

Glossopteris ashwinii, a new name for *Glossopteris schopfii* Maheshwari and Tewari 1992

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TWO entirely different *Glossopteris* leaves have been assigned a similar name—*Glossopteris schopfii*, by Pigg (1990) and by Maheshwari and Tewari (1992). Pigg (1990) reported a petrified leaf from the central Transantarctic Mountains, Antarctica while Maheshwari and Tewari described a compression from the Barakar Formation of Churulia area, Raniganj Coalfield, West Bengal, India.

Pigg (1990) gave a proper diagnosis, description, illustrations and figures (figs. 1-3; pls. I-IV) showing the essential characters of the leaf. Accordingly, *G. schopfii*, as described by Pigg (1990, pp. 107-109), is an incomplete oblanceolate leaf with an obtuse to retuse apex, a prominent midrib, arched secondary veins and narrow, elongate meshes with Y-shaped dichotomies, λ-, X-, H-, and N-shaped reticulations. The anatomical features of this species include straight walled, elongate cells which are frequently papillate with a single central papilla, undifferentiated mesophyll, composed of loosely organized parenchymatous tissue, 1-2 cells thick hypodermis composed of cuboidal cells, mesarch to marginally exarch vascular bundles, protoxylem elements with annular or helical thickenings, metaxylem tracheids with scalariform thickenings and circular bordered pits and a prominent vascular bundle sheath composed of elongate parenchyma cells and fibres.

Leaves belonging to this species are hypostomatic with elongate, slightly sunken stomata oriented parallel to long axis of leaf, irregular in distribution, with thick walled guard cells and 4-5 unspecialized subsidiary cells.

Maheshwari and Tewari (1992) described an altogether different leaf, which was linear in shape, with a narrow base, flat midrib and distinct cuticular characters. Pigg's (1990) paper got published while Maheshwari and Tewari's (1992) was still in press. According to Articles 11.1 and 38.1 of International Code of Botanical Nomenclature (Greuter *et al.*, 1994), "Each family or taxon of lower rank with a particular circumscription, position, and rank can bear only one correct

name..." and "In order to be validly published, a name of a new taxon of fossil plants of specific or lower rank published on or after 1 January 1912 must be accompanied by an illustration or figure showing the essential characters, in addition to the description or diagnosis, or by a reference to a previously and effectively published illustration or figure", respectively, *G. schopfii* as described by Pigg (1990) is effectively and validly published. Therefore, on the basis of priority of publication, *G. schopfii* Pigg (1990) is a valid species. *G. schopfii* described by Maheshwari and Tewari (1992) is being assigned a new name—*Glossopteris ashwinii*. Detailed description of this new species is provided here after Maheshwari and Tewari (1992). Morphological and cuticular dimensions are given in Fig. 1.

GENUS—GLOSSOPTERIS Brongniart 1828

G. ASHWINII nom. nov.

(=*Glossopteris schopfii* Maheshwari and Tewari 1992, Palaeobotanist 39: 362, 364; pl. 6, figs 1,4-5, 7; pl. 7, fig 9; text-fig 7C-G, non. Pigg. 1990)

Diagnosis—Leaf linear in shape, apex not known, base narrow, margins entire; midrib distinct, flat, striated lengthwise; lateral veins arise from midrib at acute angles (10°-14°), take an outward curve, dichotomise, anastomose, meet margin at an angle between 70°-75°, 11-16 per cm near midrib, 19-26 per cm near margin; meshes narrow, short, arcuate near midrib, trapezoidal elsewhere.

Upper cuticle of lamina differentiated into vein and mesh areas, cells over veins narrow, rectangular or elongate-polygonal, arranged end-to-end in longitudinal rows, cells over meshes polygonal, arranged irregularly, lateral walls of cells straight, surface walls non-papillate; stomata absent.

Lower cuticle of lamina differentiated into vein and mesh areas, cells over veins narrow, rectangular, trianguloid,

External Morphology		
Overall Size		7.0 x 1.1 cm
Width of midrib at base		2 mm
Number of veins near midrib		11(13.6)16/cm
Number of veins near margin		19(22.8)26/cm
Size of meshes in upper middle part		1.5(2.2)2.9 x 0.3(0.4)0.5 mm
Size of meshes in middle part		1.7(2.8)4.0 x 0.3(0.4)0.6 mm
Size of meshes in basal part		1.3(2.0)2.5 x 0.3(0.4)0.4 mm
Cuticular characters	Upper surface of lamina	Lower surface of lamina
Size of cells of veins	36-88 x 12-24 μ m	70-150 x 30-36 μ m
Width of cell walls of veins	2 μ m	4 μ m
Size of cells of meshes	60-114 x 44-66 μ m	50-102 x 34-68 μ m
Width of cell walls of meshes	2-4 μ m	2-6 μ m
Size of stomata		38-52 x 12-28 μ m
Width of guard cell wall		2-4 μ m
Size of stomatal pore		16-30 x 30-52 μ m
Size of subsidiary cells		28-60 x 30-52 μ m
Width of subsidiary cell wall		2-4 μ m
Stomatal index		1.85-5.66 μ m
	Cuticle of midrib	
Size of cells		60-146 x 26-38 μ m
Width of cell walls		4-10 μ m

Fig. 1—Morphological and cuticular dimensions.

squarish, arranged end-to-end in longitudinal rows, cells over meshes polygonal, arranged irregularly; lateral walls straight, surface walls non-papillate; meshes stomatiferous, stomata haplocheilic, distributed in rows, oriented at right angles or obliquely or parallel to veins, stomatal apparatus monocyclic, subsidiary cells 5-6 in number, non-papillate; guard cells normal, stomatal opening visible as biconvex slit.

Holotype—Specimen no. 36462A, Slide nos. 36462A-1, 2; Birbal Sahni Institute of Palaeobotany, Lucknow; Early Permian, Barakar Formation, Churulia area, Raniganj Coalfield, India.

Derivation of name—After Dr Ashwini Kumar Srivastava, BSIP, Lucknow, India.

Description—The specimen is incomplete, apical half and basalmost portion are not preserved. Overall shape of the leaf was probably linear with entire margins. Leaf gradually narrows down towards base. Midrib is distinct, flat and striated lengthwise. Lateral veins emerge from midrib at very acute angles (10° - 14°), take an outward curve, and after successive dichotomies and anastomoses approach the margin at an angle between 70° - 75° . The number of veins is 11 (13.6) 16 per cm near midrib and 19(22.8) 26 per cm near the margin. Vein dichotomies usually are of gamma type and the cross-connections between the veins are of zeta type. Size of the meshes varies in different parts of the leaf, while the shape of the meshes is arcuate near the midrib and mostly trapezoidal elsewhere.

Non-stomatiferous cuticle of lamina is differentiable into vein and mesh areas; the cells over the veins are narrow and rectangular or elongately polygonal, arranged end-to-end in almost longitudinal rows. Cells in the mesh areas are polygonal

in shape. Lateral walls of the cells are straight to slightly undulate. The surface walls are non-papillate.

The stomatiferous cuticle of lamina is also differentiable into vein and mesh areas. Stomata are haplocheilic, distributed in longitudinal rows along veins in the mesh areas and oriented either at right angles to the veins or placed obliquely or parallelly to them. Stomatal apparatus is monocyclic and has 5-6 subsidiary cells which are polygonal in shape like other epidermal cells of the mesh areas.

The cells over the midrib are usually rectangular, rarely triangular or irregular and arranged end-to-end in linear rows.

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