

ON A COLLECTION OF FERNS FROM SHEVAROY HILLS, SALEM DISTRICT, MADRAS STATE

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ABSTRACT

The Shevaroyas are situated to the north-east of Salem town at a distance of 26 km., the main hill station being Yercaud. Two seasonal explorations were made in the year 1958 and in all a total number of 51 species of ferns representing 14 families and 35 genera were collected.

In Shevaroyas, the evergreen moist type of forest is seen where the vegetation is undisturbed and it is interesting to note that all the important fern families are represented here like Ophioglossaceae, Marattiaceae, Osmundaceae, Schizaeaceae, Gleicheniaceae, Hymenophyllaceae, Cyatheaceae and Polypodiaceae (*sensu lato*). Among the rare and interesting ferns, mention may be made of: *Anemia tomentosa* (Sav.) Sw., *Antrophyum plantagineum* (Cav.) Kaulf., *Athyrium macrocarpum* Bedd., *Botrychium daucifolium* Wall., *B. lanuginosum* Wall., *Cyrtomium falcatum* Presl var. *caryotideum* Wall., *Dryopteris cochleata* C. Chr., *Hymenophyllum exsertum* Wall., *Leptochilus decurrens* Blume, *Lindsaea heterophylla* Dry., *Lygodium scandens* Sw., *Niphobolus gardneri* (Mett.) Kunze, *Osmunda regalis* L., *Pteris cretica* L., *P. quadriaurita* Retz., var. *argentea* Bedd., and *Trichomanes proliferum* Blume.

The classification of Copeland is followed and the salient taxonomic features of the ferns collected are mentioned in the enumeration. Out of the plants listed Pteridaceae is well represented, the next in order being Aspidiaceae and Polypodiaceae (*sensu stricto*). The collections include a number of species which are new distributions to Salem District.

INTRODUCTION

The main hill station in the Shevaroyas is Yercaud, which is approachable by road from Salem town. The Shevaroyas are situated to the north-east of Salem town at a distance of 26 km. and lie between 11° 45' and 77° 55' N. and between 78° 10' and 78° 20' E. The altitude ranges from 667 m. to 1800 m., the highest point being nearly 1800 m. high. Two seasonal explorations were conducted in the months of September, 1958 (13-9-58 to 14-9-58) and December, 1958 (17-12-58 to 21-12-58).

GEOLOGY AND SOIL

The Shevaroyas are rich in archean charnockites (Krishnan, 1956) and they occur over large areas. Along the slopes the soil is a red sandy loam; the sholas and valleys are, however, rich in humus.

CLIMATE

The average annual rainfall ranges from 136 cm. to 148 cm. (Table 1) and the temperature varies from a minimum of 11° C (in December and January) to maximum of 30° C (in April and May). The climate is cool and pleasant in summer.

TABLE I

Rainfall in cm.

Month	Average taken on 61 yrs.	Rainfall in 1958
January	2.86	1.00
February	1.52	0.00
March	1.37	2.94
April	7.42	6.10
May	16.52	31.17
June	11.32	12.10
July	14.25	7.10
August	20.20	18.90
September	21.17	14.72
October	21.30	18.10
November	20.70	20.50
December	9.40	3.52

VEGETATION

A large portion of the hills and slopes in the Shevaroyas, particularly in and around Yercaud, has been used for cultivation of coffee, on a very extensive scale. The evergreen moist type of forest is seen only where the vegetation is still undisturbed. It is here that the ferns are very well represented and every opportunity was taken to collect as many species as possible.

