale brown when mature, dark brown at the centre, pale brown at the periphery when young; apex acute, margin bearing few fingerlike outgrowths at the distal part, glabrous above and below. Stipes tufted, up to 90 x 1cm, grey-brown at the base with few scattered scales, stramineous and glabrous above, abaxially rounded, adaxially grooved. Lamina oblong-lanceolate, up to 100 x 45 cm, pinnæ up to 42 pairs excluding the abruptly reduced basal pairs, subopposite or alternate, sessile, up to 6 cm apart, ascending, up to 16 pairs of basal pinnæ abruptly reduced to widely spaced tubercles; largest pinna 25 x 2 cm, linear oblong - lanceolate, about half of the distal part of the pinna gradually narrowed to a long acuminate apex, base subtruncate or broadly cuneate, oblique, margin of the pinnæ lobed 1-2.5 mm to the costa, lobes up to 50 pairs, oblong, 12 x 3 mm, falcate, slightly oblique, apex acute, margin entire, lobes of the basal most pair lobes larger than the others, the acroscopic lobe overlapping the main rachis; costules and veins slightly raised and distinct above and below, veins up to 15 pairs, simple, long, soft, pale brown, acicular hairs densely distributed on the adaxial side of the costa and rachis, rarely on the abaxial side of the costa and along the margin of the labes; pinna dark green, texture subcoriaceous; sori infra median on all over the veins except few pairs in the distal part of the lobes, 1 mm in diameter; flesh red when young, dark brown when mature, indusia, glabrous, spores bilateral, dark brown (Plate 7).

Economic importance:

Not yet found.
49. Systematic position of Pseudocyclosorus ochthodes (Kunze) Hottum

   Class       -       Filicopsida
Sub Class    -       Filicidae
   Order       -       Aspidiales
   Family      -       Thelypteridaceae
   Genus       -       Pseudocyclosorus
   Species     -       ochthodes

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Senkadu, Balmides Estate, Muluvi, Marappalam, etc.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

   Rhizome usually short creeping or suberect, rarely erect, up to 6 cm thick in erect ones; scales broadly ovate, about 4 x 5 mm, uniformly pale brown, apex acuminate, margin entire or with few small elongate outgrowths. Stipes up to 100 x 1 cm, dark brown and sparsely scaly at the base, grey-brown or purple-brown and glabrous above, rounded below, grooved above, three or four pairs of 2-3 mm long, dark brown aerophores present along each side of the stipe. Lamina ovate or lanceolate, up to 110 x 35 cm, terminating with a pinna having larger lobes at the basal part, acuminate, pinnae up to 35 pairs, sessile, subopposite or alternate, up to 3.5 cm apart, up to 10 m pairs of basal pinnae abruptly reduced to tubercles, next two or third pairs slightly reduced, pinnae in the distal part of the lamina progressively reduced; about 2 mm long, dark brown aerophores present on lower side of the junction of each pinna and rachis, rachis more or less tetragonal with groove on each side except at the lower flattened side; largest pinna 19 x 1.5 cm, linear- lanceolate, few pairs of unreduced pinnae in the basal part of the lamina perpendicular to the rachis, other gradually ascending towards distal part of the lamina; apex acuminate, base truncate or subtruncate, margin lobed 1-1.5 mm to the costa, lobes up to 50 pairs, oblong, up to 8 x 2.5 mm, slightly ascending and ablique, apex acute or rounded, margin entire, costa distinctly raised and rounded below;
slightly raised and grooved above, costules and veins slightly raised below, veins up
to 15 pairs, basal acrosopic vein reaching the base of the sinus; pinnae dark green
above, pale green below; texture subcoriaceous, long, soft, slender, pale brown
acicular hairs densely distributed all over the rachis, upper and lower surfaces of
costa and costules, sparsely on lower surface of veins, margin of the lobes bears
few short, stiff acicular hairs. Sori supramedian on each veins except few pairs of
veins in the distal part of the lobe, up to 1 mm in diameter, yellowish- green, indusia
with few acicular hairs, spores yellowish-green (Plate 8).

Economic importance:

Not yet found.

50. Systematic position of Cyclosorus interruptus (Willd.) H. Ito

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Aspidiales</td>
</tr>
<tr>
<td>Family</td>
<td>Thelypteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Cyclosorus</td>
</tr>
<tr>
<td>Species</td>
<td>interruptus</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome  wide creeping, profusely branched, 0.5 cm thick, scaly at the apex;
scales 3 x 1.5 mm, ovate, apex-acuminate, margin entire, glabrous above and below;
stipes 5 cm apart , 60 cm  long, 0.5 cm thick, black and scaly at the base, pale brown
and glabrous above, flattened below, grooved above. Lamina elliptic lanceolate, up to
85 x 20 cm, simply pininate; pinnae up to 27 pairs, subopposite or alternate, 5 cm apart,
sessile or very shortly stalked, ascending, basal pinnae not reduced, few pairs of pinnae
in the distal part of the lamina rather abruptly reduced. Largest pinna 18 x 1.2 cm,
oblung-linear-lanceolate, base broadly cuneate, apex acuminate, margin lobed one-third
to half way to the costa; lobes 3 x 4 mm, deltoid slightly oblique, apex rounded with a
short acumen; costa very slightly raised above and below, flattened below, grooved above, costules distinct below, obscure above; veins distinct below, indistinct above, up to 11 pairs, simple, very rarely forked once, reaching the margin, basal one or one and half pairs of acrosopic and basiscopis veins of adjacent lobes joining to form an excurrent vein reaching the base of 1 mm long, opaque sinus membrane; lower surface of rachis, costa, costules, veins and intervenal areas densely covered by long, soft acicular or capitate hairs, upper surface of the pinnae glabrous, broad, thin, pale brown, ciliated scales borne on lower surface of rachis and costa; texture chartaceous, lamina pale green, sori median on the veins, up to eight pairs in two rows arranged in V- shape, sori up to 1 mm in diameter, indusiate, indusia hairy, sporangial stalk bearing capitate hairs; spores monoolete, pale brown (Plate 8).

Economic importance:

Not yet found.

51. Systematic position of Christella parasitica (L.) H. Lev.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Aspidiales</td>
</tr>
<tr>
<td>Family</td>
<td>Thelypteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Christella</td>
</tr>
<tr>
<td>Species</td>
<td>parasitica</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Nagaloor, Sengadu, Ghatroad, Kakasholai.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome long creeping, rarely erect, 0.5-1 cm thick; rhizome scales linear-lanceolate up to 10-1.5 mm, margin entire or with very few minute hairs, apex acuminate. Stipes 2.5 cm apart, up to 40 cm long, 4 cm thick, grey-green, scaly at the base, covered by few short or long hairs at the top, the rest glabrous. Lamina
deltoid, broadly ovate or cordate, 28 x 12 to 14 cm, rachis copiously covered by long and short hairs; pinnae up to 13-20 pairs, opposite at the base, subopposite or alternate at the distal part, basal pinnae up to 3 cm apart, not or slightly reduced, usually deflexed; pinnae up to 11 x 1.2 cm, linear-lanceolate, sessile, base truncate or very broadly cuneate, apex acuminate, margin lobed one-third to two-third to the costa; lobes up to 20 pairs, oblique, basal acroscopic lobe slightly larger than the others, costa densely covered by long and short hairs above and below; veins up to eight pairs, basal veins of opposite lobes joining to form an excurrent vein passing to the base of the sinus, next pair reaching at or above the sinus base; upper and lower surface of the costules, veins, intervenal areas covered by short acicular or glandular hairs of about 1 mm long; thick elongate, orange coloured glandular hairs distributed on the lower surface of the costules and veins; pinnae pale green. Sori median or submarginal on the veins, up to five pairs, up to 1 mm in diameter, often only the lowermost vein bearing sori, indusia densely hairy; spores bean-shape, dark brown (Plate 8).

Economic importance:

It is used in the treatment of gout and rheumatism.

52. Systematic position of Christella dentata (Forssk.) Brownsey & Jermy

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Thelypteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Christella</td>
</tr>
<tr>
<td>Species</td>
<td>dentata</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Nagaloor, Sengadu, Ghat road, Kakasholai.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Seldom.
Taxonomic description:

Rhizome short to long creeping, up to 1 cm in thick, sparsely scaly; scales lanceolate, 9 x 1.5 mm, pale brown, apex acuminate, margin entire hairy; stipes up to 20 cm apart, 70 cm long, 0.4 cm thick, pale brown to dark brown, scaly at the base, glossy and glabrous above. Lamina 90 x 20 cm, oblong-lanceolate; pinnae up to 20 pairs with up to 10 pairs of progressively reduced basal pinnae, reduced basal pinnae opposite or subopposite, up to 9 cm apart, unreduced pinnae alternate, 5 cm apart; largest pinna 18 x 2 cm, apex acuminate, base broadly cuneate, basal ones subsessile, upper ones sessile, margin lobed about half way of the costa; lobes up to 35 pairs, 3.5 mm wide; veins up to eight pairs, free, one and half pairs of basal veins anastomosing to form an excurrent vein reaching the base of the 2 mm wide sinus; sinus membrane mostly absent; 1 mm long, slender, unicellular, acicular hairs densely distributed all over the rachis and upper surface of costa; upper and lower intervenal area with few minute hairs; sori median on veins, up to six pairs, up to 1.25 mm diameter; indusia with short hairs, spores plano convex or reniform, brown (Plate 8).

Economic importance:

Not yet found.

53. Systematic position of Macrothelypteris torresiana (Gaudich.) Ching

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Aspidiales</td>
</tr>
<tr>
<td>Family</td>
<td>Thelypteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Macrothelypteris</td>
</tr>
<tr>
<td>Species</td>
<td>torresiana</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Vaniyar stream line.

Altitude: 1000-1500 msl.

Distribution level: Rare.
Taxonomic description:

Rhizome up to 5 cm thick, densely scaly all over; scales linear lanceolate, 12 x 1 mm, uniformly pale brown, apex long acuminate, gland tipped, margin entire with long stiff acicular hairs. Stipes up to 67 cm long, 1 cm thick, abaxially rounded, adaxially grooved, dark brown and densely scaly at the base, pale brown and glabrous above with minute, dark brown spots on the persistent scale bases, but not verrucose. Lamina broadly ovate or deltoid, 100 x 60 cm, bipinate-pinnatifid, primary pinnae up to 15 pairs with acuminate apex; largest one 45 x 15 cm, lanceolate, apex acuminate; secondary pinnae up to 20 pairs, 2 cm apart, up to 8 x 2 cm; tertiary pinnae up to 18 pairs, oblong, apex subacute or rounded, margin lobed half way to the costule, lobes up to six pairs, oblique with rounded apex; costa slightly raised especially on the basal part above and below; costules distinct above and below, veins and veinlets indistinct, free, forked twice or thrice, not reaching the margin; long, slender, acicular hairs densely distributed on the adaxial side of the secondary rachis and costa, sparsely on adaxial side of the costules, rarely on veins; lower surface of costa, costules and veins sparsely covered by 1.25 mm long, acicular or capitate, septate hairs; upper and lower intervenal area and main rachis glabrous, pinnae pale green; texture herbaceous. Sori borne on the basal acrosopic veinlets of each lobe just above the forking point; indusia very minute, fugaceous, covered by long acicular hairs; spores reniform, monlete, light brown (Plate 8).

Economic importance:

Not yet found.

