

# *Palmoxylon kamalam* Rode from Wardha District, Maharashtra

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## INTRODUCTION

**D**ECCAN Intertrappean beds of Wardha District, Maharashtra are well known. Nawargaon-Maragsur localities (21°1' N : 78°35' E) are rich in microfossils and megafossils, however angiospermic fossils are predominating. A small hillock present in Maragsur is rich in palm stumps.

Recently, authors have collected plant fossils from this area, one of the specimens showing interesting features is described below.

## SYSTEMATICS

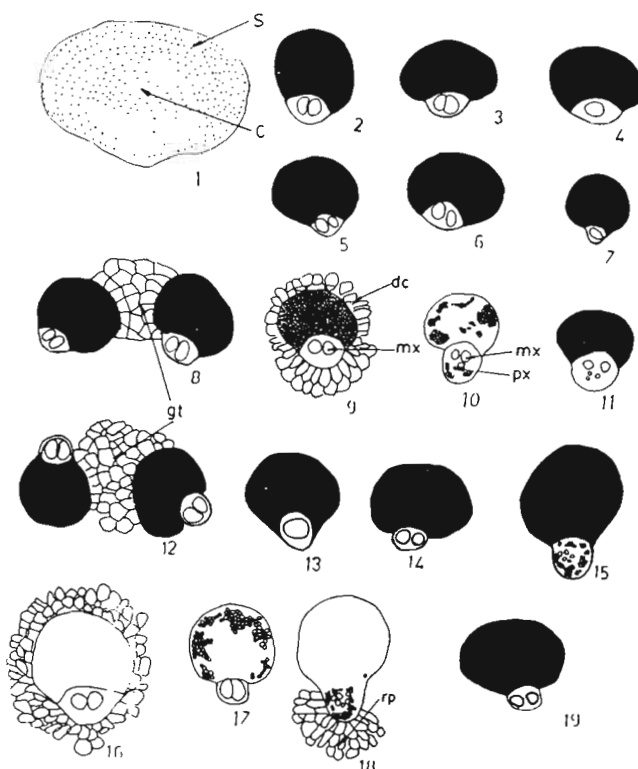
### Genus—PALMOXYLON

## PALMOXYLON KAMALAM Rode, 1933

(Fig. 1-19, Pl. 1-1-12)

The fossil specimen is a piece of a palm stem measuring 11 cm in radial extent and 15 cm in length. It is reddish brown externally as well as internally. Its external surface is eroded and it has no periderm, cortex or leaf scars. The present description is based on account of subdermal and central zone of the specimen. A number of transverse and longitudinal sections passing through the stem were prepared in order to study the internal structure.

Fig. 1—*Palmoxylon kamalam* Rode (1-19). 1. T.S. of stem showing subdermal and central zone. x 7.5. 8. T.S. of subdermal zone showing two slightly irregularly oriented fibrovascular bundles and ground tissue – gt. x 25. 12. T.S. of central zone showing two irregularly oriented fibrovascular bundles. Note the complanate dorsal cap. x 25. 4, 7. A typical fibrovascular bundle from the subdermal zone with complanate dorsal cap and vascular part extruded with single metaxylem element. x 25. 2, 3, 5, 6. Fibrovascular bundles from the subdermal zone with two metaxylem elements. x 25. 9. A typical fibrovascular bundle from subdermal zone with complanate dorsal cap – dc and vascular part extruded with two metaxylem elements – mx. Note the petaloid arrangement of intercellular spaces around the fibrovascular bundle. x 25. 10, 11. A leaf trace bundle from the subdermal zone with complanate dorsal cap and vascular part extruded with two metaxylem elements – mx and 2-3 protoxylem elements – px. x 25. 13. Fibrovascular bundle in the central zone with one metaxylem element. x 25. 14, 16, 17, 19. Fibrovascular bundles in the central zone with complanate dorsal cap and two metaxylem elements. x 25. 15. A leaf trace bundle from the central zone. x 25. 18. A leaf trace bundle from the central zone. Note the radiating parenchyma – rp around the vascular part. x 25.



