



INVESTIGATION OF A DICOT WOOD FROM THE DECCAN INTERTRAPPEAN BEDS OF NAGPUR DIST., MAHARASHTRA.

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ABSTRACT:

A petrified wood is described in this paper. The specimen was collected from Mhurzari, Nagpur Dist. Which is about 20 kms. from Nagpur, which is of uppermost Cretaceous to lower Eocene age. The wood is decorticated, diffused porous and without growth rings. Vessel solitary with radial multiples of 2-3, medium sized. Pearforation simple; intervacular pits alternate, bordered; parenchyma paratracheal vasicentric. Rays mostly multiseriate with few uniseriate, homogeneous, procumbent, fibers long, non-septate, moderately thick with intercellular spaces, named as *Leucaenoxylon mahurzarii sp. nov.*

Key Words:- Fossil, petrified, dicot, wood, Deccan, Intetrappean.

INTRODUCTION:

A petrified wood is described in this paper. The specimen was collected from Mhurzari, Nagpur Dist. Which is about 20 kms. from Nagpur, which is of uppermost Cretaceous to lower Eocene age (Plate Fig.1). So far there are some records of dicot woods from this locality.

MATERIAL & METHOD:

A wood is found embedded in chert, it is petrified and well preserved. A piece if chert was collected which is in the transverse and longitudinal section. The preservation is being good. Cellulose acetate peel sections after etching with Hydroflouric Acid were prepared along transverse, transverse longitudinal and radial longitudinal plane (Darrah, 1936). The peels were mounted in DPX mountant and photographed for detail study.

DESCRIPTION:

The specimen described here measures about 5 inches in diameter and 18 inches in length. The primary tissue is absent. The secondary wood is decorticated, diffused porous and without growth rings. It consist of vessels, wood parenchyma, wood rays and wood fibers.

Vessels are medium sized and can be seen with naked eyes. They mostly solitary as well as radial in multiples of 2-3 and some seen obliquely placed. Each vessel measures 118 to 150 um in diameter. Their walls are moderate thick. The solitary vessels are circular to sub-circular in transverse plane. The vessel frequency 12 to 14 per sq. mm. Rays are seen contiguous with vessels at places. Vessel members are long and measures 2.1 to 2.5 mm. Perforation plates are simple and oblique. The intervacular pits are simple, alternate, bordered

and hexagonal and measures 5 to 6 μm in diameter. Pit pores are oval in shape. Tyloses are absent.

Xylem parenchyma cells are thin walled with transverse diameter 21 μm and height 56 μm . Paratracheal, vasicentric and in single tyre around the vessel.

Medullary rays are not seen with naked eyes. They are larger and 20 to 25 cells in height, 120 μm broad and 14 to 17 per sq. mm. The rays are uni to multiseriate. They are long, broad and homogeneous made up of procumbent cells. The multiseriate rays are 1 to 1.5 mm in height and 60 to 90 μm in width. The uniseriate ones are 80 to 120 μm high and 20 μm wide. Pits to ray cells are very clear and are seen to be bordered and fine.

The fibers are short, broad, thin walled to moderately thick walled. In transverse section they are completely arranged in regular beds of 2 to 6 in between xylem rays. The accepted, non-storied nature of these fibers are very well seen in RLS of the specimen. They are 0.3 to 0.4 mm long and varied from 36 to 70 μm in radial diameter and 40 to 80 μm in tangential diameter. The inter fiber pits seems to be in spiral arrangement. Inter cellular spaces are visible in transverse section.

DISCUSSION:

The present fossil wood shows following characters like-

- Wood diffuse porous.
- Vessels solitary as well as in radial and tangential multiples of 2 to 3.
- Parenchyma paratracheal, vasicentric and in single tyre around vessel.
- Wood rays uni to multiseriate and homogenous.
- Inter vascular pit pairs are alternate, bordered and hexagonal.
- Fibers aseptate and non-storied.

Taking into consideration of above characters following modern families are comparable- Celastraceae, Hippocrataceae and Caesalpinaceae & Mimosaceae of Leguminosae (Metcalf & Chalk, 1950).

It is comparable with Celastraceae in paratracheal parenchyma, simple perforation plates, bordered & alternate pits and multiseriate, homogeneous and aseptate fibers but differs in having typically small vessels.

With Hippocrataceae it is comparable in medium sized vessels, paratracheal, simple perforation plates and homogeneous aseptate fibers but differs in exclusively uniseriate rays.

In Caesalpinaceae the living wood of *Cercidium* and *Zuccanginia* differ from the fossil wood in medullary rays which are 4 to 7 cells wide in *Cercidium* and numerous uniseriate in *Zuccanginia* (Metcalf & Chalk, 1950). The typical characters of fossil wood is the presence of intercellular spaces in the fibers which character is absent in modern woods of Caesalpinaceae but is present in Mimosaceous woods. Hence the present specimen is come closer to the family Mimosaceae. Further the comparison are made with Mimosaceous woods. *Pithocelebium dulce* differs from the fossil specimen in nature of vessels and in nature of medullary rays. In *Pithocelebium dulce* uniseriate medullary rays are predominant which character is absent in present specimen. *Albizzia labbeck* differs in vessels diameter, vessels frequency (5 to 75 per sq. mm) and typically uniseriate rays. The present specimen resembles more with *Leucaena*

leucaephela in having medium sized vessel diameter (125 to 160 um), vessel frequency 11 to 14 per sq. mm, uni to multiseriate rays, homogeneous, 18 to 23 cell high, paratracheal, vasicentric parenchyma, pit pairs alternate, bordered and hexagonal, aseptate and non-storied which characters are matched with present specimen in great extent than the characters of other members.

