

A FOSSIL PALM WOOD FROM THE LOWER SIWALIK BEDS OF KALAGARH, UTTAR PRADESH, INDIA

The Siwalik sediments of Himachal Pradesh and Uttar Pradesh exposed along the Himalayan foot-hills are rich in angiospermous fossil woods. Recently a large number of fossil woods were collected from the Lower Siwalik beds of Kalagarh in Pauri Garhwal District, Uttar Pradesh. They have been identified with dicotyledonous woods belonging to several tropical families (Awasthi, 1982; Prakash & Prasad, 1984). In this collection, the monocotyledon is, however, represented by a single piece of silicified palm wood which is being reported here.

The wood is small in size (5×6.5 cm) having only central zone as indicated by the spacing and orientation of fibrovascular bundles. *Fibrovascular bundles* (Pl. 1, figs 1, 2) irregularly oriented, fairly distantly placed, 20-28 (average 24) bundles per cm², orbicular to ovate in shape and measuring about 630×970 to 1050-1350 μm; f/v ratio varies from 4-7/1. *Dorsal sclerenchymatous sheath* prominently developed, usually reniform to rarely cordate; median sinus concave; auricular lobes rounded; dorsal sclerenchyma surrounded by 1-3 layers of thin-walled, more or less flattened cells of tabular parenchyma (Pl. 1, figs 2, 3), radiating parenchyma absent. *Xylem* consists of 1-2 (usually 1) vessels, sometimes partly exerted. *Phloem* poorly preserved, represented by a lacuna. *Ground tissue* lacunar, made up of variously shaped cells enclosing conspicuous intercellular spaces (Pl. 1, fig. 3). *Fibrous bundles* and *Stigmata* altogether absent. *Leaf trace bundles* quite common, recognized by their tongue-like protruded vascular part, each leaf-trace bundle has many small protoxylem vessels with one to two large metaxylem vessels, most of them compressed. The metaxylem vessels have scalariform thickening while protoxylem vessels possess annular to spiral thickenings (Pl. 1, fig. 4).

A large number of *Palmoxylon* species are so far known from India and abroad. A comprehensive list of these has been given by Prakash and Boureau (1968) and Prakash (1974). In addition, few more species have also been described recently.

Because of its ground tissue being lacunar, the present fossil palm has been compared with those *Palmoxyla* having similar ground tissue. Out of them, *Palmoxylon wadii* described by Sahni (1931, 1964) from the alluvial boulder cone deposits (Upper Siwalik Conglomerate) at the foot of Tarangri on the left bank of river Tawi, Jammu is the one with which the present fossil palm shows closest resemblance. Both have lacunar ground tissue, reniform type of fibrovascular bundles of almost same size, 1-2 (usually 1) exerted vessels and same f/v ratio and the dorsal sclerenchyma is surrounded by 1-3 layers of tabular parenchyma. Therefore, the fossil wood has been assigned to *Palmoxylon wadii* Sahni.