It is interesting to note that all the important fern families are represented like Ophioglossaceae, Marattia-

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ceae, Osmundaceae, Schizaeaceae, Gleicheniaceae, Hymenophyllaceae, Cyatheaceae and Polypodiaceae (*sensu lato*). In the shady sholas and along the streams *Cyathea latebrosa* and *Osmunda regalis* grow luxuriantly. Near the waterfalls especially along the River Dale stream, Balmadies Estate, where the humus is rich and the humidity is great, epiphytic populations of *Hymenophyllum exsertum* and *Trichomanes proliferum* are met with. *Botrychium daucifolium* and *Botrychium lanuginosum* grow very well under shades in rich humus soil and along the borders of streams in these hills above 1,767 m. Populations of both species occur side by side. Some very rare and interesting ferns were collected and they are: *Anemia tomentosa*, *Antrophyum plantagineum*, *Athyrium macrocarpum*, *Cyrtomium falcatum*, *Dryopteris cochleata*, *Leptochilus decurrens*, *Leucostegia pulchra*, *Lindsaea heterophylla*, *Lygodium scandens*, *Nipholobolus gardneri*, *Pteris cretica* and *Pteris quadriaurita* var. *argentea*.

OBSERVATIONS

As already stated, two seasonal explorations were made and in all a total number of 51 species representing 14 families and 35 genera were carefully observed in the field and collected on the spot. The classification of Copeland (1947) is followed and the species under each family are arranged in an alphabetical order. For each species the following data are given: locality, frequency, distinguishing taxonomic features of the sori, date of collection, altitude and finally, the field number.

Out of the plants listed the dominant families are Pteridaceae, Aspidiaceae and Polypodiaceae (*sensu stricto*).

TABLE II

Family	No. of Genera	No. of Species
Pteridaceae	...	8
Aspidiaceae	...	7
Polypodiaceae	...	4
(<i>Sensu stricto</i>)		

It will be seen from table 2 that Pteridaceae is well represented, the next in order being Aspidiaceae and Polypodiaceae (*sensu stricto*). Among other families which have three or more species are Aspleniaceae, Davalliaceae and Ophioglossaceae.

ENUMERATION

OPHIOGLOSSACEAE

**Botrychium daucifolium* Wall.
(Syn. *B. subcarnosum* Wall.)

Near Morris stream, Honey Rock Estate and Kakasholai, Yercaud, common, fertile segment either equalling or only slightly exceeding the sterile segment, branched with naked globular distinct sporan-

gia borne laterally on its branches (13-9-1958), 1537 m., 6578.

Fertile segment arises below the base of the sterile blade (Clausen, 1938).

B. lanuginosum Wall.

(Syn. *B. virginianum* Sm. var. *lanuginosum* Moore). Kakasholai, Yercaud, common, fertile segment arising laterally as a division of the foliage blade, branched with naked globular distinct sporangia borne laterally on its branches (14-9-1958), 1800 m., 6602.

A very distinctive feature is the origin of the fertile segment as a lateral branch of the sterile blade (Clausen, 1938).

**Ophioglossum reticulatum* L.

Balmadies Estate, Yercaud, few, fertile spike simple with naked coalescent sub-spherical sporangia borne in two rows (13-9-1958), 1666 m., 6564.

Blade of the sterile segment cordate, membranous.

MARATTIACEAE

**Angiopteris evecta* (Forst.) Hoffm.

By the side of a stream, Kakasholai, Yercaud, few, sori abaxial, linear oblong consisting of two opposite contiguous series of 8-12 free sporangia (14-9-1958), 1800 m., 6605.

OSMUNDACEAE

**Osmunda regalis* L.

By the side of a stream, Brooklyn, Yercaud, few, fertile frond paniculate, sporangia crowded on the margins of the segments, annulus rudimentary (18-12-1958), 1587 m., 7529.

'The Royal Fern'.

SCHIZAEACEAE

**Anemia tomentosa* (Sav.) Sw.

Opposite to the Petrol bunk, Yercaud town, few, fertile frond contracted, rachiform, decompose, the segments unilaterally sporangiferous, annulus apical, complete (14-9-1958), 1600 m., 6581.

**Lygodium scandens* (L.) Sw.

(Holtum, 1954)

(Syn. *L. microphyllum* R. Br.)

Honey Rock Estate, Yercaud, very rare, sporangia biseriate on marginal spike, each sporangium subtended by an outgrowth serving as an indusium, annulus apical, complete (13-9-1958), 1587 m., 6579.

