A NEW SPECIES OF *MESEMBRIOXYLON*, *M. RAJMAHALENSE*, FROM THE RAJMAHAL HILLS, BIHAR, INDIA

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ABSTRACT

The present paper describes *Mesembrioxylon rajmahalense* sp. nov. from the Rajmahal Hills, Bihar. The species is characterized by its large, 1-2 pinoid, simple " Eiporen " type of cross-field pits, circular opposite radial pits and the absence of resin canal or duct.

INTRODUCTION

A PERUSAL of the vast palaeobotanical literature published on the fossil plants from the Rajmahal Hills, Bihar, reveals that the podocarpaceous remains in the area are quite abundant but their fossil wood records are still very meagre, except for the species, *Mesembrioxylon indicum* Bhardwaj (1953) and *Circoporoxylon amarjolense* Kräusel & Jain (1964).

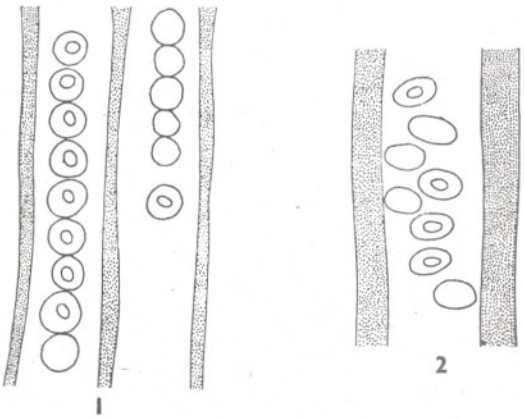
The present material was collected by Late Prof. B. Sahni and party in 1949 from Amarjola about one mile N.E. of the village Amrapara in the Rajmahal Hills, Bihar.

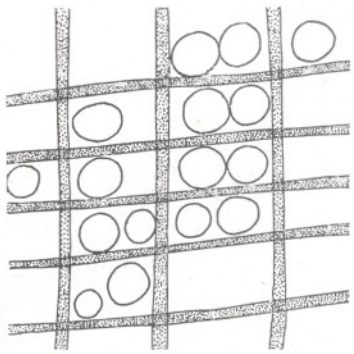
Genus *Mesembrioxylon* Seward

Mesembrioxylon rajmahalense sp. nov.

Pl. 1, Figs. 1-6; Text-figs. 1-3

Diagnosis — Decorticated secondary wood measuring 3 cm. in length and 2 cm. in width. Growth rings distinct, variable in size, 10-40 tracheids wide, transition from early to late wood gradual (Pl. 1, Fig. 1); late wood very narrow, only 2-3 tracheids wide; xylem parenchyma or resin canals absent; resin tracheids sporadic. Tracheids broad, 12μ-20 μ in diameter, thick walled, angular with almost rounded to oval lumen; only radial walls pitted, pits bordered, mostly uniseriate, some times biseriate; uniseriate pits circular or oval, 12 μ in diameter or 10 $\mu \times 16$ μ in size, mostly separate or sometimes forming a line of contact (Pl. 1, Figs. 2-3; Text-fig. 1); pits when biseriate, separate, opposite, subopposite or very rarely showing a tendency towards alternation (Pl. 1, Figs. 2-3; Text-fig. 2); pit pores rounded or oval, 4 $\mu \times 6$ μ in size. Cross-field pits large, 1-2, pinoid type (after Phillips, 1941, p. 268), oval to oblong or rounded, simple "Eiporen" (Pl. 1, Figs. 4-5), 12-14 μ in diameter, sometimes horizontally broad, 10 $\mu \times 20$ μ in size (Pl. 1, Figs. 4-5; Text-fig. 3). Medullary rays simple, uniseriate, 1-10 cells high (average 4 cells in 32 counts), distantly





Text-figs. 1-2 — A few tracheids in radial plane showing uni- to biseriate, circular, separate bordered pits. No. 17272-2. × 350.

Text-fig. 3 — Medullary rays in radial view showing 1-2, oval to circular, simple cross-field pits "Eiporen". No. 17272-2. × 350.

placed, resin plugs (r.p.) seen near the rays (PL. 1, FIG. 6).

Locality — Amarjola, Amrapara, Rajmahal Hills, Bihar.

Age and Horizon — Jurassic (Rajmahal Series).

Holotype — No. 17272 of B.S.I.P. Museum, Lucknow.

Comparison with Fossil Forms — Of the so far known species of *Mesembrioxylon* (= *Phyllocladoxylon*) the only comparable ones are, *M. tiruvakkaraianum* Ramanujam (1953), *M. woburnense* (Stopes) Seward (1919), *M. fluviale* Sahni (1920), *M. fusiforme* Sahni (1920) and *Phyllocladoxylon heizyoense* Shimakura (1936). *M. tiruvakkaraianum* described from the vicinity of Pondicherry, South India, differs in having always opposite radial pits, high medullary rays and tangential bordered pits. Stopes's species differs in having abundant xylem parenchyma. *M. fluviale* reported from the Tertiary beds of Queensland can be distinguished in having oblique, small field pits and xylem parenchyma. While *M. fusiforme* from the same locality differs in having fusiform cross-field pits and rims of Sanio. Shimakura's *Phyllocladoxylon heizyoense* may also be separated from the present Rajmahal wood mainly in having distinct zones of early and late wood, rims of Sanio, pits on the tangential walls of the tracheids and small, oblique, simple cross-field pits in the late wood zone.