54. Systematic position of Asplenium nidus L.

<table>
<thead>
<tr>
<th>Class</th>
<th>- Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<tr>
<td>Family</td>
<td>- Aspleniaceae</td>
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<tr>
<td>Genus</td>
<td>- Asplenium</td>
</tr>
<tr>
<td>Species</td>
<td>- nidus</td>
</tr>
</tbody>
</table>
Habit: Epiphyte.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect or suberect, about 5 cm thick, densely at the apex; scales lanceolate, about 10 x 3 mm, pale yellowish-brown at the base, upper region with blackened, thick walled calls, acuminate, margin with many long, slender, multicellular hairs. Stipes tufted, up to 5 x 0.5 cm, grey-green, abaxially rounded, adaxial side with a large canal, narrowly winged on either side, glabrous all over. Lamina simple, elliptic to lanceolate, up to 80 x 8 cm, apex usually acuminate, rarely subacute or acute, often retuse, base very gradually decurrent, more or less up to the base of the frond, margin entire; veins indistinct above, very slightly distinct below, simple or forked once, 50-60 to the rachis, parallel, connected by intramarginal vein continuously, lamina dark green, glabrous above and below; texture coriaceous. Sori usually distributed towards the distal one-third to three-fourth part of the frond, linear along vein, stretching above from the midrib, not reaching the margin, up to 4.5 x 0.15 cm, indusiate; indusia pale brown, entire, stiff, spores ellipsoid, planoconvex or reniform, pale brown (Plate 8).

Economic importance:

It is used as a depuative and sedative in Philippines (Dixit and Vohra 1984); also used as ornamental plaiting (Fosberg 1942). Root stock is considered good for fever and elephantiasis, used as an emollient in cough and chest diseases. Leaf is smoked to cure cold (Singh 1999; Mathew et al., 2000).
55. Systematic position of Asplenium erectum Bory ex willd.

   Class       -       Filicopsida
   Sub Class   -       Filicidae
   Order       -       Aspidiales
   Family      -       Aspleniaceae
   Genus       -       Asplenium
   Species     -       erectum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

   Rhizome erect, 1-3 cm thick, covered by scales; scales ovate-lanceolate, 2.5 x 0.5 mm, apex acuminate, margin entire, uniformly dark. Stipes numerous, tufted, up to 10 x 0.3 cm, terete pale brown or grey brown, glabrous. Lamina linear-elliptic, progressively narrowing towards base, 24-30 x 2.4 cm, simply pinnate with serrate, acuminate apex; pinnae up to 35 pairs alternate, up to 1.5 cm, apart, sessile, up to six pairs of basal pinnae progressively reduced and deflexed; pinnae up to 2 x 0.7 cm, trapezoid oblong, dimidiate, apex rounded, base truncate, margin crenate or shallowly incised, very rarely lobed up to one-third way to the costa; costules up to eight pairs, free, not reaching the margin, basal acroscopic costule forked twice or thrice, two to two and half pairs reaching the large basal acroscopic auricle, next few costule forked once, rest simple; pinnae dark green, glabrous above and below; texture herbaceous. Sori up to 3 mm long, up to four and a half pairs per pinnae, more or less median on the veins, rarely borne on auricles; spores plano convex or reniform, dark brown (Plate 8).

Economic importance:

   Not yet found.
56. Systematic position of Asplenium decrescens Kunze

<table>
<thead>
<tr>
<th>Class</th>
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<tr>
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<tr>
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<tr>
<td>Family</td>
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</tr>
<tr>
<td>Genus</td>
<td>Asplenium</td>
</tr>
<tr>
<td>Species</td>
<td>decrescens</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai, Manjakuttai.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome long creeping, 0.5 cm thick, densely covered by scales; scales ovate-lanceolate, brittle, uniformly dark, margin slightly toothed, apex long acuminate. Stipes scattered, 0.5.-1.5 cm apart, 15-55 cm long, 2-4 mm thick, dark brown, rounded below, grooved above, glabrous and polished. Lamina ovate-lanceolate, 25-55 x 10-25 cm, simply pinnate; pinnae 15-25 pairs, shortly stalked, opposite or subopposite in the lower part of the lamina, alternate above, 6-10 x 1-2.5 cm, lanceolate, falcate, dimidiate with long, caudate, apex acuminate, margin irregularly lobed one-third to two-third way to the centre; lobes oblong, apices serrate; veins distinct below, obscure above, forked, free, reaching the margin; pinnae pale green, upper surface almost glabrous, lower surface with long, soft, light brown scales; scales also borne at the junction of pinna and rachis; texture subcoriaceous. Sori imbricate along the costa; spores reniform, dark brown (Plate 8).

Economic importance:

Not yet found.
57. Systematic position of Asplenium indicum Sledge

<table>
<thead>
<tr>
<th>Class</th>
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</tr>
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<tbody>
<tr>
<td>Sub Class</td>
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<tr>
<td>Genus</td>
<td>Asplenium</td>
</tr>
<tr>
<td>Species</td>
<td>indicum</td>
</tr>
</tbody>
</table>

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills: Brook Lyne Estate, Balmadies estate, Puthur, Nallur.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome erect, up to 2.5 cm thick, densely covered by scales all over; scales ovate-lanceolate up to 10 x 1 mm, uniformly dark brown, apex long acuminate, margin entire. Stipes up to 17 x 0.25 cm, brownish-green to dark brown, rounded below, grooved above, sparsely covered by small, soft, pale brown scales all over. Lamina simply pinnate, oblanceolate or linear lanceolate, up to 38 x 7 cm, progressively narrowed towards the distal part; pinnae up to 30 pairs, subopposite at the base, alternate above, shortly stalked, up to 1.5 cm apart, few pairs of basal pinnae slightly reduced or not; largest pinna 3 x 1 cm, dimidiate-ovate, up to one-third of the basal basiscopic side excised, acrosopic base truncate, margin irregularly lobed half way to the centre, lobes serrate, apex obtuse; veins slightly distinct above, obscure below, forked up to four times, free, reaching the margin; pinnae pale green, glabrous above and below except the occurrence of small, soft, scales on the rachis all over, costa below; texture subcoriaceous. Sori copious, more or less one per lobe, imbricate, up to 1 x 0.1 cm, spores reniform or elliptic, dark brown (Plate 9).

Economic importance:

Not yet found.
58. Systematic position of Asplenium normale D.Don

Class - Filicopsida
Sub Class - Aspidiales
Family - Aspleniaceae
Genus - Asplenium
Species - normale

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Frequent.

Taxonomic description:

Rhizome erect, up to 2 cm thick, densely scaly at the apex; scales ovate-lanceolate, dark brown with pale edge, acute, gland tipped, margin entire with few glandular hairs. Stipes tufted, up to 18 x 0.2 cm, wiry, dark chestnut to purple black, rounded below, shallowly grooved above, glabrous, polished. Lamina oblong-lanceolate, up to 35 x 4 cm, simply pinnate, acute, base truncate or cordate; rarely the lamina proliferate; pinnae about 35 pairs, sessile, subopposite, up to 2 cm apart, overlapping each other, basal pairs not reduced but deflexed, others patent, about five distal pairs progressively reduced; largest pinna 2 x 1 cm, oblong, slightly excised on the basiscopic base, apex rounded, acroscopic base truncate, slightly auricled or not, margin subentire or crenate; veins hardly distinct above and below, forked once or twice, free, not reaching the margin; pinnae dark green, glabrous above and below, texture stiff herbaceous. Sori terminal along the veinlets all over, up to 3 x 1 mm, indusia pale brown, entire; spores planoconvex or reniform, dark brown (Plate 9).

Economic importance:

Not yet found.
59. Systematic position of Asplenium polyodon G. Forster

<table>
<thead>
<tr>
<th>Class</th>
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<tbody>
<tr>
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<tr>
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<td>Asplenium</td>
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<tr>
<td>Species</td>
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</tbody>
</table>

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills: Andiyappan Koil, Kakasholai.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome erect, about 2 cm thick, scaly at the apex; scales lanceolate, about 10 x 1.5 mm, uniformly dark brown, long acuminate, entire. Stipes tufted, about 30 x 0.3 cm, dark brown to black, rounded below, grooved above, scaly at the base, almost glabrous above except the presence of few linear, soft, pale brown scales. Lamina lanceolate, about 40 x 15 cm, simply pinnate, imparipinnate, acuminate, base broadly cuneate. Pinnae up to 12 pairs, patent or slightly ascending, shortly stalked, subopposite or alternate, up to 4 cm apart, terminal pinna often trilobed or bilobed, rarely simple; largest pinna 18 x 3 cm, lanceolate, falcate, apex acuminate, base cuneate, usually unequal by the slight excision of the basiscopic base, slightly auricled on the acrosopic base, margin irregularly biserrate or shallowly lobed; veins distinct above and below, forked up to five times, parallel, reaching the margin; pinnae pale green, glabrous below and above, few soft, pale brown, linear scales borne on main rachis; texture subcoriaceous. Sori linear, median or submedian along the veins, parallel, more or less uniformly distributed, about 20 x 1.5 mm, often facing each other, indusiate, indusia pale brown, narrow, entire; spores plano-convex or reniform, dark brown (Plate 9).
Economic importance:

The plant is used in enlargement of the spleen, incontinence of urine, calculus, jaundice and malaria in North Africa and Madras.

60. Systematic position of Asplenium polyodon G. Forster var. bipinnatum (sledge) sledge

<table>
<thead>
<tr>
<th>Class</th>
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<th>Filicopsida</th>
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<tr>
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<td>Genus</td>
<td>-</td>
<td>Asplenium</td>
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<tr>
<td>Species</td>
<td>-</td>
<td>polyodon var. bipinnatum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Shervaroyan Temple, Mining area.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome suberect, about 3 cm thick, densely scaly all over; scales linear-lanceolate, about 10 x 1 mm, uniformly dark brown, long acuminate, entire. Stipes tufted, about 26 x 0.4 cm, dark brown to black, rounded below, grooved above, scaly at the very base, glabrous above. Lamina lanceolate or oblong-lanceolate, about 55 x 20 cm, acuminate, broadly cuneate, bipinnate; primary pinnae about 10 pairs, patent to slightly ascending, subopposite with up to 1 cm long petiole, up to 5 cm apart, basal pinnae not reduced; largest pinnae 12 x 4 cm, lanceolate, acuminate, cuneate, one -third to half distal part of the primary pinnae shallowly lobed without bearing distinct pinnules; pinnules up to five pairs, anadromous, sessile, alternate, up to 1-5 cm apart, obovate or wedge-shaped, about 3 x 1.5 cm, base cuneate, apex rounded and irregularly incised; veins marked by striations above, slightly distinct below, copious, forked two or three times, free, parallel, raching the margin, pinnae pale green, glabrous above and below, texture subcoriaceous, few soft, linear, dark brown
scales borne on main rachis especially at the junction of primary pinnae. Sori numerous, all along the veins except the extreme apex, about 10 x 1 mm, indusiate, indusia pale brown, entire, spores reniform of planoconvex, dark brown (Plate 9).

Economic importance:

Plant is used to promote Parturition. Plant is anti-cancerous. The fresh crosiers paste prepared on granite is applied to the tumour (Manickam and Irudayaraj 1992).

61. Systematic position of Asplenium inaequilaterale willd.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
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</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<tr>
<td>Genus</td>
<td>Asplenium</td>
</tr>
<tr>
<td>Species</td>
<td>inaequilaterale</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.

Distribution level: Frequent.