The important diagnostic features exhibited by the present fossil are :

- 1) The fibrovascular bundle with complanate dorsal cap (Fig. 1·2-7; Pl. 1·3, 4, 8), two metaxylem elements without ventral cap and protoxylem elements, distribution 39-42 sq cm in subdermal zone (Fig. 1·8; Pl. 1·1) and 19-24 sq cm in central zone (Fig. 1·12; Pl. 1·7).
- 2) Leaf trace bundles are present in subdermal and central vascular zone, those of subdermal zone (Fig. 1·10; Pl. 1·5, 6) are smaller in size than the normal bundles but more common than the central zone, those of central zone are larger than normal vascular bundles but lesser in number than those of subdermal zone. (Fig. 1·15, 18; Pl. 1·9).
- 3) Ground parenchyma highly lacunar loose and mesh like (Pl. 1·12).
- 4) The trabaculae in between the intercellular spaces are 1-2 cells thick (Pl. 1·12).
- 5) The intercellular spaces around the fibro vascular bundle are so arranged that they make the appearance of petaloid arrangement of lotus flower (Fig. 1·9, 18; Pl. 1·6, 10, 11).
- 6) Fibre bundles are absent.

## COMPARISON

The diagnostic features enumerated above closely agree with *Palmoxylon kamalam* Rode. Rode (1933) described *P. kamalam* from Deccan Intertrappean beds of Mohgaonkalan. The account was based on peripheral region. Shukla (1939) described a piece of central region from the same locality. Later on Sahní (1964) described a piece from the subdermal zone. Further details of this palm were described by Kulkarni and Mahabale (1971) on the basis of new specimen collected from Kondhali in Nagpur District. Their account was based on transitional zone between dermal and subdermal zone, the

subdermal zone and central zone, and they have discussed all the structural details of this palm. All the structural details shown by the present specimen closely resemble with the *P. kamalam*. Present description is based only on the central and subdermal zone, but it is from new locality Maragsur in Wardha District. This is the third report of occurrence of *P. kamalam* from Deccan Intertrappean series. So it adds more data to the distribution ranging from Mohgaonkalan to Maragsur, Wardha District.

Among the living palms, *P. kamalam* shows considerable resemblance with the genus *Roystonea* in its ground tissue and fibrovascular bundle. The genus *Roystonea* is South American in origin and has four species in Cuba, Puerto Rico. They grow in the low ground and swamps in Florida and South America. The present description indicates the existence of *Roystonea* in the Deccan Intertrappean flora of India. The present specimen *P. kamalam* Rode is reported here from a new locality Maragsur – belonging to Wardha District of Maharashtra.

*Isotype*—Department of Botany, Smt. K.W. College, Sangli.

*Museum No.*—FWM 372.

*Locality*—Maragsur, Wardha District, Maharashtra.

*Horizon*—Deccan Intertrappean beds.

*Age*—Early Tertiary (probably Eocene).

*Acknowledgements*—The authors wish to express their sincere thanks to Professor AR Kulkarni for going through the slides of the fossil stem and for useful suggestions and valuable comments.

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## PLATE I

### *Palmoxylon kamalam* Rode

1. Transverse section of the stem showing subdermal zone. Note the distribution of fibrovascular bundles. x 2·6.
2. The two fibrovascular bundles from the subdermal zone and surrounding intercellular spaces. x 85.
3. A fibrovascular bundle from the subdermal zone with complanate dorsal cap and extruded vascular part with one metaxylem element and surrounding ground tissue. x 85.
4. A fibrovascular bundle from the subdermal zone with complanate dorsal cap and extruded vascular part with two metaxylem elements. x 85.
5. A leaf trace bundle from the subdermal zone. Note the dorsal cap and vascular part. x 85.
6. A leaf trace bundle from the subdermal zone note the dorsal cap, vascular part and intercellular spaces arranged in a petaloid manner. x 85.
7. Transverse section of the stem showing central zone. Note the distribution of fibrovascular bundles. x 3.
8. A fibrovascular bundle from the central zone with complanate dorsal cap and extruded vascular part with two metaxylem elements. x 85.
9. A leaf trace bundle from the central zone, with dorsal cap and extruded vascular part. x 85.
10. A fibrovascular bundle from the central zone with extruded vascular part with two metaxylem elements and lacunar ground tissue. x 85. Note the intercellular spaces arranged in a petaloid manner of lotus flower around the fibrovascular bundle.
11. A leaf trace bundle from the central zone, showing the vascular part. x 85. Note the intercellular spaces arranged in a petaloid manner of lotus flower around the fibrovascular bundle.
12. Transverse section of central zone showing ground tissue with large intercellular spaces. x 85.

