

PANGIOXYLON MOHGAOENSE GEN. ET SP. NOV. FROM THE DECCAN INTERTRAPPEAN BEDS OF MOHGAON KALAN, CHHINDWARA DISTT., M.P., INDIA

B. S. TRIVEDI AND KIRAN SRIVASTAVA

Botany Department, Lucknow University, Lucknow-226 007

ABSTRACT

A new fossil wood resembling the modern taxon *Pangium edule* Reinw. of the family Flacourtiaceae is described here from the Deccan Intertrappean beds of the Mohgaon Kalan, District Chhindwara, M. P.

INTRODUCTION

In the Indian Tertiary rocks, the family Flacourtiaceae is represented by two fossil woods and one leaf impression, i.e. *Homalioxylon assamicum* (PRAKASH & TRIPATHI, 1974) reported from the Tertiary of Assam, *H. mandlaense* (BANDE, 1974) from the Deccan Intertrappean beds of Mandla distt., and a leaf impression, *Flacourtiites intertrappeum* (NAMBU DIRI, 1966) from Mohgaon Kalan, Madhya Pradesh. The specimen described here was also collected from the Deccan Intertrappean beds of Mohgaon Kalan, 22°N, 79°E, located in Chhindwara distt. It is 10 cm in length and 6 cm in diam. with fairly good preservation, and resembles that of *Pangium edule* (Flacourtiaceae) which is found in Malaysia, Bismark, Archip, Palau Is. (WILLIS, 1973).

DESCRIPTION

Family—FLACOURTIACEAE

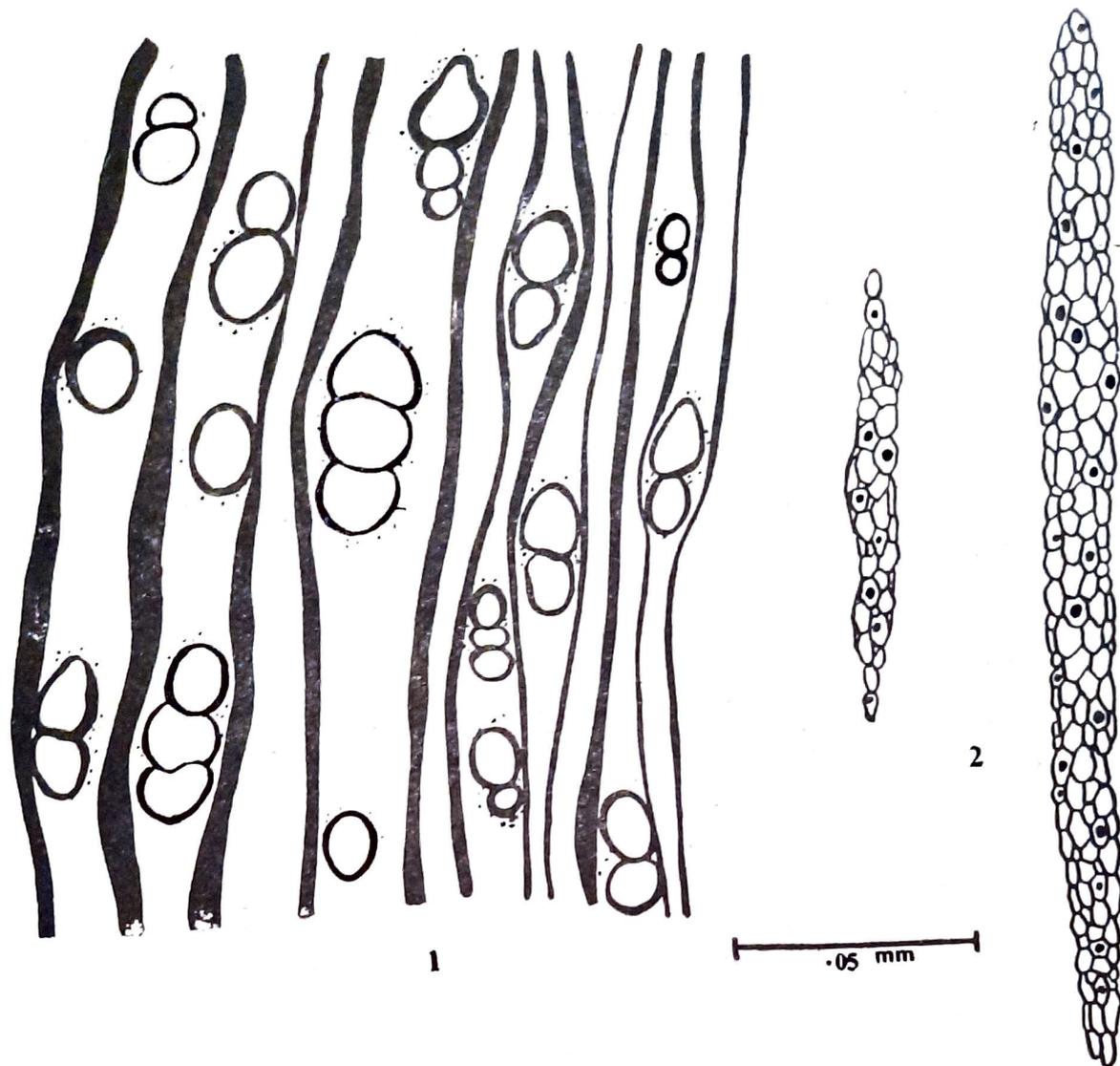
Genus—**Pangioxylon** gen. nov.

