

characterized by glabrous sepals and 2-2.5 mm long corolla-lobes while in the subsp. *amplexicaulis* the posterior sepal is with hairy keel and corolla-lobes are 3.25-3.75 mm long.

*Specimens examined* : Univ. Campus Patiala, M. Sharma 2565.

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### ADDITIONS TO THE PTERIDOPHYTIC FLORA OF SIKKIM HIMALAYAS

The fern flora of Sikkim Himalayas is fairly rich. Smith & Cave (1911), Smith (1913) and Rao (1963) mentioned some species of ferns. A comprehensive treatise is by Mehra & Bir (1964). Recently Ohasi (1975) also reported on the ferns of Sikkim. After the establishment of a circle of the Botanical Survey of India in December 1979 at Gangtok, 11 species of ferns not so far reported from the State could be discovered and they are enumerated below. All the specimens are deposited in the herbarium of Sikkim Himalayas Circle, Gangtok.

#### OSMUNDACEAE

***Osmunda regalis*** L. Sp. Pl. 1065. 1753 ; Clarke in Trans. Linn. Soc. Ser. 2 (Bot.) 1 : 583. 1880 ; Bedd., Handb. Ferns Brit. India 450, t. 276. 1883 ; Panigrahi et Dixit in Journ. Ind. Bot. Soc. 48 : 95. 1969.

Stipe tufted *ca* 35 cm tall. Fronds pinnate 20 cm long. Fertile segments *ca* 30 cm long. Sporangia cylindrical. Spores trilete.

Raj Bhavan Campus, East District, *ca* 1850 m, 27.4.1980, P. K. Hajra 152.

#### POLYPODIACEAE

***Lepisorus amaurolepida*** (Sledge) Bir et Tir-kha in Bull. Bot. Surv. India 11 : 266. 1969 ; *Pleopeltis amaurolepida* Sledge in Bull. Brit. Mus. Nat. Hist. 2 (5) : 136. 1960.

Rhizome creeping scaly. Fronds linear-lanceolate, base decurrent on stipe, *ca* 25 cm

long, 8 mm broad. Sori globose many arranged on either sides of the distinct midrib.

Balwakhani, Gangtok, East District *ca* 1800 m ; 25.4.1980, P. K. Hajra 99.

#### DENNSTAEDTLACEAE

***Oleandra pistillaris*** (Sw.) C. Chr. Ind. Fil. Suppl. iii : 132. 1934 ; Dansk. Bot. Ark. 9 : 17. 1937 ; *Aspidium pistillare* Sw. Schrad. J. 1800 : 30. 1801.

Epiphyte, stem erect, densely covered with scales. Fronds digitate *ca* 25 cm long, 7 mm broad, narrowed at the base, widest above the middle and narrowed at apex. Sori arranged in a row on either sides of the midrib.

Burtuk Basti near Gangtok, East District, *ca* 1700 m, 25.4.1981, P. K. Hajra 84.

***Pteris aspericaulis*** Wall. ex Agardh, Rec. Spec. Gen. Pterid. 22. 1839 ; Alston & Bonner in Candollea 15 : 201. 1956 ; *Pteris quadriaurita* Retz. var. *aspericaulis* Bedd., Handb. Ferns Brit. India (with Suppl.) 111. 1892.

Terrestrial *ca* 1 m tall. Stipe rigid *ca* 50 cm tall, red. Pinnae *ca* 20 cm long, 3 cm broad, nerves red. Sori arranged along the edge of the pinnules.

Rumtek, East District, *ca* 1750 m, 17.4.1980, P. Chakraborty 112.

***P. rigida*** Sod. Sert. Fl. Ecaud. 11 : 15. 1908 (non Swartz 1806).

Rhizome erect *ca* 5 cm tall. Rachis *ca* 25 cm long. Fronds pinnate texture rigid with spine tipped. Sori marginal.

Honuman top near Gangtok, East District, *ca* 2000 m, 2.5.1981, P. Chakraborty 1508.