Comparison with Living Forms — In having circular, separate radial pits and 1-2 large, simple "Eiporen" cross-field pits, the present species may be compared with some of the modern species of Podocarpaceae and Pinaceae as described by Greguss (1955), viz., *Dacrydium colensoi* Hook. (PL. 34, FIG. 3), *D. franklinii* Hook. f. (PL. 37, FIG. 3), *Microcachrys tetragona* Hook. f. (PL. 39, FIG. 3), *Phyllocladus alpinus* Hook. f. (PL. 40, FIG. 3), *P. glaucus* Carr. (PL. 41, FIG. 3), *Pinus albicaulis* Engelmann (PL. 270, FIG. 3), and *P. khasya* Royle (PL. 294, FIG. 3). Brown *et al.* (1947, pp. 401 & 405; PL. 17, FIG. 100; PL. 18, FIG. 101) have also shown such type of cross-field pits in *Pinus lobatus* L. and *P. lambertiana* Dougl. The Rajmahal wood does not show any other feature of the family Pinaceae and, therefore, needs no comparison with the members of the family.

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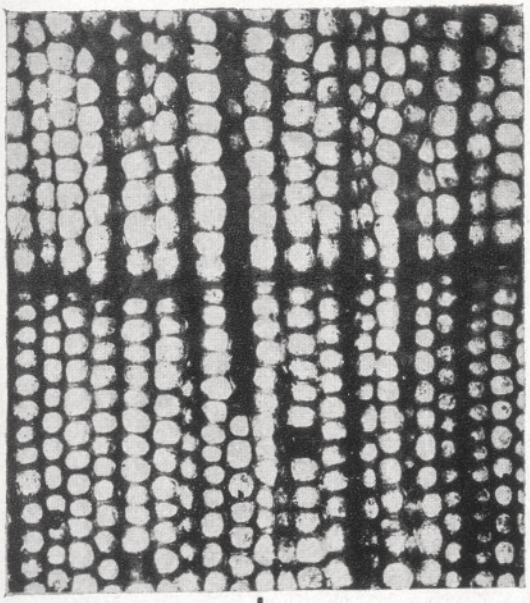
EXPLANATION OF PLATE 1

1. A part of cross-section. No. 17272-1. × 110.
2. A part of radial section showing the uni- and biseriate bordered pits. No. 17272-2 . × 170.
3. Same, a portion of two tracheids magnified. × 500.
4, 5. Parts of radial section through medullary rays showing cross-field pits. No. 17272-2. × 500.
6. A part of tangential section (r.p.— resin plug). No. 17272-4. × 130.



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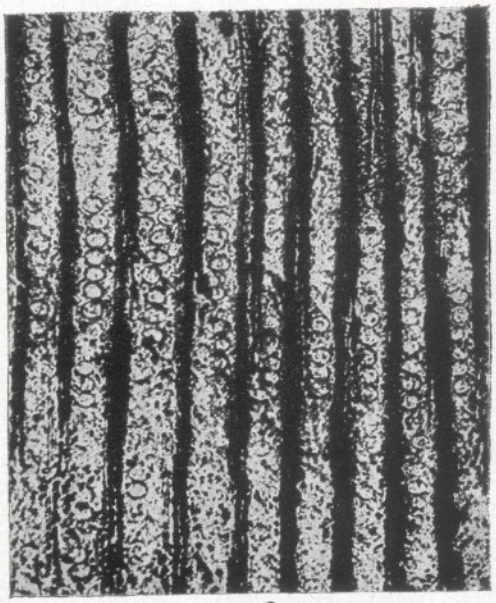

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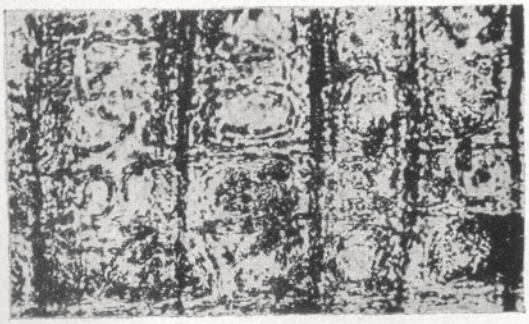

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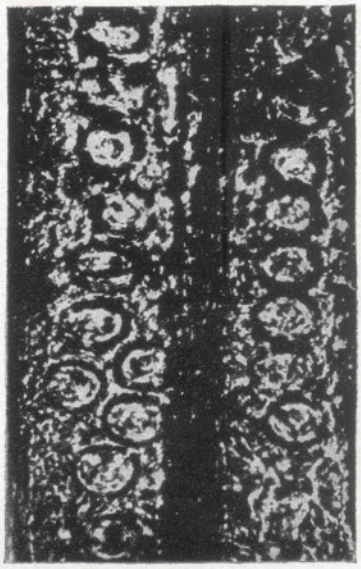

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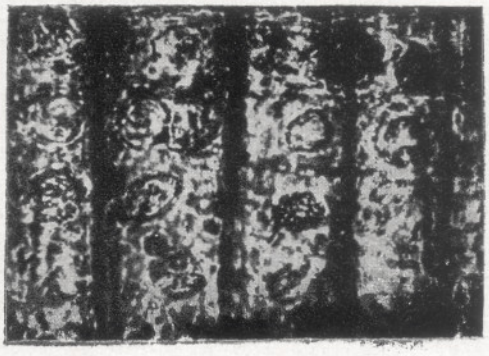

r.p.