Scandant delicate herb, pinnae usually simple, occasionally palmately lobed at base.

GLEICHENIACEAE

**Dicranopteris linearis* (Burm.) Underwood

(Syn. *Gleichenia linearis* Burm.)

Brooklyn, Yercaud, abundant, sori superficial, in 2 rows one on either side of the midrib of the pinnule,

sporangia radiating, nonindusiate, annulus oblique-transverse, complete (13-9-1958), 1587 m., 6572.

The opposite branches at the node equal or unequal, ultimate branches alone leafy except a pair of short reflexed leafy accessory branches above all the nodes, veins 2 or 3 times forked with the sorus on one of the unforked veinlets (Holtum, 1957).

HYMENOPHYLLACEAE

**Hymenophyllum exsertum* Wall.

By the side of the River Dale stream, Balmadies Estate, Yercaud, common, sorus seated in an oblong bivalved involucre, sporangia on cylindrical receptacle, annulus transverse or oblique-vertical, complete (19-12-1958), 1666 m., 7552.
Epiphytic herb.

**Trichomanes proliferum* Blume

By the side of River Dale stream, Balmadies Estate, Yercaud, common, sorus sunk within a sub-cylindrical, obscurely two lipped involucre, sporangia on exserted receptacles, annulus transverse or oblique-vertical, complete (19-12-1958), 1666 m., 7550.
Epiphytic herb.

PTERIDACEAE

Actiniopteris dichotoma (Forsk.) Kuhn

In crevices of rocks on the Ghat Road to Yercaud, common, sori linear, elongate, marginal on the contracted rachiform segments (20-12-1958), 1100 m., 7591.

A curious little palm-like fern.

**Adiantum cuneatum* Lang. & Fisch.

Balmadies Estate, Yercaud, very common, sori marginal, interrupted, indusium reniform (13-9-1958), 1666 m., 6561.

**A. hispidulum* Swartz

Ghat Road near Yercaud town, common, sori copious, marginal, indusiate, interrupted, involucre orbicular, hispid (14-9-1958), 1600 m., 6583.

**Cheilanthes farinosa* Kaulf.

Honey Rock Estate, Yercaud, common, sori marginal, indusium continuous, waved, the margin lacerato-fimbriate (18-12-1958), 1587 m., 7533.
The silver fern.

Hemionitis arifolia (Burm.) Moore

In crevices of rocks. Ghat Road near Yercaud Town, common, sori reticulated, superficial, linear, non-indusiate (14-9-1958), 1600 m., 6582.
Fertile fronds few, erect, hastate on longer stipes, sterile fronds ovate, cordate.

Lindsaea heterophylla Dry.

By the side of River Dale stream, Balmadies Estate, Yercaud, few, sori marginal, continuous except at base, indusiate (19-12-1958), 1666 m., 7549.

Pellaea concolor Langs and Fisch.

Balmadies Estate, Yercaud, common, sori linear, continuous, marginal, indusiate (13-9-1958), 1666 m., 6559.

Fronds cordiform and pedate.

**Pteris cretica* L.

Brooklyn, Yercaud, rare, sori linear, continuous, marginal, indusiate (13-9-1958), 1587 m., 6566.

Sterile pinnae spinuloso-serrate.

P. quadriaurita Retz.

Balmadies Estate, Yercaud, common, sori linear, continuous, marginal, indusiate (13-9-1958), 1666 m., 6558.

P. quadriaurita Retz. var. *argentea* Bedd.

Balmadies Estate, Yercaud, rare, sori linear, continuous, marginal, indusiate (13-9-1958), 1666 m., 6562.

Fronds characteristically white mottled along midribs of pinnae.

Sphenomeris chusana (L.) Copeland

(Holtum, 1954).

(Syn. *Stenoloma chinensis* Sw.)

Brooklyn, Yercaud, common, sori at apex of pinnules, indusiate (13-9-1958), 1587 m., 6570.

Pinnae and pinnules oblique, deltoid.

DAVALLIACEAE

**Humata repens* (L. f.) Diels

(Holtum, 1954).

