

TWO NEW VARIETIES OF *DICRANOPTERIS LINEARIS* (BURM.) UNDERW. FROM INDIA

Our studies on the family Gleicheniaceae have led us to recognise the existence of 2 genera, 5 spp. and six varieties in the flora of India (cf. Panigrahi and Dixit, 1968; 1969). While the genus *Gleichenia* is represented by four species, each by its type variety viz. *Gleichenia longissima* Bl. var. *longissima*, *G. volubilis* Jungh var. *volubilis*, *G. blotiana* C. Chr. var. *blotiana*, *G. laevissima* Christ var. *laevissima*, *Dicranopteris linearis* (Burm.) Underwood shows an amazing range of intraspecific variations, so much so that one can recognise in it easily the existence of eight varieties in our flora. Of these, var. *montana* Holtt. (Holtt., 1957) and var. *subpectinata* (Christ) Holtt. (Hiroshi Ito, 1966 as *Dicranopteris warburgii* sensu Nakai, 1950) were earlier reported from India and var. *subferruginea* (Hieron) Nakai; var. *latiloba* Holtt.; var. *demota* Holtt. and var. *altissima* Holtt. have been reported by us as new records for India (Panigrahi and Dixit, 1969). This note deals with the remaining two varieties, as new to science. They are *Dicranopteris linearis* (Burm.) Underw. var. *wattii* Panigr. et Dixit collected from Kala Naga Hills (195 m) of Manipur in May, 1882 and *Dicranopteris linearis* (Burm.) Underw. var. *sebastiana* Panigr. ex Dixit collected from Kotagiri (2030 m) of Nilgiri Hills in October, 1956 and from its adjacent regions.

***Dicranopteris linearis* Underw. var. *wattii* Panigr. et Dixit var. nov.**

Affinis varietati *subferrugineae* (Bl.) Holtt. ramificatione inaequali ad bifurcationes successivas, capillis persistentibus, tenuibus, floccosis, pallide rubiginosis fixis praesertim secus nervos in inferiore pagina laminae; differt tamen ramis ultimis 24-30 cm longis; laminae segmentis absque marginibus reflexis, ramis ultimis infimorum basioscoporum loborum nec amplificatis nec lobatis. Var. *subferruginea* monstrat ramos ultimos 15-20 cm longos, segmenta laminae marginibus recurvis eminentibus ornata, lobos infimos basioscopicos ramorum ultimorum vulgo caeteris maiores et ad margines plus minusve lobatos. Var. *wattii* monstrat ramos ultimos 7.5-9.5 cm latos; costulas 4-6 mm inter se distantes; laminae segmenta 3-4 mm lata, gracilia sed firma, fragilia cum sicca; apicem retusum; paginam superiorem glabram, nervis distincte elevatis lamina pallidioribus. Sporae non visae in sporangiis juvenilibus.

Holotypus, *Watt* 7497 lectus in collibus Kala

Naga dictis in Manipur in India orientali mense maio 1892 et positus in CAL.

***Dicranopteris linearis* (Burm. f.) Underw. var. *wattii* Panigr. et Dixit var. nov.**

The variety *wattii* appears to be allied to var. *subferruginea* (Bl.) Holtt., with which it shares its unequal branching at the successive forks and the persistent fine floccose pale-rusty hairs attached mainly along the veins on the lower surface of the lamina segments. But it differs from the latter in having ultimate branches 24-30 cm long; lamina segments without reflexed edges and the lowest basioscopic lobes of the ultimate branches neither enlarged nor lobed. In var. *subferruginea* the ultimate branches are 15-20 cm long; lamina segments with prominent recurved edges and the lowest basioscopic lobes of the ultimate branches usually larger than the rest and their edges are more or less lobed.

Apart from the distinguishing characters as above var. *wattii* has its ultimate branches 7.5-9.5 cm broad; costules 4-6 mm apart; lamina segments 3-4 mm wide, thin but firm in texture and brittle when dry; apex retuse; upper surface glabrous with distinctly raised veins, the latter being paler than the lamina. Spores could not be studied due to young sporangia seen.

Holotype: Kala Naga Hills, 195 m, Manipur, May 1882 *G. Watt* 7497 (CAL).