Pangioxylon mohgaoense sp. nov.

Pl. 1, Figs. 1-6 ; Text-figs. 1-2

Topography :

Wood diffuse porous. *Growth rings* not seen. *Vessels* visible to the naked eye, small to medium, oval to elliptical, mostly solitary, sometimes in radial groups of 2-4 (mostly 2-3); frequency 11-20/mm². *Parenchyma* paratracheal, vasicentric, forming 2-3 cells wide sheath around vessels; apotracheal parenchyma represented by a few diffused cell amongst the fibres. *Rays* multiseriate, 3-6 cells (mostly 3-4 cells) wide with a few uniseriate, 5-7 per mm, 18-50 cells (300-1050 μm) in height, heterocellular, composed of procumbent cells and uniseriate extensions of 2-6 upright cells at the ends : dark coloured square or rectangular chemical inclusions in the form of crystals frequently occur in ray cells. *Fibres* aligned in radial rows, 2-8 rows between two consecutive rays, hexagonal, semilibriform, septate. *Primary wood* also preserved with parenchymatous cells in the centre having similar chemical inclusions as in ray cells. Few secretory canals may be seen in the periphery of pith.



Text-figs. 1-2. *Pangioxylon mohgaense* gen. et sp. nov.—1. Cross section of fossil wood showing distribution of vessels and parenchyma. 2. Xylem rays as seen in T. L. S. of fossil wood.

Elements :

Vessels t.d. 60-175 μm , r.d. 45-195 μm ; Vessel members 300-10,00 μm in maximum length with tapered ends; inter-vascular pitting alternate, orbicular, 2-4 μm in diameter. *Rays* upright cells 70-90 μm in vertical height, 45-60 μm in radial length, procumbent cells 30-40 μm in vertical height and 60-65 μm in radial length. *Fibres* hexagonal in cross section, thick-walled, 20-25 μm in diameter, septate.

DISCUSSION AND AFFINITIES

A combination of the above mentioned anatomical features of the fossil wood indicates its affinities with the members of the family Bixaceae and Flacourtiaceae.

Due to the presence of solitary and radial multiples of small to medium-sized vessels, rays up to 3 or 6 cells wide, heterocellular, the fossil wood shows gross resemblance with the members of Bixaceae. However, it can easily be distinguished from them in having septate fibres, vasicentric paratracheal and diffused apotracheal parenchyma (METCALFE AND CHALK, 1950). In the family Flacourtiaceae there are a number of genera, viz., *Gynocardia*, *Hydnocarpus*, *Flacourtia*, *Homalium* and *Pangium*. with which our fossil shows gross resemblance. However, all these genera, leaving *Pangium*, can be distinguished from the present fossil wood in the total absence of

parenchyma and in having 1-2 seriate xylem rays. The most important anatomical features which suggest the affinity of the present fossil wood with *Pangium edule*, are presence of paratracheal vasicentric parenchyma and diffused cells of apotracheal parenchyma; heterocellular and uni- to multiseriate rays having chemical inclusion in ray cells, and septate fibres. A detailed comparison of fossil wood with extant taxon *Pangium edule* shown in table 1 clearly indicates the affinities of fossil wood with *Pangium edule*. There are a few minor differences between the two. In the present fossil the vessels are relatively smaller in size and rays are 3-6, mostly 3-4 seriate as against 2-4 seriate in *Pangium edule*.