Taxonomic description:

Rhizome erect or suberect, up to 1 cm thick, covered by scales at the apex; scales ovate-lanceolate, up to 4 x 0.5 mm, dark brown at the centre, pale brown at the periphery, apex acuminate, margin entire. Stipes tufted, up to 23 cm long, 3 mm thick, grey-brown to pale brown, rounded abaxially, grooved above, glabrous. Lamina oblong to ovate-lanceolate, 8.5-30 x 4-12 cm, apex with lobed subacuminate pinnae unlike the lateral ones; simply pinnate; pinnae up to 20 pairs, gradually reduced in the distal part of the frond, basal pinnae not reduced, pinnae alternate or subopposite, up to 2 cm apart, shortly stalked, trapezoid-lanceolate, up to 4.8 x 1 cm, dimidiate, oblique, acrosopic base truncate and parallel to the rachis, one-third or more of the basal basiscopic part obliquely excised, apex subacute or retuse, margin serrate or inciso crenate, costules up to 12 pairs, basal acrosopic costule forked twice or thrice, costules in the distal part of the pinnae
simple, others forked once, free, not reaching margin; pinnae dark green, glabrous, texture herbaceous. Sori up to 10 pairs, median on the veins, 5 x 1.5 mm; spores planoconvex or reniform, spores pale brown (Plate 9).

Economic importance:

Not yet found.

62. Systematic position of Asplenium laciniatum D.Don

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Aspleniaceae
Genus - Asplenium
Species - laciniatum

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills:, Balmadies, Kadukamaram,
Shervorayan Temple.
Altitude: Above 1500 msl.
Distribution level: Rare.

Taxonomic description:

Rhizome erect, 0.5-1 cm thick, scaly at the apex; scales ovate-lanceolate, 4.5 x 0.5 mm, dark at the centre, pale brown at the periphery, apex long acuminate, margin slightly toothed. Stipes tufted, up to 8 cm long, 1 mm thick, pale green above, purplish below, scaly at the base, glabrous above. Lamina ovate-lanceolate, 3.5-10 x 1-5 cm, bipinnate, acute; pinnae up to 10 pairs subopposite or alternate, up to 2 cm apart, apex rounded, pinnules up to 5 pairs, sessile, alternate, obovate or broadly obovate or parallelogram-like if dimidiate, apex rounded, base narrowly or broadly cuneate, entire towards base, toothed above; veins forked once or twice, not reaching the the margin; pinnae pale green, glabrous above and below, texture herbaceous. Sori up to 5 mm long, indusium membranaceous. Spores planoconvex or reniform, light brown (Plate 9).

Economic importance:

Not yet found.

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63. Systematic position of Asplenium aethiopicum (Burm. f.) Becherer

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Aspleniaceae
Genus - Asplenium
Species - aethiopicum

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Minining area, Shervorayan temple.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect or suberect, 1.5-3.0 cm diameter, densely clothed by scales intermingled with long wooly hairs; scales linear-lanceolate, up to 6.5 x 0.6 mm, hair pointed, margin toothed. Stipes tufted, up to 43 x 0.4 mm, dark brown, abaxially rounded, deeply grooved above and densely clothed by scales and hairs. Lamina ovate-lanceolate, up to 59 x 12 cm, bipinnate, primary pinnae up to 25 pairs, alternate or subopposite, 4 cm in large fronds up to 10 x 3.5 cm, apex with long serrate pinnule; pinnules up to 12 pairs, sessile, alternate, obovate or oblong, trilobed, margin serrate, costules close, flabellate, forked twice or thrice. Pinnae pale green; texture subcoriaceous, abaxial and adaxial side of the pinnae and rachis densely covered by long, slender, soft scales. Sori up to 1 cm long, narrowing at the ends, spores reniform, dark brown (Plate 9).

Economic importance:

Not yet found.

64. Systematic position of Athyrium solenopteris (Kunze) T. Moore

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Athyraceae
Genus - Athyrium
Species - solenopteris
Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Balmadies Estate, Rosie land Estate.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, up to 5 cm thick, densely covered by scales all over; scales lanceolate, about 10 x 1 mm. Stipes tufted, about 20 x 0.4 cm, greyish-brown or pale brown, abaxially rounded, adaxially grooved, densely scaly at the base, glabraous above. Lamina ovate or ovate-lanceolate, about 35 x 20 cm, bipinnate or subtripinnate, apex acuminate, base broadly cuneate; pinnae about 12 pairs, patent or ascending subopposite below, alternate above, up to 5 cm apart, shortly stalked, basal one to three pairs very slightly reduced or not; largest pinna 16 x 6 cm, oblong-lanceolate, apex acuminate, base broadly cuneate or truncate, pinnules about 12 pairs, subopposite or alternate, shortly stalked, about 1.5 cm apart, largest one up to 3 x 1 cm, basal acrosopic one slightly larger than the others, oblong, apex subacute or rounded, margin lobed one- fifth to four- fifth to the costa, acrosopic base truncate or broadly cuneate, basiscopic base narrowly cuneate in the basal pairs, decurrent in the distal pairs; lobes up to seven pairs per pinnule, ascending, oblong, up to 5 x 3 mm, apex subacute or rounded, up to 5 x 3 mm, margin sharply serrate; veins slightly distinct above and below, simple or forked once or twice, free, reaching the margin; pinnae pale green, glabrous above and below, texture herbaceous. Sori in two rows close to the costules, usually hooked, rarely straight; up to 2 x 1 mm, indusiate; indusium yellowish-brown to reddish brown when dry, spores planoconvex or reniform pale brown (Plate 9).

Economic importance:

Not yet found.
65. Systematic position of Deparia petersenii (Kunze) M.Kato

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Athyriaceae
Genus - Deparia
Species - petersenii

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Mining areas, Rosie land estate.
Altitude: Above 1500 msl.
Distribution level: Rare.

Taxonomic description:

Rhizome long creeping, about 0.5 cm thick, randomly branched, densely covered by scales all over; scales lanceolate, up to 8 x 1.5 mm, pale brown with thin walled cells, apex acuminate, margin entire. Stipes scattered, up to 2 cm apart, up to 34 x 0.3 cm, abaxially rounded, adaxially grooved, dark at the base, pale brown or stramineous above, covered by scales densely below, sparsely above. Lamina lanceolate, up to 40 x 15 cm, simply pinnate with caudate apex; pinnae about 10 pairs, subopposite or alternate, slightly ascending, up to 7 cm apart, sessile; basal pinnae not reduced, distal pairs progressively reduced and terminated with a caudate apex, largest pinnae 14 x 2.5 cm, oblong-lanceolate, apex acuminate, base broadly cuneate, margin deeply lobed up to 2 mm to the costa in the basal pairs of pinnae, inciso-crenate in the distal pairs of pinnae; lobes oblong, up to 1.5 x 0.5 cm, slightly oblique, apex subacute or rounded, margin serrate at the apex, entire in the rest, costa slightly raised above and below, rounded below, grooved above; veins slightly distinct above and below, about five pairs per lobe, simple, free, reaching the margin, rachis, costa and veins covered by thin hairs; pinnae pale green, texture soft herbaceous. Sori median on the veins, linear, up to five pairs per lobe, up to 4 x 1.5 mm, indusia pale brown when dry, margin fimbriate, spores monolete, pale brown (Plate 10).
Economic importance:

Not yet found.

66. Systematic position of *Diplazium esculentum* (Retz.) Sw.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<tr>
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<tr>
<td>Genus</td>
<td>Diplazium</td>
</tr>
<tr>
<td>Species</td>
<td>esculentum</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Mining areas, Roise land Estate.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome erect, up to 4 cm thick, densely scaly at the apex; scales linear-lanceolate, 8 x 1 mm, apex long acuminate, margin with short, simple or bipartite teeth. Stipes tufted, up to 60 cm long, 7 mm thick, dark brown or black at the base, pale or grey-brown or stramineous above, sparsely scaly at the base, glabrous above; purplish bands scattered throughout the stipe and rachis. Lamina deltoid, up to 100 x 55 cm, apex acuminate, base truncate, bipinnate with simply pinnate apex; pinnae up to seven pairs, basal one to two pairs opposite or subopposite, rest of the pairs alternate, up to 18 cm apart with up to 3 cm long stalk, narrowly deltoid with deeply lobed terminal pinna, up to 40 x 30 cm, apex acuminate, base truncate; pinnules up to 15 pairs, alternate, basal few pairs sessile, up to 3 cm apart, oblong-lanceolate, up to 11 x 1.5 cm, apex acuminate, base truncate, margin serrate at the apex, shallowly lobed or creante in the rest; lobes broadly deltoid, oblique, margin serrate, apex toothed, costa slightly raised above and below, shallowly grooved above, flattened below with a narrow wing on either side of the costa both above and below; veins up to seven pairs, pinnate, veins in the unlobed part of the adjacent groups joining to form an irregular excurrent vein reaching the base of the sinus or the side of the
margin of the lobe. Pinnae dark green, glabrous above and below; texture herbaceous. Sori up to 1.5 mm wide, linear, all along the veins except the base and apex; indusia pale brown with wavy margin; spores dark brown (Plate 10).

Economic importance:

Young leaves are cooked as vegetables by the tribals of Uttar Pradesh (Singh et al 1989). Decoction prepared from rhizome and young leaves is used for haemoptysis and cough in Philippines.

67. Systematic position of Diplazium polypodioides Blume

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Athyriaceae
Genus - Diplazium
Species - polypodioides

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Pears Cave Estate.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome erect, subarborescent, up to 15 cm thick, densely scaly at the apex; scales linear-lanceolate, up to 1 5x 2 mm, hair pointed, margin with conspicuous, simple or forked teeth. Stipes tufted, up to 140 cm long, 2 cm thick, black at the base, pale or grey-brown above, sparsely scaly at the base, muricate all over the surface. Lamina broadly lanceolate, up to 130 x 80 cm, bipinnatifid; primary pinnae up to 10 pairs, alternate, stalked, up to 5 cm apart, apex acuminate, base truncate; secondary pinnae pinnae up to 25 pairs in the largest basal primary pinna, basal two to five pairs shortly stalked, others sessile or subsessile, basal few pairs subopposite, others alternate, up to 3.5 cm apart, oblong-lanceolate, 9 x 1.7 cm, apex acuminate, base truncate, margin serrate at the apex, lobed to 1-2 mm to the costa in the rest; lobes oblong, 8 x 4 mm, apex rounded, margin serrate; adaxial side of the costa
slightly raised and flattened with narrow pale brown, thin, membranaceous wing on either side, not raised abaxially; costules and veins slightly distinct above and below, veins up to eight pairs, basal baiscopic vein often forked, others simple, reaching the margin. Pinnae dark green, glabrous above and below except the occurrence of few small pale brown scales on the lower side of the costules and costa. Sori straight, borne on all the veins except few distal pairs, stretching from the costule half to three-fourth way to the margin; indusia thin, membranaceous, pale brown, margin fimbriate, spores pale brown (Plate 10).

Economic importance:
Not yet found.