(Syn. *H. pedata* J. Sm.)

Honey Rock Estate, Yercaud, rare, sori small, marginal, indusium suborbicular, the whole edge above the base free (18-12-1958), 1587 m., 7534

Leucostegia pulchra J. Sm.

By the side of River Dale stream, Balmadies Estate, Yercaud, very rare, sori superficial, small, indusium suborbicular affixed by its base (19-12-1958), 1666 m., 7551.

Rhizome creeping, clothed with compact imbricated broad obtuse scales.

Nephrolepis cordifolia (L.) Pr.

(Syn. *Nephrolepis tuberosa* Pr.)

Kakasholai, Yercaud, abundant, sori about midway between midrib and margin, indusium cordato-reniform (14-9-1958), 1800 m., 6603.

Runners many, sometimes bearing tubers.

CYATHEACEAE

Cyathea latebrosa (Wall.) Copeland

(Holtum, 1954).

(Syn. *Alsophila latebrosa* Wall.)

By the side of streams and along the shaded regions, Brooklyn, Yercaud, few, sori superficial, cylindrical, nonindusiate, annulus oblique-vertical, complete (13-9-1958), 1587 m., 6568.

The tree fern ; veins unisoriferous.

ASPIDACEAE

- **Athyrium macrocarpum* (Blume) Bedd.
Kakasholai, Yercaud, rare, sori median on the veins, lunate or hippocrepiform with indusium of corresponding shape (20-12-1958), 1800 m., 7572.
- Cyclosorus extensus* (Blume) Ching
Chettiar garden, Balmadies Estate, Yercaud, common, sori small, copious, submarginal, indusium reniform (18-12-1958), 1666 m., 7537.
- **C. gongylodes* (Schkur) Link.
(Holtum, 1954).
(Syn. *Nephrodium unitum* L.)
In marshy places, Kakasholai, Yercaud, common, sori submarginal, globose, indusium subreniform (14-9-1958), 1666 m., 6593.
- **C. parasiticus* (L.) Farwell
Honey Rock Estate, Yercaud, few, sori large, globose, near the middle of the veinlet, indusium reniform (18-12-1958), 1587 m., 7532.
- **Cyrtomium falcatum* Pr. var. *caryotideum* Wall.
Kakasholai, Yercaud, few, sori scattered, globose, indusium orbicular, peltate-laciniate (14-9-1958), 1666 m., 6599.
- **Diplazium japonicum* Thunb.
Chettiar garden, Balmadies Estate, Yercaud, common, sori linear, superficial along the veins, indusium narrow, membranous (18-12-1958), 1666 m., 7536.
- **Dryopteris cochleata* (Don) C. Chr.
(Ching, 1938).
(Syn. *Lastrea cochleata* Moore)
In crevices of rocks, Kakasholai, Yercaud, rare, sori very large, closely packed and perfectly covering the under surface of frond, indusium reniform (20-12-1958), 1800 m., 7571.
- **D. oethodes* (Kunze) C. Chr.
[Syn. *Lastrea oethodes* (Kunze) Moore]
In marshy places, Brooklyn, Yercaud, common, sori globose, in a continuous line near the centre of the vein, indusium reniform (13-9-1958), 1587 m., 6565.
A callous gland is present at the base of each pinna.
- **D. sparsa* (Don) Kuntze
(Ching, 1938).
(Syn. *Lastrea sparsa* Moore)
By the side of a stream, Brooklyn, Yercaud, common, sori globose nearer the costule than the margin, indusium reniform (13-9-1958), 1587 m., 6567.
- **Elaphoglossum viscosum* Schott
By the side of River Dale stream, Balmadies Estate, Yercaud, few, fertile fronds much contracted, sori superficial, nonindusiate (19-12-1958), 1666 m., 7556.

**Polystichum aculeatum* (L.) Roth.

Balmadies Estate, Yercaud, common, sori globose, indusium orbicular, peltate (17-12-1958), 1666 m., 7573.