Table 1—Detailed anatomical comparison of fossil wood with that of extant *Pangium edule*

Wood	Vessels	Parenchyma	Rays	Fibres	Vessel elements, perforations & pitting
<i>Pangium edule</i>	Diffuse, porous Size— t.d. 60-195 μm , r.d. 105-225 μm , Freq. 7-15/mm ²	Paratracheal, vasicentric, 2-3 cells thick layer around the vessels, some diffused apotracheal parenchyma in ground tissue.	Uni- to multi-seriate, mostly 2-4 seriate, heterogeneous, heterocellular, uniseriate extensions of 2-8 upright cells present on the endings of multi-seriate rays, transparent, quadrangular, chemical inclusions present in procumbent cells, height 8-50 cells, freq. 4-9 rays/mm,	Semilibriform, hexagonal in cross section, septate.	Perforations simple, plate obliquely placed, maximum length of vessel members 150-1500 μm , Int. vas. pits, alternate and orbicular medium sized.
Fossil wood	Diffuse, porous Size t.d. 60-175 μm , r.d. 45-195 μm , freq. 11-20/mm ²	Paratracheal, vasicentric and few scattered cells of apotracheal parenchyma amongst the fibres.	Uni- to multi-seriate mostly 3-6 cells wide, heterogeneous, heterocellular, uniseriate extension of 2-4 upright cells present on the ending of multiseriate rays, some chemical inclusions present in proc. cells, height 18-50 cells or 300—1050 μm , freq. 5-7 rays/mm.	Semibriform, hexagonal in cross section, septate.	Perforations simple, plate obliquely placed, maximum length of vessel members 300—1,000 μm , Int. vas. pits alternate.

As the present fossil shows close resemblance with that of *Pangium edule*, it is assigned to a new genus *Pangioxylon* and named *P. mohgaoense* sp. nov.

GENERIC DIAGNOSIS

Pangioxylon gen. nov.

Wood diffuse-porous. *Growth rings* not seen. *Vessels* small to medium, oval to elliptical, mostly solitary, sometimes in radial groups of 2-4. *Parenchyma* paratracheal and

apotracheal. *Rays* uni- to multiseriate (mostly 3-4 cells wide), heterocellular, composed of procumbent as well as upright cells. *Fibres*—Semilibriform, hexagonal, septate.

Genotype—*Pangioxylon mohgaoense* sp. nov.

SPECIFIC DIAGNOSIS

***Pangioxylon mohgaoense* sp. nov.**

Vessels t.d. 60-175 μm , r.d. 45-195 μm ., vessel members 300-1,000 μm in maximum length with tapered ends; intervascular pitting alternate with orbicular apertures. *Parenchyma* paratracheal, vasicentric, 2-3 cell thick layer around the vessels and a few diffused cells of apotracheal parenchyma. *Rays* heterocellular, uni- to multiseriate, mostly 3-6 cells wide, 5-7 per mm, dark coloured chemical inclusion in the form of crystals frequently occur in procumbent cells and in parenchyma of pith region; uniseriate extensions of upright cells at the ends of multiseriate rays. *Fibres* septate, semilibriform, hexagonal.

Holotype : B. S. Trivedi's collection No. M. 54, Botany Department, Lucknow University, Lucknow.

Locality : Mohgaonkalan in Chhindwara District, M. P. (India).

Horizon : Deccan Intertrappean beds.

Age : Tertiary (Early Eocene).

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EXPLANATION OF PLATE-1

Pangioxylon mohgaoense gen. et sp. nov.

1. T.S. of fossil wood, $\times 36$.
2. T.L.S. of fossil wood, $\times 100$.
3. R.L.S. of fossil wood, $\times 40$.
4. T.S. of living wood of *Pangium edule*, $\times 36$.
5. T.L.S. of living wood of *Pangium edule*, $\times 100$.
6. R.L.S. of living wood of *Pangium edule*, $\times 40$.