68. Systematic position of Dryopteris cochleata (Buch. Ham. ex D. Don) C. Chr.

<table>
<thead>
<tr>
<th>Class</th>
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<tbody>
<tr>
<td>Sub Class</td>
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<tr>
<td>Species</td>
<td>cochleata</td>
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</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Pallagudagu, sanyasikaradu, Nagaloor Road, Shevaroyn temple road.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome short creeping, up to 4 cm thick, densely clothed scales all over; scales lanceolate, up to 10 x 2 mm, pale brown, thin, membranaceous, translucent, apex long acuminate, margin with tooth-like or glandular hair-like ourgrowths or with long lateral branches. Stipes upto 30 x 0.5 cm, grey-brown when dry, scaly below, glabrous and glossy above, fronds dimorphic; lamina lanceolate, bipinnate; sterile lamina about 45 x 22 cm, fertile one much contracted, up to 35 x 14 cm, pinnae up to 10 pairs, ascending, shortly stalked, subopposite, up to 5 cm apart;
largest sterile pinna 15 x 3.5 cm, oblong-lanceolate, apex acute, base truncate; fertile pinna up to 9 x 2.5 cm, pinnules up to 15 pairs, alternate; isodromous, adnate to the costa by both acrosopic base and decurrent basiscopic base, oblong, up to 2 x 0.7 cm, apex abtuse or rounded, margin lobed one-fourth to one-third way to the costules; lobes oblong, up to 4 x 3 mm, apex rounded, margin serrulate; costa raised and rounded, stramineous below, flattened or shallowly grooved and brownish above, veins slightly distinct below, indistinct above, up to seven pairs, forked once or twice, ending in pellucid gland; pinnae pale green, texture subcoriaceous, long, soft, pale brown, appressed hairs sparsely distributed on costa, costules and veins below especially in fertile fronds. Fertile pinnule up to 1.5 x 0.3 cm, oblong, acute, margin lobed more than half way to the costule; lobes up to eight pairs, deltoid, oblique, apex acute, toothed; sori one per lobe, reniform, up to 2.25 mm in diameter, indusia reniform, spores dark brown (Plate 10).

Economic importance:

Whole Plant extract is given twice daily orally in case of snakebite. Plant paste is also applied on the bite wound to prevent infection. A small portion of powdered rhizome is taken with water twice daily in rheumatism, epilepsy and leprosy. Juice of the roots (about 2 teaspoonfuls) twice a day before meal is given to treat amoebic dysentery (Verma et al 1998; Shah & Singh 1900; Singh 1999; Manandhar 1996).

69. Systematic position of *Dryopteris sparsa* (Buch. Ham. ex D. Don) Kuntze

- **Class**: Filicopsida
- **Sub Class**: Filicidae
- **Order**: Aspidiales
- **Family**: Dryopteridaceae
- **Genus**: Dryopteris
- **Species**: sparsa

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Manjakuttai, Velur, Palakudagu.
Slopes of T.V Station, Sanyasi karadu.
Altitude: Above 1000 msl upto the hill top.
Distribution level: Frequent.
Taxonomic description:

Rhizome erect, up to 5 cm thick, densely scaly at the apex; scales ovate-lanceolate, up to 9 x 4 mm, pale brown or stramineous and glossy above. Lamina ovate-lanceolate up to 55 x 15 cm, bipinnatifid, apex acuminate, base cuneate; primary pinnae up to eight pairs, ascending, falcate, subopposite at the basal part of the lamina, opposite above; up to 9 cm apart, distinctly stalked; largest pinna 19 x 5 cm, ovate-lanceolate, apex acuminate, base cuneate, basal pairs usually bear an accessory branch on the basal basiscopical side; secondary pinnae up to 12 pairs in the basal primary pinna of the largest frond, subopposite or alternate, anadromous below, isodromous above, basal few pairs shortly stalked, others sessile or adnate, ovate-lanceolate, up to 4.5 x 2.5 cm, decurrent on the basal basiscopical side, apex acute, basiscopical base broadly cuneate, margin lobed one-sixth to five-sixth way to the costules; lobes oblong, up to 1.5 x 0.6 cm, apex acute or rounded, margin entire or toothed; rachules narrowly winged on either side, shallowly grooved and dark brown above, stramineous below; veins indistinct above, slightly distinct below, up to five pairs, forked once or twice, not reaching the margin; pinnae dark green, texture herbaceous, scattered small scales borne on rachis and costa. Sori median on the veinlets, up to 2 mm in diameter, indusia reniform, pale brown, glabrous with thin membranaceous border; spores dark brown (Plate 10).

Economic importance:

Plant is used as an anthelmintic (Jain 1991).

70. Systematic position of Arachniodes tripinnata (Goldm.) Sledge

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<tr>
<td>Order</td>
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</tr>
<tr>
<td>Family</td>
<td>Dryopteridaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Arachniodes</td>
</tr>
<tr>
<td>Species</td>
<td>tripinnata</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.
Geographical distribution in Shevaroys hills: Vellakadai, Brooklyn estate, Balmadies estate, Kavary peak.
Altitude: Above 1500 msl.
Distribution level: Seldom.

Taxonomic description:

Rhizome erect, up to 7 cm thick, densely clothed by scales all over; scales linear-lanceolate, up to 2 x 0.3 cm, uniformly pale reddish-brown. Stipes tufted, up to 76 cm long, 0.7 cm thick, pale brown, glossy. Lamina broadly ovate, up to 70 x 60 cm, tripinnatifid, apex acuminate, base broadly cuneate; primary pinnae up to eight pairs, ascending, slightly falcate, distinctly stalked, up to 15 cm apart, broadly ovate, up to 40 x 27 cm, oblique at the base; secondary pinnae up to eight pairs in the largest primary pinnae, slightly falcate, stalk up to 1 cm long, up to 5 cm apart, tertiary pinnae up to 10 pairs per secondary pinnae, oblong or ovate-lanceolate, up to 4 x 1.5 cm, apex of the primary and secondary pinnae acuminate, acute in the tertiary pinnae; acrosopic base truncate, basiscopic base cuneate in all cases; pinnules up to six pairs, parallelogram-like, apex rounded with spinule, margin serrate or shallowly lobed, basiscopic base decurrent; veins indistinct both above and below, all the veins except those bearing sori reaching the margin, pinnae dark green, glabrous and glossy; texture coriaceous. Sori borne on the acrosopic basal vein which does not reach the margin, up to 1 mm diameter, indusia reniform, dark brown, fugacious; spores ellipsoid, dark brown (Plate 10).

Economic importance:

Not yet found.

71. Systematic position of Arachniodes aristata (Forst. f.) Tindale

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Dryopteridaceae
Genus - Arachniodes
Species - aristata

Habit: Terrestrial.
Geographical distribution in Shevaroys hills: Brooklyn estate, Balmadies estate.
Altitude: Above 1500 msl.
Distribution level: Seldom.

Taxonomic description:

Rhizome long creeping, up to 1.5 cm thick, densely clothed by scales all over; scales oblong-linear-lanceolate, up to 10 x 1 mm; stipes scattered, up to 2 cm apart, up to 40 x 0.4 cm, pale brown, densely scaly below, sparsely above. Lamina ovate-lanceolate, up to 45 x 25 cm, tripinnate at the base, bipinnatifid or bipinnate above, apex acuminate, base broadly cuneate, primary pinnae up to eight pairs, slightly ascending, subopposite or alternate, stalked up to 1.5 cm, up to 8 cm apart, basal pinnae about 22 x 21 cm, deltoid with acuminate apex and truncate base, bearing about four pairs of secondary pinnae, rest of the primary pinnae lanceolate, up to 21 x 5 cm, apex acuminate, acroscopic base broadly cuneate or truncate, basiscopic base cuneate; secondary pinnae up to 15 pairs, alternate, shortly stalked, up to 5 x 2.5 cm, lanceolate with broadly cuneate or truncate acroscopic base, cuneate basiscopic base; pinnules sessile or adnate, oblong-ovate, up to 2 x 0.7 cm, margin shallowly lobed, acroscopic base truncate, basiscopic base cuneate; apices of the pinnules and the lobes bearing long stiff spinules; veins indistinct above and below, pinnae dark green, texture coriaceous; pale brown linear scales sparsely distributed on rachis, costa and costules above and below. Sori borne on the basal acroscopic veinlet which ends with the sorus; not reaching the margin, indusia reniform, dark brown, fugacious, spores dark brown (Plate 10).

Economic importance:

Not yet found.

72. Systematic position of Polystichum squarrosum (D.Don) Fee

<table>
<thead>
<tr>
<th>Class</th>
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</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<td>Order</td>
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<tr>
<td>Genus</td>
<td>Polystichum</td>
</tr>
<tr>
<td>Species</td>
<td>squarrosum</td>
</tr>
</tbody>
</table>
Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kondaiyanoor, Vellakadai.

Altitude: Above 1500 msl.

Distribution level: Seldom.

Taxonomic description:

Rhizome erect or suberect, about 8 cm thick, densely scaly. Scales elliptic, lanceolate, acute, acuminate, up to 2 x 0.5 cm, edges toothed, dark brown. Stipes tufted, up to 50 cm tall, 7 mm thick, covered by filiform, brown scales at base, by large scales upward, deeply grooved above. Lamina bipinnate, lanceolate, acute, acuminate, up to 60 x 30 cm, base subtruncate, pinnae up to 30 pairs, opposite or subopposite, 4 cm apart, almost sessile, largest 20 x 4 cm, oblong-lanceolate, base subtruncate, apex acuminate; pinnules ovate, up to 2 x 1 cm, basiscopic margin excised at base, incised one-third to the costule; basal basiscopic lobe larger than the next above by 4 x 4 cm, ovate- elliptic, entire or subentire. Veins up to five pairs at the basal acrosopic lobe, branched once, one or two pairs reaching the margin, obscure below, slightly visible above. Texture coriaceous; pinnae dark brown, rachis and costa bearing dense, long branched hairs and scales above and below, pinnules glabrous above and below except at the base. Sori in two submarginal rows, borne at the ends of veinlets, filling the entire surface of the pinnules when mature; indusium rufous-brown, glabrous, spores copious, reinform, dark brown (Plate 10).

Economic importance:

Not yet found.
73. Systematic position of Phanerophlebia caryotidea var. micropteris (Kunze)

C.Chr.

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Dryopteridaceae
Genus - Phanerophlebia
Species - caryotidea var. micropteris

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai to mines.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, about 3 cm thick, densely covered by scales all over; scales ovate-lanceolate, about 10 x 4 mm, dark brown with pale brown border, acuminate, margin ciliated. Stipes tufted, about 18 x 0.3 cm, stramineous to grey-brown, rounded abaxially, grooved adaxially, densely covered by more or less uniformly coloured scales which are softer than the rhizome scales. Lamina oblong, about 40 x 10 cm, simply pinnate with simple or bilobed or trilobed terminal pinna; pinnae up to 12 pairs, slightly ascending, shortly stalked, up to 5 cm apart, subopposite or alternate; largest pinna 5 x 2.5 cm, ovate-lanceolate, falcate, apex acuminate, acrosopic base truncate, basiscopic base cuneate, auricled on the acrosopic base, margin finely serrate; veins slightly distinct above, obscure below, copiously anastromosung to form numerous areoles; areoles ascending, elongated, up to 8 x 2 mm with acute apex, two series of larger areoles along the costa in addition to apparently two or three series of smaller areoles along the margin of the pinna, areoles enclose usually one or two simple included veinlets, rarely with once forked veinlets, free veinlets along the margin reaching the margin; pinnae pale green, glabrous above and below, texture coriaceous; soft, linear, pale brown scales sparsely distributed at the base of the petioles; sori numerous, median or submedian on the included veinlets, not on the netted veins, up to 1 mm in diameter, indusiate,
indusia small, reniform, fimbriate, usually fugacious, rarely persistent; spores monolete, dark brown, spherical or ellipsoid (Plate 11).

Economic importance:

Not yet found.

74. Systematic position of Tectaria wightii (Clarke) Ching

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Dryopteridaceae
Genus - Tectaria
Species - wightii

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Sundakkadu .