BLECHNACEAE

**Blechnum orientale* L.

Brooklyn, Yercaud, common, sori linear, continuous, running all along the midrib, indusium linear (13-9-1958), 1587 m., 6569.

ASPLENIACEAE

**Asplenium aethiopicum* (Burm.) Bech.

Balmadies Estate, Yercaud, common, sori linear along the veins, indusium membranous, flap-like (13-9-1958), 1666 m., 6560.

**A. caudatum* Forst.

Kakasholai, Yercaud, few, sori linear along the veins, indusium membranous, flap-like (20-12-1958), 1800 m., 7575.

**A. lunulatum* Sw. var. *camptorachis* Bedd.

Balmadies Estate, Yercaud, common, sori elongate, oblique, 2-4 on each side of the costa, indusium membranous, flap-like (17-12-1958), 1666 m., 7514.

**A. lunulatum* Sw. var. *trapeziforme* Bedd.

Kakasholai, Yercaud, few, sori oblong, on the forked veins, indusium membranous, flap-like (14-9-1958), 1800 m., 6601.
Pinnae trapizoid-lanceolate.

**A. normale* Don

Kakasholai, Yercaud, few, sori oblong, large, indusium membranous, flap-like (14-9-1958), 1666 m., 6598.

**A. varians* Wall.

Balmadies Estate, Yercaud, common, sori linear along the veins, indusium membranous, flap-like (17-12-1958), 1666 m., 7517.

POLYPODIACEAE

**Leptochilus decurrens* Blume

(Holtum, 1954).

(Syn. *Gymnopteris variabilis* Bedd.)

Kakasholai, Yercaud, few, in vegetative condition (14-9-1958), 1666 m., 6600.
Sterile frond ovate-lanceolate, acuminate at apex, attenuate and decurrent at base.

Niphobolus fissus Bedd.

Balmadies Estate, Yercaud, common, sori copious, intermingled with ferruginous stellate hairs having 7 or 8 radiating branches, nonindusiate (17-12-1958), 1666 m., 7511.
Epiphytic herb.

**Niphobolus gardneri* (Mett.) Kunze

Balmadies Estate, Yercaud, common, sori copious, superficial, intermingled with ferruginous stellate hairs having 10 to 11 radiating branches, non-indusiate (14-9-1958), 1666 m., 6587.

Epiphytic herb.

Phegopteris punctata (Thunb.) Mett.

Chettiar garden, Balmadies Estate, Yercaud, few, sori ovoid, superficial, nonindusiate (18-12-1958), 1666 m., 7538.

**Pleopeltis lanceolata* Kaulf.

Balmadies Estate, Yercaud, few, sori large, rounded, in two rows one on either side of the midrib, non-indusiate, sporangia mixed with stalked scales (19-12-1958), 1666 m., 7553.

Rhizome creeping, clothed with lanceolate ferruginous scales; fronds with copious orbicular, ovate, appressed peltate scales, dark in the centre; epiphytic herb.

**P. linearis* (Thunb.) Moore

Balmadies Estate, Yercaud, common, sori large, rounded, in 2 rows one on either side of the midrib, nonindusiate, partially covered with compact peltate long stalked deciduous scales (14-9-1958), 1666 m., 6586.

Rhizome creeping, covered with ovate-lanceolate scales; epiphytic herb.

**P. hastata* (Thunb.) Moore

Kakasholai, Yercaud, very rare, sori large, arranged in two rows close to the midrib one on either side, nonindusiate (20-12-1958), 1800 m., 7570.

Epiphytic herb.

VITTARIACEAE

**Antrophyum plantagineum* (Cav.) Kaulf.

Kakasholai, Yercaud, very rare, sori partially

reticulated, usually immersed, nonindusiate (14-9-1958), 1800 m., 6607.

Epiphytic herb.

NOTE: Species marked with an asterisk represent new distribution for the Shevaroy in Salem District. It has to be pointed out here that these data are based upon careful and critical comparison of the sheets present in the Regional Herbarium of the Southern Circle of the Botanical Survey of India and also the distribution data presented by Beddome (1868, 1873, 1883).

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