

BARAKAROXYLON MONOCANALOSUM SP. NOV. FROM JHARIA COALFIELD

SHAILA KULKARNI (Miss)

Birbal Sahni Institute of Palaeobotany, Lucknow

ABSTRACT

A new species *Barakaroxylon monocanalosum* has been described. It is characterized by the presence of one central canal in the pith as opposed to *B. jhariense* which is characterized by a central canal and a number of peripheral canals.

INTRODUCTION

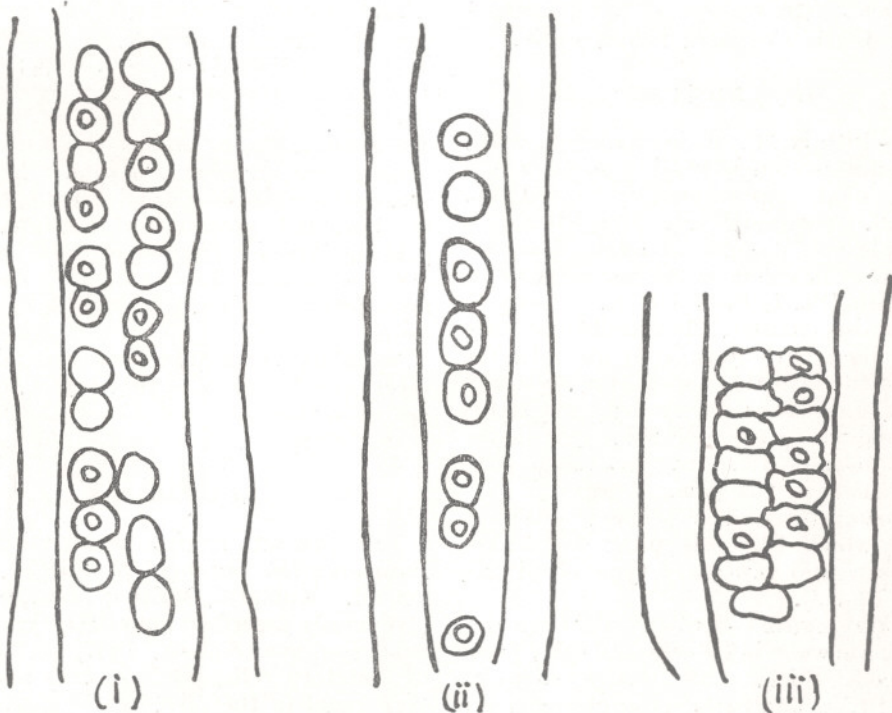
IN the fossil woods collected from the 18th Coal seam of Kharkhari colliery, Jharia coalfield, Bihar, *Barakaroxylon jhariense* was very common. However, one piece of fossil wood, measuring 5×5 cm., showed some different characters than *B. jhariense* and it is, therefore, described below, under a new specific name.

Barakaroxylon monocanalosum sp. nov.

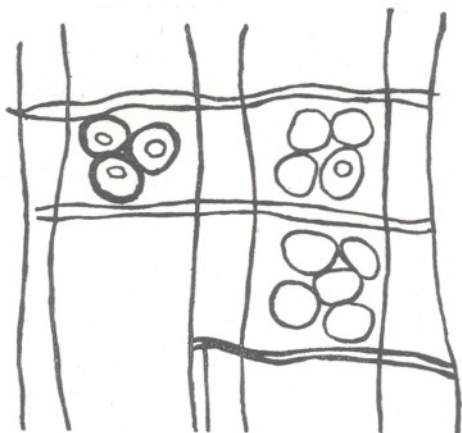
Pl. 1, Figs. 1-6

Diagnosis — Pith solid, unlobed, with sclerotic, secretory cells and a single central secretory canal; primary xylem endarch; growth rings distinct, radial pitting uniseriate, bordered, alternate, opposite, subopposite, contiguous or separate, rarely in groups of 2-3; cross field pits 3-7, bordered; pits on tangential walls frequent, bordered; medullary rays uniseriate, partially biseriate.