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome short creeping, up to 1.5 cm thick, densely scaly at the apex, scales lanceolate, up to 5 x 1 mm, dark brown with pale edge, margin with projecting cells. Stipe clustered, up to 1 cm apart, up to 52 x 0.5 cm, dark brown at the base, grey-brown or stramineous above, densely scaly at the base, sparsely scaly or glabrous above. Lamina ovate, up to 50 x 25 cm, simply pinnate with a terminal pinna similar to the lateral ones, apex acuminate, base cuneate; pinnae up to six pairs, ascending, lanceolate or ovate-lanceolate, abruptly narrowed towards the acuminate apex, base cuneate, margin entire, costa slightly raised and rounded below, not raised and shallowly grooved above; veins slightly raised and distinct below, copiously anastomosing to form areoles of various shapes with one simple included veinlet; pinnae pale green when fresh, adaxially reddish-brown when dry, glabrous above and below, texture herbaceous; fertile pinnae contracted ones, Sori numerous, borne on the netted veins in the rows along each distinct costule; basal pair often overlaps; sori up to 2 mm in diameter, exindusiate; spores ellipsoid or reiform, pale brown (Plate 11).
Economic importance:

Plants are considered anthelmintic (Dixit and Vohra 1984).

75. Systematic position of Tectaria coadunata (J. Sm.) C. Chr.

- Class: Filicopsida
- Sub Class: Filicidae
- Order: Aspidiales
- Family: Dryopteridaceae
- Genus: Tectaria
- Species: coadunata

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Valliappa Estate.

Altitude: 1000-1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome short creeping, up to 3 cm thick, densely scaly at the apex; scales ovate-lanceolate, about 7 x 2 mm, pale brown to dark brown, apex acuminate, margin sparsely ciliated. Stipes scattered, about 0.5 cm apart, 50 x 1 cm, rounded abaxially, grooved adaxially, castaneous or grayish-brown, glabrous and glossy all over. Lamina ovate or broadly ovate, about 30 x 40 cm, apex acute, base cordate, bipinnate or bipinnatifid, distinct primary pinnae three to five pairs, in the basal two-third part of the lamina, distal one-third part of the lamina bears three to five adnate primary pinnae and candate apex; primary pinnae opposite or subopposite or alternate, about 8 cm apart, slightly ascending, basal most pair is the largest one with about 1 cm long petiole, about 25 x 16 cm, obliquely ovate, broadly cuneate, acuminate; secondary pinnae mostly adnate and decurrent, about five pairs, alternate about 2 cm apart, basal basiscopic pinnae of the basalmost pair of the primary pinnae is the largest one, about 8 x 35 cm, oblong-lanceolate, acute, margin crenate in the distal pairs; lobed half to three-fifth way to the costa in the basal pairs, lobes ascending, oblong 1.5-1 cm, subacute or rounded, margin entire or subcrenate; veins slightly distinct below, obscure above, copiously anastomosing to form a series of
elongated areoles along the costa and costules, areoles along the main costa do not extend from one costule to the other, others extend from one to the other, areoles mostly free from included veinlets, rarely, especially areoles in the basal part of the basal pairs of primary and seconstry pinnae are with included veinlets; lamina pale green; texture thin, soft herbaceous, below 0.5 mm long, pale brown, soft, multicellular hairs densely distributed all over the lamina except the abaxial side of the main rachis. Sori on the end of the veinlets in two rows along the costules of the secondary pinnae or lobes of secondary pinnae, orbicular, about 1.5 mm in diameter, compital; indusia dark brown, glabrous, margin pale brown and crisped; spores reniform or planoconvex or spherical, pale brown (Plate 11).

Economic importance:

Young fronds are used as vegetable curry or as salad; extract from fresh rhizomes is used for preventing diarrhoea in children in Darjeeling district (Dixit and vohra 1984).

Plant is antibacterial, used in asthma, bronchitis, stings of honeybee (Singh 1999). Extracts from the fresh rhizome is used for preventing diarrhea in children in Darjeeling District. The cooked tender portion in used for curing stomach trouble (Dixit and vohra 1984; Singh, 1999; Manandar, 1996).

76. Systematic position of Hypodematum crenatum (Forssk.) kuhn

Class - Filicopsida
Sub Class - Filicidae
Order - Aspidiales
Family - Dryopteridaceae
Genus - Hypodematum
Species - crenatum

Habit: Lithophyte.

Geographical distribution in Shevaroys hills: Kondaiyanoor.

Altitude: 1000-1500 msl.

Distribution level: Rare.
Taxonomic description:

Rhizome prostrate, up to 3 cm thick, densely clothed by scales giving spongy structure to the rhizome, scales lanceolate or oblong lanceolate, about 2 x 0.3 cm, uniformly pale reddish-brown, glossy, apex long acuminata, margin entire. Stipes closely arranged, about 30 x 0.5 cm, stramineous to pale brown, rounded abaxially, grooved adaxially, densely scaly at the very base, glabrous and glossy above. Lamina broadly ovate, up to 35 x 30 cm, apex acute, base cuneate, basal half tripinnatifid, base of the distal half bipinnatifid, distalmost part simply pinnatifid; distinct primary pinnae two to four pairs, subopposite, ascending, up to 12 cm apart, 30 x 12 cm, lanceolate, acute with about 1 cm long petiole, secondary pinnae up to five pairs, ascending, alternate with short stalk, up to 6 cm apart, oblong, lanceolate, about 10 x 3 cm, apex acute, base truncate; tertiary pinnae about 1 cm apart, oblong, about 1.5 x 0.5 cm, apex subacute or rounded, base decurrent, acrosopic base truncate, basiscopic base broadly cuneate, margin lobed up to the costules, lobes oblong with entire, subentire or crenulate margin, axis of the secondary pinnae narrowly winged on both sides; veins obscure both above and below, veinlets in the ultimate segments forked two to four times, free, reaching the margin; lamina pale green, texture herbaceous, pale brown, thin, stiff, below 0.5 mm long hairs distributed sparsely on the axis of the primary pinnae, densely on the costa, costules and veins both above and below, rarely on the interveinal area. Sori median on the veinlets in the two rows along the costules, reniform, about 1 mm in diameter, indusia reniform, entire, densely covered by short, stiff hairs, spores reniform or planoconvex or ellipsoid, pale brown (Plate 11).

Economic importance:

The plant used to cure gynaecological disorders. There is a superstition among the tribals of Central India that the scales of the ferns are useful against witchcraft or the evil eye. Rhizome is used an antibacterial agent (Trivedi 2002).
77. Systematic position of Elaphoglossum stigmatolepis (Fee) T. Moore

<table>
<thead>
<tr>
<th>Class</th>
<th>- Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<td>- Lomariopsidaceae</td>
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<td>Genus</td>
<td>- Elaphoglossum</td>
</tr>
<tr>
<td>Species</td>
<td>- stigmatolepis</td>
</tr>
</tbody>
</table>

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Sengkadu.

Altitude: 1000-1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome long creeping, up to 3 mm thick, densely clothed by scales all over; scales spreading, ovate-lanceolate, about 3 x 1 mm, uniformly pale brown, apex acuminate, margin entire with small hair-like outgrowths. Stipes scattered, about 1 cm apart, up to 15 x 0.2 cm, dark at the base, pale yellowish brown to dark brown above, covered by scales densely when young, sparsely when mature. Lamina simple, lanceolate, 18 x 2 cm, acute, distal one-third part and basal one-third to half part of the lamina progressively narrowed, margin entire with cartilaginous border; midrib slightly raised above and below; shallowly grooved above; veins immersed, lamina dark green, glabrous above, minute fimbriate, persistent scales distributed on the midrib below, abaxial side of the lamina with minute dark spots of attachments of deciduous scales; texture coriaceous. Fertile fronds up to 13 x 0.8 cm, ob lanceolate, much contracted with slightly longer stipe; margin revolute, sori acrostichoid, spores reniform or planoconvex, dark brown (Plate 11).

Economic importance:

Not yet found.
78. Systematic position of Blechnum orientale L.

Class - Filicopsida
Sub Class - Filicidae
Order - Blechnales
Family - Blechnaceae
Genus - Blechnum
Species - orientale

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Bear cave estate, Mining Area.

Altitude: Above 1500 msl.

Distribution level: Rare.

Taxonomic description:

Rhizome erect, up to 12 cm thick, densely clothed by scales all over; scales linear-lanceolate 15 x 3 mm, uniformly dark brown, glossy, apex acuminate or hair pointed, margin entire. Stipes tufted, up to 120 x 1.5 cm, dark or reddish-brown at the base, pale or grey-brown above, scaly at the very base glabrous and glossy above, about 6 x 20 pairs of small tubercles present along the stipe. Lamina ovate to linear-lanceolate, 20-176 x 13-50 cm, apex acute base subtruncate or broadly cuneate; pinnae 10-55 pairs, spreading or slightly ascending, sessile or adnate by the basiscopic base, alternate, up to 4 cm apart, basal few pairs reduced slightly, largest pinna 37 x 2 cm, oblong-linear-lanceolate, base broadly cuneate, oblique, apex long acuminate, margin entire; costa slightly raised above and below, rounded below, grooved above; veins immersed, slightly distinct above and below, usually simple, paralellel more or less perpendicular to the costa, pinnae pale or yellowish green, glabrous above and below, glossy; texture coriaceous. Sori linear along either side of the costa, parallel, dark brown, up to 2 mm wide, continuous, very rarely interrupted, indusiate; indusia dark brown, firm with entire margin, spores spherical or ovoid, yellowish-brown (Plate 11).

Economic importance:

Fresh fronds are used as a poultice for boils in Malaya; rhizome is used as a anthelmintic in China, eaten during scarcity of food in Malaya, as cure for intestinal worms, bladder complaints in India, Polynesia and as diaphoretic, aromatic, aperative in Philippines (Dixit and Vohra 1984).
79. Systematic position of Pyrrosia lanceolata Farewell

<table>
<thead>
<tr>
<th>Class</th>
<th>- Filicopsida</th>
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</thead>
<tbody>
<tr>
<td>Sub Class</td>
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<td>- Pyrrosia</td>
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<tr>
<td>Species</td>
<td>- lanceolata</td>
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</tbody>
</table>

Habit: Epiphyte or Lithophyte.

Geographical distribution in Shevaroys hills: Ghat road, Water-falls road, Vaniyar
Stream line, Puther etc.,
Altitude: Above 1000 msl upto the hill top.
Distribution level: Seldom.

Taxonomic description:

Rhizome long creeping, up to 2 mm thick, slender, densely covered by scales; scales lanceolate, up to 5 x 1 mm, uniformly pale brown with a reddish-brown spot at the subbasal region, apex acuminate, base rounded, margin entire. Stipes scattered, up to 4 cm apart, up to 2.5 cm long, 2 mm thick, flattened, winged along the margin, pale brown, densely scaly at the very base, rest of the part sparsely covered by stellate hairs. Frond simple, lanceolate, elliptic or linear-lanceolate, up to 14 x 1 cm, apex acute, base decurrent up to the winged stipe, margin entire or wavy; midrib marked by a shallow groove above, by pale brown line below, veins immersed, frond dark green above, brownish below; lower surface of the frond densely covered by stellate hairs, upper surface glabrous; texture coriaceous. Sori irregularly distributed mainly in the distal part of the pinna, orbicular, up to 2 mm in diameter, dark brown, naked; spores reniform or palmoconvex, pale brown (Plate 11).

Economic importance:

A decoction of the fern is used in South Africa for curing colds and sore throat. In Mexico, a tea prepared from the fronds is used for itch (Manickam and Irudayarai 1992).
80. Systematic position of Pyrospa porosa var. porosa Hovenkamp

Class - Filicopsida
Sub Class - Filicidae
Order - Polypodiales
Family - Polypodiaceae
Genus - Pyrospa
Species - porosa var. porosa

Habit: Terrestrial, Epiphyte.

Geographical distribution in Shevaroys hills: Ghat road, Water-falls road, Vaniyar Stream line, Puther etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Frequent.