***D. linearis* var. *sebastiana* Panigr. et Dixit var. nov.**

Rami laterales semel atque interum furcati, ad bifurcationes successivas distincte inaequales alternantim, rami maiores successivi efformantes lineam fere rectam; rami ultimi semper ramis accessoriis ornati, 8-16 × 3-4 cm; costulae in ramis ultimis 5-6.5 mm inter se distantes; laminae segmenta decrescentia a basi ad apicem; textu gracili sed firmo, apice acuto, margine paulum reflexo in planta sicca, pagina inferiore glabra et subglauca; nervis eiusdem coloris ac lamina, distincte in pagina superiore, paulum eminentibus in inferiore; ramis accessoriis ad bifurcationes inferiores fixis oppositis furcae. Sporae non visae in sporangiis juvenilibus. Accedit ad var. *demotam* Holtt., a qua differt ramis accessoriis oppositis bifurcationi successivae, non sub bifurcatione.

Holotypus, *Sebastine* 981, lectus ad Kotagiri in

montibus Nilgaricis (2030 m) et positus in BSMH; paratypi: *Bidie* s.n. lectus in Montibus Nilagiricis anno 1873 et positus in BSMH sub numero 58871; Ramamurthi 23411 lectus ad Kodaikanal in dist. Madura et positus in BSMH.

D. linearis (Burm. f.) Underw. var. **sebastiana** Panigr. et Dixit var. nov.

Lateral branche system several times forked; branches at successive forks conspicuously alternately unequal; successive larger branches forming almost a straight line; ultimate branches always with accessory branches, 8-16 × 3-4 cm; costules on the ultimate branches 5-6.5 mm apart; segments of lamina tapering from base to apex; texture thin but firm, apex acute, margin slightly reflexed when dry, lower surface glabrous and slightly glaucous; veins concolourous to lamina, distinctly prominent on the upper surface and slightly so on the lower surface; accessory branches at the lower forks attached opposite to the fork. Spores could not be studied due to young sporangia seen.

This variety differs from var. *demota* Holtt. in having its accessory branches opposite the successive forks, not distinctly below the fork, as in var. *demota*.

Holotype: Kotagiri 2030 m, Nilgiris—*Sebastine* 981 (MH).

Paratypes: Nilgiri hills, 1873—*Bidie* s.n. (MH); Perumalmalai, 2000 m, Kodaikanal, Madurai—*Ramamurthy* 23411 (MH).

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PENTABOTHRA NANA HOOK. F.—A LITTLE KNOWN ASCLEPIADACEAE MEMBER

The monotypic genus **Pentabothra** was established by Hook. f. based upon *Cynanchum nanum* Buch.-Ham. ex Wt. which in its turn was described from a single specimen collected from northern Kamrup in Assam by Buchanann-Hamilton which is represented only at the Kew Herbarium. Since then the genus has neither been collected nor recorded from any part of the world.

In the course of studies on the flora of Darjeeling district, the authors collected a solitary specimen of the remarkable species from Sevoke forest division, which was hitherto known only from the type locality. A detailed description together with illustration based on the present collection is provided here to enable others to collect this interesting and rare specimen from other parts of India, particularly from Eastern India.

Pentabothra nana (Buch.-Ham. ex Wt.) Hook. f. in Hooker's Ic. Pl. 15: 21 t. 1426. 1883 & in Fl. Brit. Ind. 4: 19. 1883. *Cynanchum nanum* Buch.-Ham.

(ex Wall. Cat. No. 8230. 1847, *nom. nud.*) ex Wt. Contrib. 59. 1834. T: India, Assam, Kamrup, Sannyashikate, *Hamilton* 765 (K).

Dwarf herb, about 20 cm tall; stem simple or rarely branched at the base, striate, glabrous except for appressed hairy young tops. *Leaves* subsessile, linear, 5-8(-10) × 0.5-1 cm, connate at the base to form an interpetiolar ridge, cordate at base, sharply acute at apex, with an entire purple-tinged thickened margin, subcarnose, dark green above, pale beneath, glabrous, midrib depressed above, raised and prominent beneath, lateral nerves 15-16 pairs, faint, spreading. *Inflorescence* axillary and terminal, cymose umbels 1.5-2 cm across; peduncle stout, 2.5-5 mm long, glabrous or thinly appressed-hairy, bracts linear-subulate 1.5-2 mm long; pedicels slender, terete, 4-6 mm long, glabrous or sparingly hairy. *Calyx* 5-partite to the base, segments 4 × 1.5 mm, lanceolate-oblong, acute, broadly scarious-margined, ciliate with upcurved hairs, glabrous within,