Following fossil woods of Leguminosae have been described from the different beds of India and abroad. The following comparison is made with them-

Leguminoxylon acaciae (Krausel, 1939), described from the Tertiary beds of Egypt, differs from the present wood in the possession of metatracheal bands of parenchyma. *Acacioxylon indicum* (Ramanujam, 1954), from the Tertiary of Madras state, differs from the present fossil in having both paratracheal and metatracheal parenchyma, paratracheal being aliform to confluent. Rays 3-5 seriate, 6 to 9 per sq. mm. Vessels quite larger 220 to 250 um in t.d. Fibres septate and growth rings present. Another wood from Tertiary of Madras *Ceasapinoxylon sitholeyi* (Ramanujam, 1954), differs from the fossil specimen in having aliform to confluent parenchyma. Rays 1-3 seriate, and fibers too long 1200 to 1450 um each. A Tertiary wood from Assam *Cassioxylon boroahii* (Prakash, 1966), does not resemble the present wood in having tyloses, aliform to confluent nature of parenchyma. *Acacioxylon mohgaonense* (Shallom, 1963), from the Deccan Intertrappean beds of Mohgaonkalan, differs from the present fossil wood in having larger vessel diameter 250 to 300 um, presence of tyloses, aliform to confluent parenchyma and 1-4 seriate medullary rays.

From the above comparison it is clear that the fossil wood under consideration does not shows any resemblance with any of the reported fossil woods but shows much resemblance with genus *Leucaena leucaephela* of modern family Mimosaceae. Thus it is included under family Mimosaceae under a genus *Leucaena* and named as *Leucaenoxylon mahurzarii* sp. nov. The generic name after the genus *Leucaena* of modern family Mimosaceae and specific name after the locality from where it is collected.

DIAGNOSIS:

Leucaenoxylon gen. nov.

Vessel solitary with radial multiples of 2-3, medium sized. Pearforation simple; intervascular pits alternate, bordered; parenchyma paratracheal vasicentric. Rays mostly multiseriate with few uniseriate, homogeneous, procumbent, fibers long, non-septate, moderately thick with intercellular spaces.

Leucaenoxylon mahurzarii sp. nov.

Wood dicotyledonous, diffuse porous. Vessel 118 to 150 um in diameter. 12 to 14 per sq. mm. solitary to radial multiples of 2-3. Perforation simple, transverse and oblique. Intervascular pit pairs alternate, bordered. Parenchyma paratracheal vasicentric. Medullary rays mostly homogeneous multiseriate, composed of procumbent cells, few uniseriate, 20 to 25 cells in height, 120 um wide, 14 to 17 per sq. mm. Fibers long moderately thick walled, aseptated with intercellular spaces 40 to 80 in t.d. and 0.3 –0.4 mm in length.



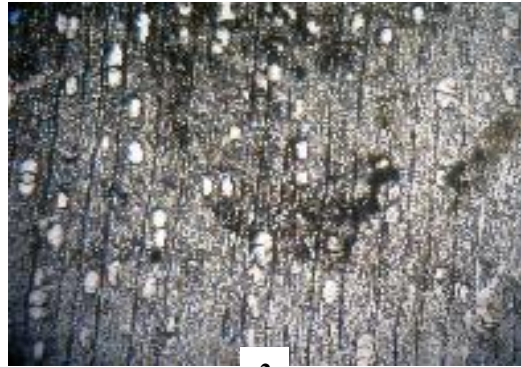
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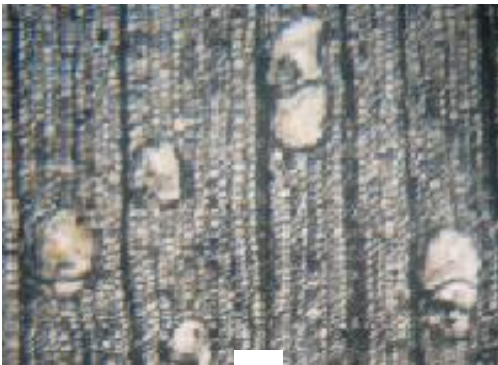
PLATE FIGURES



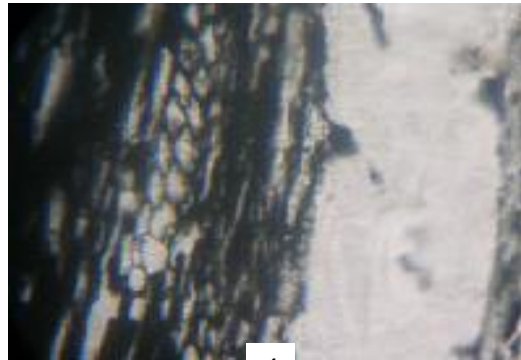
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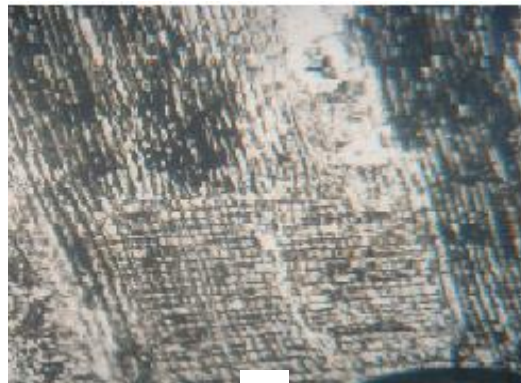
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Explanation of Plate Figures:-

1. A chert showing embedded wood.
3. T. S. Magnified
5. T.L.S. showing rays and fibers .
7. R.L.S. Magnified view.

2. T.S. of Wood showing Vessels.
4. T.L.S. showing Paranchyma .
6. R.L.S. view of wood.
8. Intervascular pit pairs .