Taxonomic description:

Rhizome: short creeping, up to 5 mm thick, densely covered by scales; scales appressed, lanceolate, about 6 x 1.25 mm, attached subbasally, younger one uniformly pale brown, mature ones pale brown at the margin, gradually becoming dark brown towards the point attachment, apex acuminate, base broadly or narrowly cuneate or rounded, margin fimbriate. Fronds scattered, up to 0.5 cm apart, simple, monomorphic, indistinctly or not stipitate, linear-elliptic to lanceolate, up to 30 x 3 cm, widest at the neck region from where it narrows towards apex and base progressively or abruptly, about basal half of the frond narrowed to up to 0.5 cm thick stipelikepart, margin entire; midrip slightly distinct and pale or reddish-brown above, indistinct and concolorous with the surface below, shallowly grooved above, rounded below; veins immersed, slightly distinct on the lower surface when the hairs are removed, marked by slightly raised elevations, primary veins ascending, parallel, secondary veins connecting the primary veins and forming about 4 x 2 mm, rectangular areoles, tertiary veins indistinct; fronds dark green above, pale brown below; texture thick coriaceous; lower surface of the frond densely clothed by pale brown, stalked, soft, stellate hairs in two layers. Sori numerous, three to five per larger aerole, towards the distal half of the frond, probably terminal on the tertiary veins, orbicular, up to 1.25 mm in diameter, protected by stellate hairs, marked by dark spot above; sporangia with stalk about half the length of the sporangium; spores reniform or planoconvex, yellowish-brown (Plate 11).

Economic importance:

Not yet found.
81. Systematic position of Pleopeltis macrocarpa (Bory ex Willd.) Kaulf.

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<tr>
<td>Sub Class</td>
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<tr>
<td>Genus</td>
<td>Pleopeltis</td>
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<tr>
<td>Species</td>
<td>macrocarpa</td>
</tr>
</tbody>
</table>

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills: Ghat road, Water-falls road, Vaniyar
Stream line, Puther etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Rare.

Taxonomic description:

Rhizome long creeping, up to 3 mm thick, densely covered by scales; scales appressed, lanceolate, about 3 x 0.75 mm, pale brown to dark brown at the centre, pale brown at the periphery, apex acuminate, margin erose. Fronds simple, monomorphic; stipes scattered, 0.5-2 cm apart, up to 4 x 0.125 cm, dark brown, abaxially rounded, more or less scaly above; lamina linear-elliptic, up to 12 x 2 cm, apex acuminate, base narrowly cuneate, margin entire; midrib slightly raised and rounded above and below, veins indistinct above and below; fronds pale green, texture subcoriaceous; about 1 mm wide pale brown appressed scales densely covered both surfaces of young fronds, rarely on the upper surface of the mature fronds. Sori superficial, median between the midrib and the margin of the frond distributed towards the distal half of the lamina, hemispherical, up to 4 mm in diameter; spores monolate, ellipsoid or planoconvex, pale brown (Plate 12).

Economic importance:

Not yet found.
82. Systematic position of Leptochilus axillaries (cav.) kaufl.

Class - Filicopsida
Sub Class - Filicidae
Order - Polypodiales
Family - Polypodiaceae
Genus - Leptochilus
Species - axillaris

Habit: Epiphyte.

Geographical distribution in Shevaroys hills: Kiliyur water falls, vaniyar stream line.
Altitude: 1000-1500 msl.
Distribution level: Rare.
Taxonomic description:

Rhizome slender, climber, up to 3 mm in diameter, green when fresh, black when dry, scaly at the apex; scales 2 x 0.5 mm, dark brown, conspicuously toothed along the margin. Stipes up to 1 cm apart, about 5 cm long in sterile fronds, about 25 cm long in fertile fronds; sterile lamina elliptic-lanceolate, up to 20 x 2.5 cm, acuminate, base gradually decurrent; fertile lamina about 28 x 0.3 cm, sori acrostichoid, spores dark brown (Plate 12).

Economic importance:

Not yet found.

83. Systematic position of Leptochilus decurrents Bl.

Class - Filicopsida
Sub Class - Filicidae
Order - Polypodiales
Family - Polypodiaceae
Genus - Leptochilus
Species - decurrents

Habit: Terrestrial.

Geographical distribution in Shevaroys hills: Kakasolai.

Altitude: Above 1500 msl.
Distribution level: Rare.

Taxonomic description:

Rhizome about 0.4 cm thick, densely scaly all over; scales ovate-lanceolate, 2 x 1 mm, uniformly pale brown. Stipes up to 5 cm apart, about 20 x 0.25 cm in sterile fronds, pale brown or strawmineous when dry, abaxially rounded, adaxially grooved, glabrous; lamina ovate-lanceolate, about 40 x 11 cm, apex acute or acuminate, base abruptly decurrent. Fertile fronds up to 20 x 0.7 cm with up to 35 cm long stripe, spores reniform or planoconvex, spores dark brown (Plate 12).

Economic importance:

Not yet found.

84. Systematic position of Drynaria quercifolia (L.) J. Sm.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Polypodiales</td>
</tr>
<tr>
<td>Family</td>
<td>Polypodiaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Drynaria</td>
</tr>
<tr>
<td>Species</td>
<td>quercifolia</td>
</tr>
</tbody>
</table>

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills: Kiliyur water falls, Ghat Road of Yercaud, Sengadu, kondiyanoor, Thangamalai, Sengkaluthuppadi etc.,

Altitude: Above 1000 msl upto the hill top.

Distribution level: Seldom.

Taxonomic description:

Rhizome short creeping, up to 4 cm thick, densely clothed by scales; scales linear-lanceolate, about 12 x 2 mm, uniformly pale brown to dark brown, apex long acuminate, margin dentate-ciliate; nest leaves ovate, up to 24 x 17 cm, apex acute, margin shallowly lobed, midrib and primary veins distinctly raised above and below, secondary and tertiary veins slightly raised above and below, veins interconnected; stipes up to 20 x 0.5 cm, grey-brown, abaxially rounded, adaxially grooved, narrowly winged on either side, glaborous all over.
Lamina oblong, up to 75 x 50 cm, pinnately lobed, terminated by a pinnule similar to the lateral ones, base decurrent; lobes up to 15 pairs, basal pairs much reduced; largest lobe up to 22 x 5 cm, oblong-lanceolate, apex acute, margin entire, base decurrent; costa and veins raised above and below, interconnected by veinlets, areoles free from any included veinlets; pinnae pale green, glabrous, texture coriaceous. Sori seated at the juncture of veins, more or less in two rows along each primary vein, orbicular, up to 2 mm in diameter, exindusiate; spores reniform, pale brown (Plate 12).

Economic importance:

The rhizome bitter, it is used as an antibacterial anodyne, constipating, anti-inflammatory tonic, in the treatment of typhoid fever, phthisis, cough, arthralgia, cephalagia, diarrhea, ulcers and inflammations (Dixit and Vohra 1984). It is very specific in the treatment of migraine. The decoction of the plant is used in typhoid fever and is also used as anthelmintic, pectoral, expectorant, tonic, dyspepsia and astringent. Fronds are useful as poulticing swellings (Warrier et al., 1996).

85. Systematic position of Lepisorus nudus (Hook.) Ching

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub Class</td>
<td>Filicidae</td>
</tr>
<tr>
<td>Order</td>
<td>Polypodiales</td>
</tr>
<tr>
<td>Family</td>
<td>Polypodiaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Lepisorus</td>
</tr>
<tr>
<td>Species</td>
<td>nudus</td>
</tr>
</tbody>
</table>

Habit: Epiphyte, Lithophyte.

Geographical distribution in Shevaroys hills: Water falls, Balmidis, Kakasolai.

Altitude: Above 1000 msl upto the hill top.

Distribution level: Rare.
Taxonomic description:

Rhizome long creeping, up to 3 mm thick, branched, densely covered by scales; scales appressed, ovate to ovate-lanceolate, about 4 x 1 mm, pale brown with thin walled cells at the periphery, gradually becoming dark brown with thick walled cells, attached subbasally with orange coloured spot, apex acute, margin subentire or entire. Stipes scattered, about 2 cm apart, 1-10 x 0.15 cm, stramineous or grey-brown to dark or reddish-brown, abaxially rounded, grooved adaxially, scaly at the very base, glabrous. Laminae simple linear-elliptic to linear-lanceolate, 4 x 6.5 cm, to 35 x 2 cm, widest just below the midportion from where gradually narrowing towards both ends, apex acuminate, base decurrent, narrowly cuneate, margin entire; midrib slightly raised above and below, almost flattened on both sides, veins immersed, indistinct above and below; lamina dark green above, pale green below, glabrous; texture chartaceous to subcoriaceous. Sori superficial, arranged in the distal half of the frond in two rows between margin and midrip, conspicuous, hemispherical, up to 5 mm in diameter, sorus scales different from rhizome scales, orbicular with dark brown, thick walled cells and long stalk; spores reniform or planoconvex or ovoid or ellipsoid, light brown (Plate 12).

Economic importance:

Not yet found.

86. Systematic position of Lepisorus amaurolepidus (sledge) Bir. & Trikha

Class - Filicopsida
Sub Class - Filicidae
Order - Polypodiales
Family - Polypodiaceae
Genus - Lepisorus
Species - amaurolepidus

Habit: Lithophyte.

Geographical distribution in Shevaroys hills: Near BSI.

Altitude: Above 1500 msl.

Distribution level: Rare.
Taxonomic description:

Rhizome short creeping, up to 2.5 mm thick, densely covered by scales; scales peltate, about 2 x 0.75 mm, distinctly bicolorous, dark brown with thick walled cells at the centre, pale brown with thin walled cells towards periphery, apex acuminate, margin dentate. Stipes crowded, up to 4 mm apart, up to 1 x 0.5 cm, pale or grey-brown when dry, rounded abaxially, grooved adaxially, scaly at the very base, glabrous above. Laminae simple, elliptic-lanceolate, up to 20 x 2 cm, progressively narrowing from the middle towards base and apex, base narrowly cuneate and decurrent, apex usually acute or acuminate, rarely subacute, margin entire; midrip slightly raised and rounded both above and below, veins immersed, indistinct above and below, copiously anastomosing; laminae dark green, glabrous above and below, texture herbaceous to chartaceous. Sori superficial, probably one per primary areole, arranged in two rows, medianly on either side of the midrib usually towards the distal half of the frond, hemispherical, up to 4 mm in diameter, spores monolete, planoconvex or ellipsoid, pale green (Plate 12).

Economic importance:

Not yet found.

87. Systematic position of Marsilea minuta L.

Class - Filicopsida
Sub class - Marsileidae
Family - Marsileaceae
Genus - Marsilea
Species - minuta

Habit: Aquatic.

Geographical distribution in Shevaroys hills: Big lake, Ornamental lake.

Altitude: 1000-1500 msl.

Distribution level: Seldom.
Taxonomic description:

Rhizome long creeping, branched, subterranean, about 30 cm long, up to 2 mm thick, green in aquatic plants, pale or dark brown to terrestrials, covered by about 5 x 0.25 mm, whitish, soft, slender hairs sparsely or densely all over; roots borne usually on nodes, rarely on internodes. Stipes scattered, about 1 cm apart, up to 15 x 0.2 cm, usually green, rarely pale or dark brown, terete, glabrous or with few hairs as in rhizome. Leaves four, sessile, arranged at the tip of the stipe in clover leaf model, obovate or wedge-shaped, up to 2.5 x 2 cm, base cuneate, lateral margin entire, outer margin usually entire, rarely subcrenate; veins distinct above and below, flabellately branched, connected occasionally by lateral veins; leaves pale or dark green, glabrous with few hairs; texture thin, soft herbaceous. Sporocarps borne at the nodes in clusters alternately, five per cluster, peduncle 6 x 1 mm, sporocarps adnate to the peduncle laterally and perpendicularly, bearing a teeth on upper proximal corner, more or less bean-shaped, up to 5 x 4 mm, black or dark brown, very hard, densely hairy when young, sparsely or rarely when mature, slightly, vertically ridged on both convex surfaces; microsporangia and megasporangia enclosed in the same sporocarp and covered by gelatinous layer; microspores yellowish-brown, globose, megaspore ovate (Plate 12).