#### ASPLENIACEAE

**Asplenium indicum** Sledge in Bull. Brit. Mus. Nat. Hist. Bot. 3. 264. 1965.

Epiphytes. Rhizome creeping covered with fibrous roots. Stipe up to 10 cm long covered with scales. Fronds simple pinnate, deltoid. Sori 6-8 in each pinnae.

Betwo Basti, East District, *ca* 1600 m, 7.4.1981, P. Chakraborty 1240.

#### ADIANTACEAE

**Adiantum capillus-veneris** L. Sp. Pl. 1558. 1753; Clarke in Trans. Linn. Soc. Ser. 2 (Bot.) 1 : 453. 1880; Bedd., Handb. Ferns Brit. India (with Suppl.) 84. 1892.

Rhizome creeping clothed with brown linear scales. Stipes dark brown up to 10 cm long. Lamina tripinnate or decompound. Pinnules stalked, lobed. Sori reniform.

Deorali on way to Tadung, East District, *ca* 1300 m, 17.11.1980, P. Chakraborty 794.

**A. cuneipinnulum** Nair et Ghosh, Acta Botanica Indica 2 : 77-78. 1974; *Adiantum cuneatum* Langed. et Fisch., Ic. Fil. 23. t. 26. 1810.

Terrestrial 30 cm tall. Rachis glabrous, purple. Fronds *ca* 8 mm in length and across. Sori kidney shaped.

Rongli on way to Kupchey, East District, *ca* 900 m, 14.12.1980, P. Chakraborty 1168.

**A. incisum** Forsk., Fl. Agg. Ar. 187. 1775; Pichi Sermoli in Webbia 12 : 669. 1957; *A. caudatum* Auct. (non L. 1771); Bedd., Handb. Ferns. Brit. India (with Suppl.) 83. 1892.

Rhizome short, erect. Stipe densely covered with palea. Frond unipinnate up to 35 cm long. Vegetative buds proliferating terminally.

Suntale forests, South District, 9.9.1981, B. Krishna 1765.

**A. lunulatum** Burm. Fl. Ind. 235. 1768; *A. philippense* L. Sp. Pl. 2 : 1094. 1753; Clarke in Trans. Linn. Soc. Ser. 2 (Bot.) 1 : 452. 1880.

Rhizome short, erect *ca* 1 cm long. Stipe and rachis purplish. Fronds unipinnate. Pinnae thin, sub orbicular, margin lobed. Sori linear.

Singtham, East District, *ca* 700 m, 10.7.1980, P. K. Hajra 245.

**Cheilanthes grisea** Blandford in Simla Nat. Hist. Soc. 25th June 1886; *C. farinosa* var. *grisea* Blandford in Journ. Asiatic Soc. Bengal 57 : 250-251 : 1888; *C. farinosa* var. *tenera* Clarke & Baker in Journ. Linn. Soc. 24 : 441. 1888.

Terrestrial, 15 cm tall. Rhizome tufted. Fronds pinnatifid, silvery beneath. Indusia reflexed.

Bumbing on way from Rongpo to Nau-thang, East District, *ca* 500 m, 19.12.1981, P. Chakraborty 2006.

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#### REFERENCES

- MEHRA, P. N. AND S. S. BIR. Pteridophytic Flora of Darjeeling and Sikkim Himalayas. Research Bull. Punjab Univ. 15 (1-11) : 69-182. 1964.
- OHASHI, H. (ed.) The flora of Eastern Himalaya (Third Report). Tokyo. 1975.
- RAO, R. S. A tour in the Sikkim State, Eastern Himalaya. Bull. Bot. Surv. India 5(2) : 105-205. 1963.
- SMITH, W. W. The Alpine and Sub-alpine vegetation of South East Sikkim Rec. bot. Surv. India 4(7) : 323-431. 1913.
- AND G. H. CAVE. The vegetation of the Zemu & Llonakh Valleys of Sikkim Ibid. 4(5) : 141-260. 1911.