Holotype — 3969 Birbal Sahni Institute of Palaeobotany, Lucknow.



TEXT-FIG. 1 — Variations of the pits on the radial walls of the tracheid. × 400. (i) pits contiguous and separate in a biseriate tracheid; (ii) pits separate and contiguous in a uniseriate tracheid; (iii) pits contiguous and subopposite in a biseriate tracheid.



TEXT-FIG. 2 — Pits in the cross-field area, in groups of 3, 4 and 5 (stellate structure).

Horizon — Barakar Stage.

Age — Lower Permian.

Locality — 18th Coal seam of Kharkhari Colliery, Jharia Coalfield, Bihar, India.

DESCRIPTION

Pith — Pith is $1\frac{1}{2}$ cm. in diameter, solid, nulobed and is composed of loosely packed, circular, oval parenchymatous cells (PL. 1, FIG. 2). Some pith cells are pitted; pits are simple and circular to oval. Sclerotic cells with thickened walls are distributed in the pith (PL. 1, FIGS. 1 & 4). Secretory cells are also circular, thick walled and are usually filled with dark contents. In the centre of the pith there is one big vertically running canal which is lined by 2-3 layers of rectangular pith cells (PL. 1, FIG. 3). There is no indication of transverse or peripheral canals in the pith.

Primary xylem — The primary xylem is endarch which lines the pith; and shows scalariform and reticulate type of pitting (PL. 1, FIG. 5).

Secondary xylem — Growth rings are distinct. Late wood is 2-3 cells and early wood 45-55 cells thick. Late xylem elements are $3.5-10.5 \mu$ and early wood elements are 21.0 to 31.5μ in width.

Both tangential and radial walls of the tracheid are pitted. Radial wall pits are

uni-triseriate, when uniseriate they are contiguous or separate [TEXT-FIG. 1 (ii)], when bi- and triseriate they are alternate, sub-opposite or opposite, contiguous [TEXT-FIG. 1 (iii)] or separate [TEXT-FIG. 1 (i)] or form a stellate structure. Pits are bordered, circular to oval, hexagonal or flattened. The pores are more or less circular or transversely oval, $3.5-5.0 \mu$ across. Pitting on tangential walls is a usual feature, the pits are bordered, uniseriate or biseriate. Cross field pits are 3-7, circular or oval, bordered, $3.5-7 \mu$ across (TEXT-FIG. 2). The cross field pits are usually arranged in stellate form.

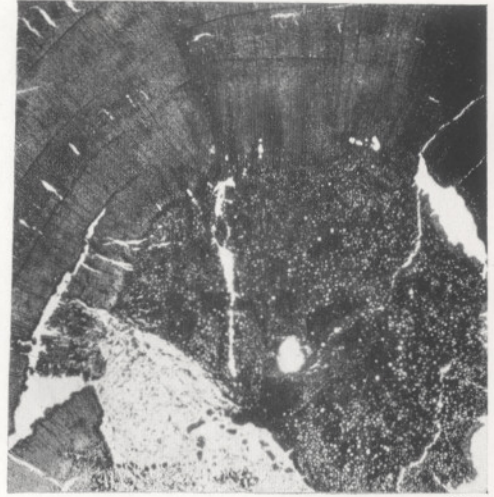
Medullary rays are usually uniseriate, rarely partly biseriate (PL. 1, FIG. 6). The height of the rays vary from 1-12 cells (commonly 1-5).

COMPARISON

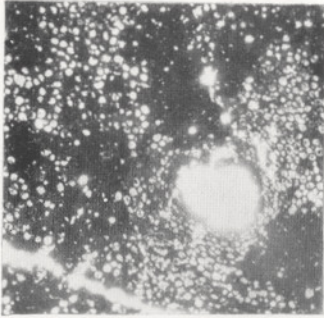
The present species is included under *Barakaroxylon* Surange & Maithy, (1962) emend. Kulkarni, Maithy, Surange, (1970) (previously described under *Dadoxylon jhariense* SURANGE & SAH, 1957) on the basis of secretory cells, sclerotic cells and secretory canal in the pith. It is distinguished from the single species of the genus *B. jhariense* on the presence of unlobed pith and only one central secretory canal.