Economic importance:

Plants are used in cough, spastic condition of leg, muscles, etc. and also in sedatum and insomnia. The leaves and sprouts are cooked as vegetables and sold in the market (Dixit and Vohra 1984). It is a cumbersome weed in paddy fields. Plant is sweet, astringent, refrigerant, acrid, diuretic, expectorant, anodyne, constipating, aphrodisiac, depurative and febrifuge. It is useful in psychopathy, ophthalmia. Strangury, diarrhoea, leprosy, skin diseases, haemorrhoids, dyspepsia and fever (Warrier et al., 1996).

88. Systematic position of Salvinia molesta Mitch.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
<td>Salvinidae</td>
</tr>
<tr>
<td>Family</td>
<td>Salviniaeae</td>
</tr>
<tr>
<td>Genus</td>
<td>Salvinia</td>
</tr>
<tr>
<td>Species</td>
<td>molesta</td>
</tr>
</tbody>
</table>
Habit: Aquatic.

Geographical distribution in Shevaroys hills: Big-lake, Ornamental lake.

Altitude: 1000-1500 msl.

Distribution level: Seldom.

Taxonomic description:

Acquatic free floating plants, stem spongy, terete, up to 2 mm thick brown, branched with nodes and internodes, bearing submerged leaf which is modified into about 5 cm long, root-like organs which are covered by brown, septate hairs. Normal leaves borne at the nodes in two opposite pairs, erect, floating, sessile, obovate to oblong, about 1.5 x 2 cm, entire, pale green, lower surface glabrous, upper surface with dense hairs borne on the intervenal areas, stiff, erect with common stalk, branched into four, septate hooked branches; veins slightly distinct below, anastomosing to form parallel, elongated areoles, texture soft herbaceous, normal leaves spongy due to the presence of hairs, sporocarps borne in clusters on submerged leaves, about 10 in number, ovoid, apiculate, up to 2 mm in diameter, sessile, densely hairy; microsporangia borne on the branched receptacle in cluster in microsporocarps, megasporangia borne in megasporocarps, spores not seen, both microsporangia and megasporangia are probably abortive (Plate 12).

Economic importance:

Bhardwaj (1989) has reported that the pulp of this plant possesses the properties for the formation of paper which can be suitably used in various ways. This plant can act as an additional source of raw material in the paper industry for the manufacture of low grade papers.
89. Systematic position of Azolla pinnata R. Br.

<table>
<thead>
<tr>
<th>Class</th>
<th>Filicopsida</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub class</td>
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<tr>
<td>Family</td>
<td>Azollaceae</td>
</tr>
<tr>
<td>Genus</td>
<td>Azolla</td>
</tr>
<tr>
<td>Species</td>
<td>pinnata</td>
</tr>
</tbody>
</table>

Habit: Aquatic.

Geographical distribution in Shevaroys hills: Big-lake, Ornamental lake.

Altitude: 1000-1500 msl.

Distribution level: Seldom.

Taxonomic description:

Stem horizontal, profusely branched, zig-zag, bearing roots which are densely covered by about 2 mm long hairs, young roots protected by cone-shaped root cap which encloses a bundle of root hairs; young leaves not in circinate vernation. Leaves alternate, arise from the dorsal lobe, aerial, more or less rectangular, up to 1 x 0.75 mm, sessile, margin entire with narrow whitish, transparent membranaceous border, grey-green, thick, encloseing large mucilarge filled cavities that harbour blue-green algae, upper surface of the aerial lobe with dense, short blunt, whitish trichomes or with their scars; veins indistinct, ventral lobes submerged, broadly ovate, up to 1 x 1 mm, base cuneate, margin entire, veins distinct, copiously anastomosing, lobes thin membranaceous, transparent, brownish, glabrous, microsporocarps globose, 1 mm in diameter, brown with two layered wall, containing numerous microsporangia which arise from the central columella, megasporocarp smaller than the microsporocarp, ovate, enclosing a single magasporangium (Plate 13).

Economic importance:

Used as an important biofertilizer in paddy fields (Singh, P.K. 1997).
b) Distribution, Diversity, Ecology and Economic uses of enumerated ferns

The documentation of fern flora in the present study in Shevaroys hills is most noteworthy due to the wide spectrum of fern and fern allies present in this region (Table-1). A total number 89 species of fern and fern allies belonging to 51 genera under 30 families were enumerated in the present study. The study showed that among the five classes the Filicopsida is dominating due to more number of 80 species fall in this category, out of 89 fern species.

The family wise contribution of the species to the fern flora is widely varied (Table-2 & Figure-2). The generic diversity among the family also varied much the family Dryopteridaceae contained higher of 6 genera followed by Polypodiaceae with 5 genera, Thelypteridaceae with 4 genera, Athyriaceae with 3 genera. The remaining 26 families generally have one or two genera only. The following families like Lycopodiaceae, Ophioglossaceae, Schizaceae, Sinopteridaceae, Hemionitidaceae, Dennstaedtiaceae and Hymenophyllaceae represent 2 genera each. In this account a higher member of 19 families such as (Selaginellaceae, Equisetaceae, Psilotaceae, Angiopteridaceae, Pteridaceae, Actiniopteridaceae, Actinopteridaceae, Adiantaceae, Lindsaeaceae, Davalliaceae, Oleandraceae, Gleicheniaceae, Cyatheaceae, Aspleniaceae, Lomariopsidaceae, Blechnaceae, Marsileaceae, Salviniaaceae and Azollaceae) are monotypic as there are with only one genus.

Of the 51 genera the genus Asplenium is determined to dominant due to a higher number of 10 species in this taxon followed by the geneus Adiantum with 6 species and Selaginella and Pteris with 5 species each. The genus Cheilanthes is represented with 3 species. The 14 genera such as (Botrychium, Nephrolepis, Hymenophyllum, Trichomanes, Cyathea, Pseudocyclosorus, Christella, Diplazium, Dryopteris, Arachniodes, Tectaria, Pyrrosia, Leptochilus and Lepisorus are present with were species each in Shevaroys hills. The remaining 32 genera such as (Huperzia, Lycopodiella, Equisetum, Psilotum, Ophioglossum, Angiopteris, Anemia, Lygodium, Actiniopteris, Doryopteris, Ceratopteris, Hemionitis, Pityrogramma, Pteridium, Histiopteris, Odontosoria, Araioestigia, Dicranopteris, Cyclosorus, Macrothelypteris, Athyrium, Deparia, Polystichum, Phanerophlebia, Hypodematum, Elaphoglossum, Blechnum, Pleopeltis, Drynaria, Marsilea, Salvinia

119
and Azolla) are present with single species only throughout the ranges of Shevaroys hills (Table-2 & Figure-3).

The fern species showed altitude preference due to the occurrence of specific microsites in Shevaroys hills (Tables-3&6 and Figure-4). To demark the species distribution, four altitudinal zones in the study hills such as zones upto 500m altitude, zone between 500m and 1000m altitude, zone between 1000 and 1500m altitude were analyzed. The observations of the study revealed that in the foot hills of Shevaroys hills upto 500m altitude 5 species (Actiniopteris radiata, Doryopteris concolor, Ceratopteris thalictroides, Hemionitis arifolia and Adiantum incisum) are present. In the second zone (500m-1000m altitude) 6 species (Selaginella involvens, S. radicata, S. inaequalifolia, Pteris biurita, Adiantum caudatum and Adiantum lunulatum) are present. In the third zone (1000m-1500m altitude) 9 species (Pteris linearis, Macrothelypteris torresiana, Tectaria coadunata, Hypodematum crenatum, Elaphoglossum stigmatolepis, Leptochilus axillaries, Marsilea minuta, Salvinia molesta and Azolla pinnata). In the fourth zone at the top of the Shevaroys hills (above 1500m altitude) a large number of 46 species (Huperzia phlegmaria, Lycopodiella cernua, S. wightii, S. tenera, Equisetum ramosissimum, Psilotum nudum, Botrychium lanuginosum, B. daucifolium, Ophioglossum reticulatum, Angiopteris erecta, Anemia wightiana, Lygodium microphyllum, Pteris vittata, P. multiurita, P. argyrea, Cheilanthes farinosa, C. mysurensis, C. tenuifolia, Pityrogramma calomelanos var. aureoflava, Odontosoria chinensis, Araioptegia pulchra, Dicranopteris linearis, Cyathea nilgirensis, C. gigantea, Cyclosorus interruptus, Asplenium nidus, A. erectum, A. decrescens, A. normale, A. polyodon, A. polyodon var. bipinnatum, A. inaequilaterale, A. laciniatum, A. aethipicum, Athyrium solenopteris, Deparia petersenii, Diplazium esculentum, D. polypodioides, Arachniodes trippinata, A. aristata, Polystichum squarrosum, Phanerophlebia caryotidea var micropteris, Tectaria wightii, Blechnum orientale, Leptochilus decurrens and Lepisorus amaurolepidus were enumerated.

In the last two zones (above 1000m altitude- upto hill top) collectively a large number of 23 species (Adiantum hispidulum, A. concinnum, A. raddianum, Pteridium aquilinum, Histiopteris incisa, Nephrrolepis auriculata, N. multiflora, Hymenophyllum denticulatum, H. javanicum, Trichomanes saxifragoides, T.
plicatum, Pseudocyclosorus tylodes, P. ochthodes, Christella parasitica, C. dentata, Asplenium indicum, Dryopteris cochleata, D. sparsa, Pyrrosia lanceolata, P. porosa var. porosa, Pleopeltis macrocarpa, Drynaria quercifolia and Lepisorus nudus were noted to be present. It indicates that majority of the fern species in Shevaroys hills are preferring subtropical and temperate climate for their better distribution and survival as in other parts of the world.