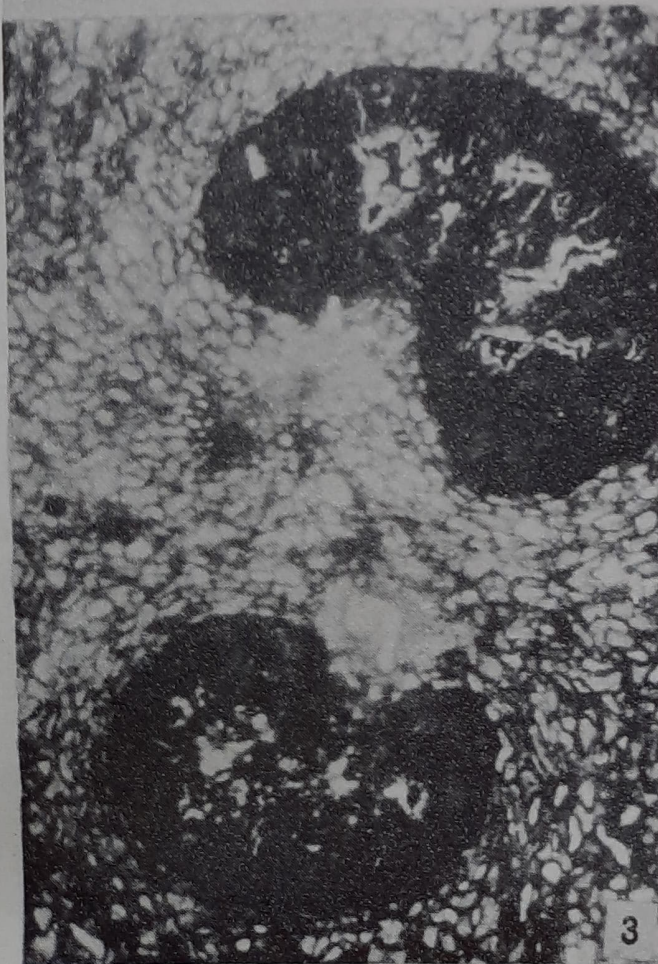
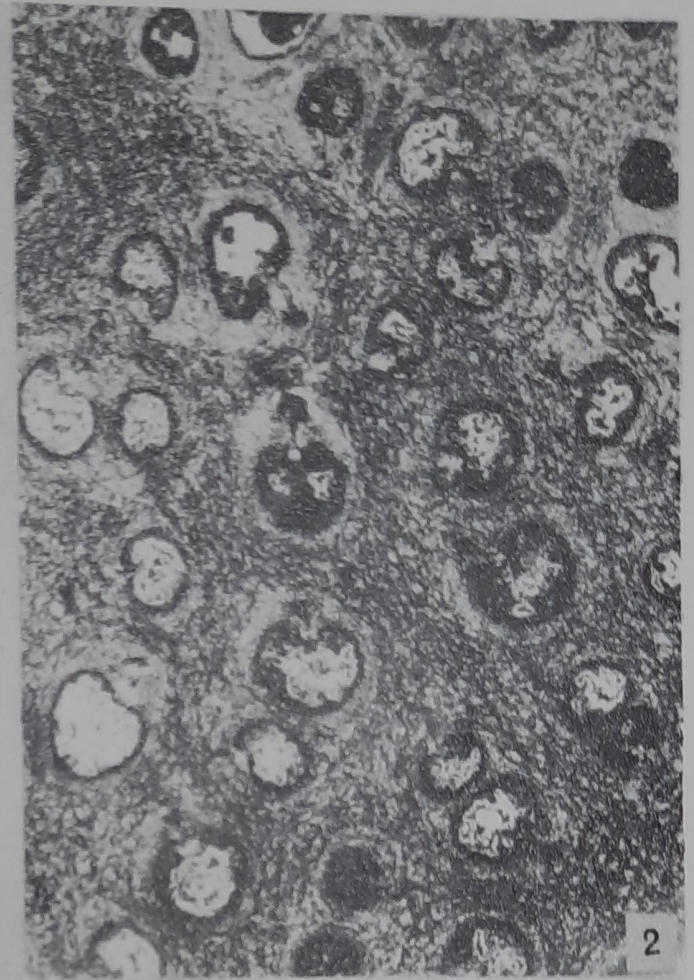
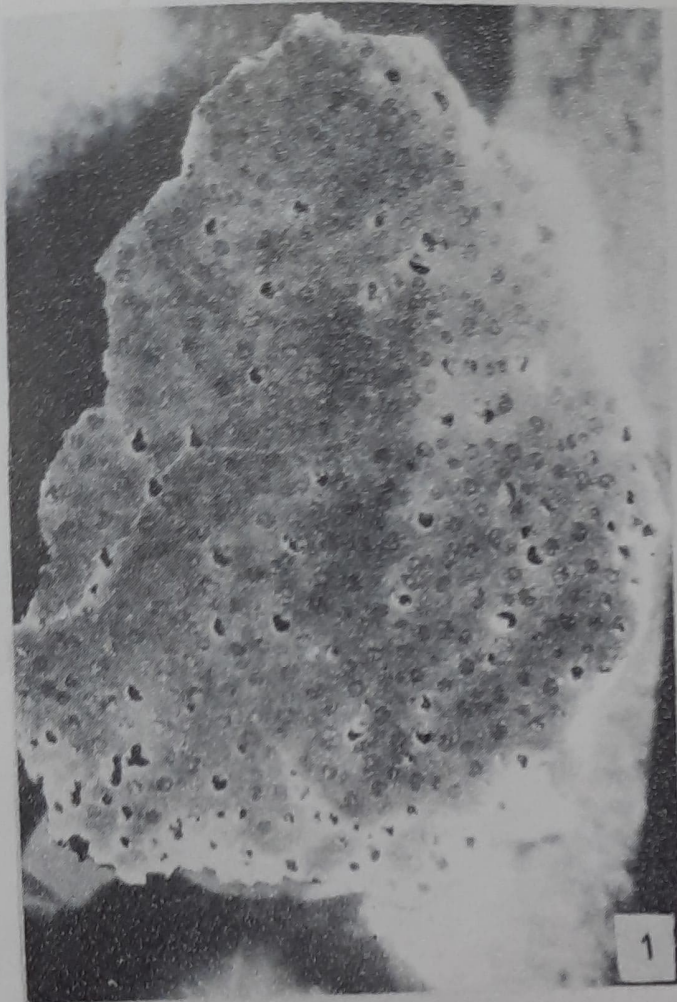
Specimen—Specimen no. B.S.I.P. 35964.

Locality—Nungarh Nala, Kalagarh, U.P.

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Explanation of Plate

PLATE 1

Palmoxylon wadiai Sahni

1. Cross section of the palm stem showing distribution of fibrovascular bundles, $\times 1$. Slide no B.S.I.P. 35964/I.
2. Magnified cross section of the palm stem showing shape, size and orientation of fibrovascular bundles $\times 7$. Slide no. B.S.I.P. 35964/I.
3. A portion of cross section magnified showing fibrovascular bundles and lacunar ground tissue $\times 35$. Slide no. B.S.I.P. 35964/I.
4. A longitudinal section of stem showing thickening in the vessel. $\times 150$. Slide no. B.S.I.P. 35964/II.

MAHESH PRASAD

*Birbal Sahni Institute of Palaeobotany,
53 University Road, Lucknow 226 007, India*