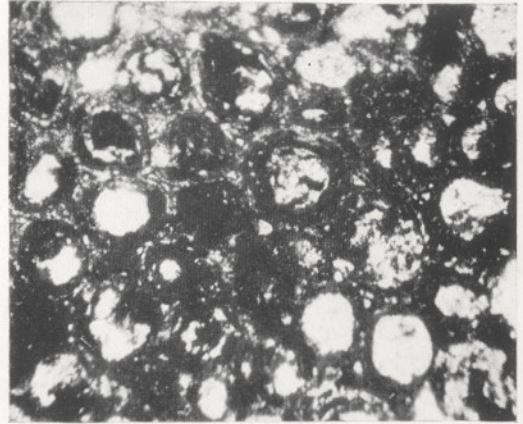
1



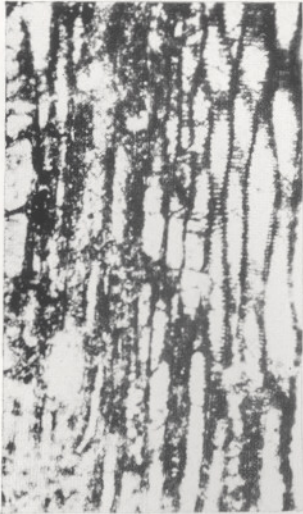
2



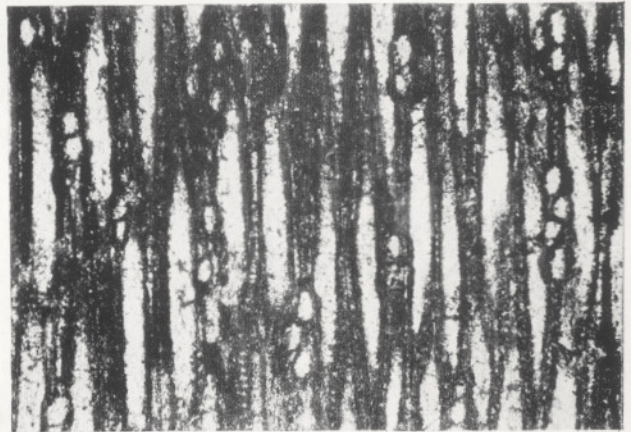
3



4



5



6

REFERENCES

- KULKARNI, S., MAITHY, P. K. & SURANGE, K. R. (1970). On *Barakaroxylon jhariense*. *Palaeobotanist*. **18**(3):
- SURANGE, K. R. & SAH, S. C. D. (1957). Studies on the Glossopteris flora of India-7. *Dadoxylon jhariense* sp. nov. from the Jharia Coalfield, Bihar. *Ibid.* **5**(2): 100-103. 1956.
- SURANGE, K. R. & MAITHY, P. K. (1962). Studies in the Glossopteris flora of India-13. *Barakaroxylon*, a new genus of petrified wood from the Lower Gondwanas of India. *Ibid.* **10** (1 & 2): 108-113. 1961.

EXPLANATION OF PLATE I

Fig. 1 — Longitudinal section of the pith to show several layered thick sclerotic cells. $\times 100$.

Fig. 2 — Transverse section of the pith to show a single secretory canal in the centre and distinct growth rings. $\times 5$.

Fig. 3 — Transverse section of the pith to show the central secretory canal lined by two to three

layers of pith cells. $\times 10$.

Fig. 4 — Transverse section of the pith to show a sclerotic nest. $\times 100$.

Fig. 5 — Longitudinal section of the primary xylem to show scalariform element. $\times 100$.

Fig. 6 — Tangential longitudinal section of the medullary rays. $\times 100$.