The habit wise distribution of fern flora in Shevaroys hills is given in the (Tables-3&7 and Figure-5). Of the total number of 89 species, a higher number of 58 species (65.16%) are terrestrial (Lycopodiella cernua, Selaginella involvens, S. radicata, S. inaequalifolia, S. tenera, Equisetum ramosissimum, Botrychium daucifolium, Ophioglossum reticulatum Angiopteris evecta, Anemia wightiana, Lygodium microphyllum, Pteris vittata, P. multiaurita, P. biaurita, P. argyracea, P. Linearis, Cheilanthes tenuifolia, Pityrogramma calomelanos var. aureoflava, Adiantum caudatum, A. incisum, A. lunulatum, A. hispidulum, A. concinnun, A. raddianum, Pteridium aquilinum, Histiopteris incisa, Odontosoria chinensis, Nephrolepis multiflora, Dicranopteris linearis, Cyathea nilgirensis, C. gigantea, Pseudocyclosorus tylodes, P. ochthodes, Cyclosorus interruptus, Christella parasitica, C. dentata, Macrothelypteris torresiana, Asplenium erectum, A. decrescens, A. normale, A. polydon var. bipinnatum, A. inaequilaterale, A. aethiopicum, Athyrium solenopteris, Deparia petersenii, Diplazium esculentum, D. polypodioides, Dryopteris cochleata, D. sparsa, Arachniodes tripinnata, A. aristata, Polystichum squarrosum, Phanerophlebia caryotidea var micropteris, Tectaria wightii, T. coadunata, Elaphoglossum stigmatolepis, Blechnum orientale and Leptochilus decurrens). The other habits such as epiphytes, lithophytes and aquatic are lower in number, less than 6 only. Interestingly it has been noted that the four species such as (Actinopteris radiata, Cheilanthes mysurensis, Dryopteris concolor and Hemionitis arifolia) were exhibiting both terrestrial as well as lithophytic life forms. Similarly two species (Araioestia pulchra and Pyrrosia porosa var. porosa) exhibiting both terrestrial/epiphytic life forms and 11 species (Nephrolepis auriculata, Hymenophyllum denticulatum, Trichomanes saxifragoides, T. plicatum, Asplenium indicum, A. polydon, A. laciniatum, Pyrrosia lanceolata, Pleopeltis macrocarpa, Drynaria quercifolia and Lepisorus nudus were
showed epiphytic/ lithophytic life forms. Four aquatic species (Ceratopteris thalictroides, Marsilea minuta, Salvinia molesta and Azolla pinnata) were documented in Shevaroys hills. Sizable number of six species (Selaginella wightii, Botrychium lanuginosum, Cheilanthes farinosa, Hymenophyllum javanicum, Hypodematum crenatum and Lepisorus amaurolepidus are lithophytes and four species (Huperzia phlegmaria, Psilotum nudum, Asplenium nidus and Leptochilus axillaries) are epiphytes. Next to terrestrial, epiphyte/ lithophyte contributed higher percentage of 12.35 species to be communities of Shevaroys hills.

The dispersion level of various fern species enumerated in Shevaroys hills is divided into categories namely frequent, common, seldom and rare according to the visual observation made over various localities/habitats all over the Shevaroys hills (Tables-4&8 and Figure-6). The observation of the study report that a great number of 39 species (43.82%), (Huperzia phlegmaria, Lycopodiella cernua, Selaginella tenera, Equisetum ramosissimum, Psilotum nudum, Botrychium lanuginosum, B. daucifolium, Ophioglossum reticulatum, Angiopteris evecta, Lygodium microphyllum, Pteris vittata, P. argyraea, Cheilanthes farinosa, C. mysurensis, Ceratopteris thalictroides, Adiantum caudatum, A. lunulatum, Odontosoria chinensis, Araioptegia pulchra, Dicranopteris linearis, Cyathea nilgirensis, C. gigantea, Macrothelypteris torresiana, Asplenium nidus, A. laciniatum, A. aethiopicum, Athyrium solenopteris, Deparia petersenii, Phanerophlebia caryotidea var micropteris, Tectaria wightii, T. coadunata, Hypodematum crenatum, Elaphoglossum stigmatolepis, Blechnum orientale, Pleopeltis macrocarpa, Leptochilus axillaries, L. decurrens, Lepisorus nudus and L. amaurolepidus were known to be rare owing to very lower number of less than five individuals only. The frequently sighted species were 18 (Selaginella involvens, Pteris biurita, Pityrogramma calomelanos var. aureoflava, Adiantum raddianum, Nephrolepis auriculata, Hymenophyllum denticulatum, H. javanicum, Trichomanes saxifragoides, T. plicatum, Pseudocyclosorus tylodes, P. ochthodes, Christella parasitica, Asplenium indicum, A. normale, A. inaequilaterale, Dryopteris cochlleata, D. sparsa and Pyrrosia porosa var. porosa) and common species were 10 (Selaginella wightii, Anemia wightiana, Actinopteris radiata, Cheilanthes tenuifolia, Dryopteris concolor, Hemionitis arifolia, Adiantum incisum, A.
hispidulum, Pteridium aquilinum and Nephrolepis multiflora). The seldom species which are dispersion more adequately were 22 in number (Selaginella radicata, S. inaequalifolia, Pteris multiaurita, P. linearis, Adiantum concinnnum, Histiopteris incisa, Cyclosorus interruptus, Christella dentata, Asplenium erectum, A. decrescens, A. polyodon, A. polyodon var. bipinnatum, Diplazium esculentum, D. polypodioides, Arachniodes tripinnata, A. aristata, Polystichum squarrosum, Pyrosia lanceolata, Drynaria quercifolia, Marsilea minuta, Salvinia molesta and Azolla pinnata). This fact indicates many number of species need conservation priority because of their lower population sites. Of the many sampling places observed, species like Botrychium daucifolium, Ophioglossum reticulatum, Angiopteris evecta, Lygodium microphyllum, Pteris argyraea, Ceratopteris thalictroides, Adiantum lunulatum, Araiostegia pulchra, Macrothelypteris torresiana, Asplenium nidus, Athyrium solenopteris, Phanerophlebia caryotidea var micropteris, Tectaria wightii, T. coadunata, Hypodematum crenatum, Elaphoglossum stigmatolepis and Lepisorus amaurolepidus have present only one location with very individuals. Therefore these species are urgently considered for protection in Shevaroys hills.

The family-wise contribution of ferns in the study area Shevaroys hills was compared with that of the ferns in other parts of India (Table 5 & Figure 7). The diversity of families in the study area is comparable to that of other parts of India. The generic composition and the species present in the genera indicate that the five families such as Dryopteridaceae, Polypodiaceae, Thelypteridaceae, Athyriaceae and Aspleniaceae are dominant in Shevaroys hills as in the other studied parts of India. The family Polypodiaceae dominant in other study areas was also present one among the predominant families in the Shevaroys hills.

The medicinal and other economic uses of the enumerated ferns in Shevaroys hills are multidimensional (Table 9). A greater number of 37 species (41.57%) out of 89 species were recognized as medicinally/economic important. The species are reported to have healing properties for various ailments. The more number of species such as Selaginella involvens, Equisetum ramosissimum, Psilotum nudum, Botrychium lanuginosum, Pteris vittata, Actiniopteris radiata, Pteridium aquilinum, Dicranopteris linearis, Hypodematum crenatum, Drynaria
quercifolia were having antibacterial properties and hence to cure infectious diseases. A sizable number
10 species such as Ophioglossum reticulatum, Angiopteris evecta, Lygodium microphyllum, Ceratopteris thalictroides, Pteridium
aquilinum Nephrolepis auriculata, Diplazium esculentum, Tectaria coadunata, Pyrrosia lanceolata and Marsilea minuta were being as vegetables. Seven species
such as Lycopodiella cernua, involvens, Nephrolepis auriculata, Asplenium indicum, Diplazium esculentum, Pyrrosia lanceolata and Marsilea minuta are used
to treat cough. Five species such as Psilotum nudum, Pteridium aquilinum, Tectaria coadunata, Drynaria quercifolia and Marsilea minuta are used to treat diarrhea and
another four species Angiopteris evecta, Lygodium microphyllum, Adiantum caudatum and Marsilea minuta are used to cure skin diseases. The species such as
Actiniopteris radiata, Pteridium aquilinum, Dicranopteris linearis, Blechnum orientale and Drynaria quercifolia are used anthelmintic and other species such as
Ceratopteris thalictroides, Pteridium aquilinum, Marsilea minuta and Azolla pinnata are used as biofertilizers due their huge biomass available in Shevaroys
hills.

The species such as Botrychium lanuginosum, Angiopteris evecta, Lygodium
microphyllum and Actiniopteris radiata are used to cure dysentery. The two species
such as Pteridium aquilinum and Odontosoria chinensis are used as dyes. The two
species such as Adiantum lunulatum and Asplenium nidus are used to cure
elephantiasis. Some of the other species used for medicinal and other economic
importance are given below:

Lycopodiella cernua – Beri beri
Selaginella involvens – piles
Equisetum ramosissimum – Treatment of fracture
Angiopteris evecta - Scabies Christella parasitica - Rheumatism Hymenophyllum
javanicum – Head ache Asplenium polyodon – Jaundice and Malaria
Asplenium polyodon var. bipinnatum – Anti cancerous
Blechnum orientale – Intestinal worms
Dryopteris sparsa – Snake bite
Drynaria quercifolia – Typhoid
Marsilea minuta – Paper industry

This wide usage of various fern flora for health care indicates that these species are producing large varieties of secondary metabolites which can aid therapeutic properties.

C) Evaluation of biological activities:

i) Antioxidant properties

DPPH radical scavenging activity

DPPH, a relatively stable organic radical with a characteristic strong absorption band at 517 nm in visible spectroscopy (deep violet colour) was used to evaluate the free radical scavenging ability of the investigated samples. The best known natural and synthetic antioxidant standards, viz., quercetin and BHT were used as positive control for comparison. The free radical scavenging activity of five study species, Actiniopteris radiata, Equisetum ramosissimum, Selaginella wightii, Anemia wightiana and Adiantum caudatum was increased with the increase of concentrations (Table 10). Among the plants examined, the leaf extracts of Anemia wightiana (23.40 - 90.44) demonstrated effective DPPH radical quenching capacity. All the plants extracts were contributed fairly outstanding antiradical capacity.

Reducing Power assay

Table 11 shows the reductive capabilities of different concentrations of methanolic extracts Actiniopteris radiata, Equisetum ramosissimum, Selaginella wightii, Anemia wightiana and Adiantum caudatum in comparison to that of the standard, ascorbic acid. It was found that the reducing power increased with the increasing of the concentrations of the extracts. In the present study, Actiniopteris radiata extract showed the highest reducing ability (absorbance 0.853 at 700µg/ml) than the other ferns studied. However, the activity was lesser than the standard, ascorbic acid (absorbance 1.05 at 700µg/ml) presence of reducers.

Ferrous ion chelating assay

The chelating effect on the ferrous ions by methanolic extract of Actiniopteris radiata, Equisetum ramosissimum, Selaginella wightii, Anemia wightiana and Adiantum caudatum is presented in Table 12. All the samples
exhibited the ability to chelate metal ions. Among the five extracts A. wightiana showed higher activity (62.55 at 5000 μg/mL) than that of the other studied ferns.

ABTS•⁺ assay

In the present investigation, (Table-13) the methanolic extract of Actiniopteris radiata registered the highest total antioxidant activity (2523.11 μmol/g) followed by Adiantum caudatum (2302.35 μmol/g). ABTS⁺, a protonated radical has characteristic absorbance maxima at 734nm which decreases with the scavenging of the proton radicals. ABTS⁺ was generated by incubating it with potassium persulfate. The presence of chemical compounds in the tested extracts that inhibit the potassium persulfate activity may reduce the production of ABTS⁺.

ii) Antimicrobial activity

Agar well diffusion assay

The results of antimicrobial studies of the study species, Actiniopteris radiata, Equisetum ramosissimum, Selaginella wightii, Anemia wightiana and Adiantum caudatum are shown in Tables 14 and 15. Generally, in all plants studied the methanolic extracts at 400μg/mL determined to have greater inhibitory effect than that of the other concentration used. The range of inhibition zone of methanolic extract of A. radiata and E. ramosissimum (Plate-14) was existing between 18mm against the bacterium, Staphylococcus aureus and Salmonella paratyphi followed by S. wightii (17mm) against Streptococcus faecalis and Pseudomonas aeruginosa.

In fungus, the methanolic extract of Selaginella wightii respectively registered maximum zone of inhibition (14mm and 15mm) at 400μg/mL against Candida albicans followed by Aspergillus fumigatus. It was further observed that the inhibitory activity of methanol extracts of leaf Anemia wightiana against the fungus, Aspergillus fumigatus and Candida albicans was determined to be considerable (Plate-15).