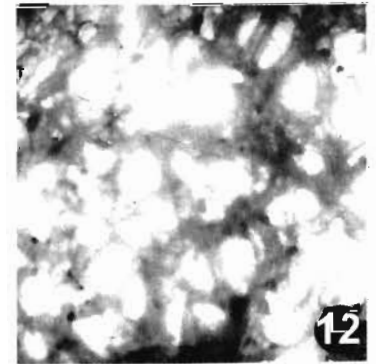
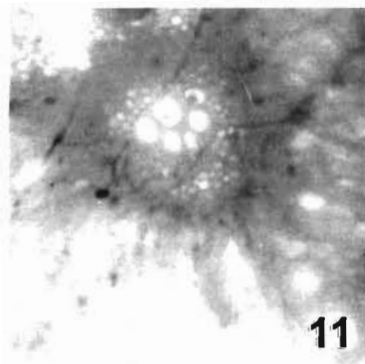
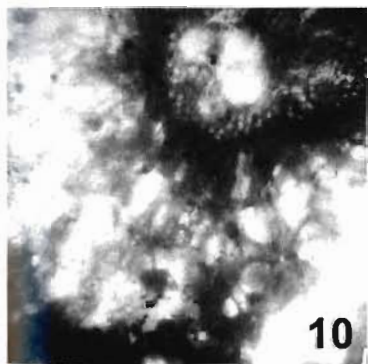
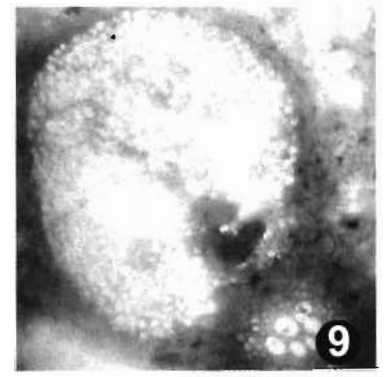
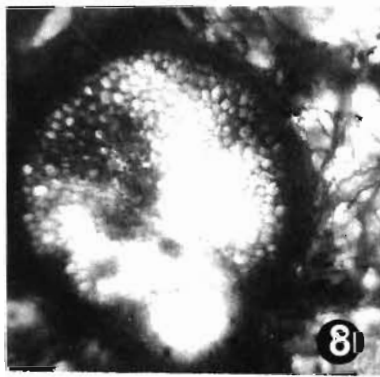
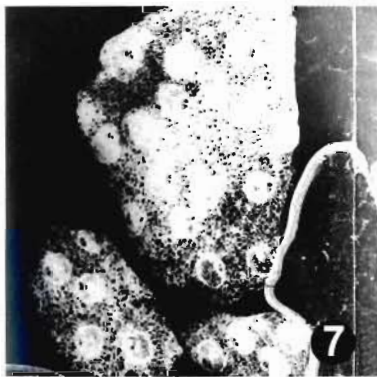
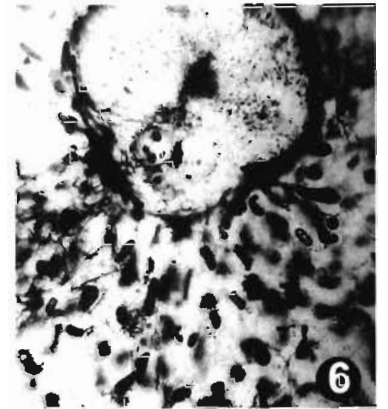
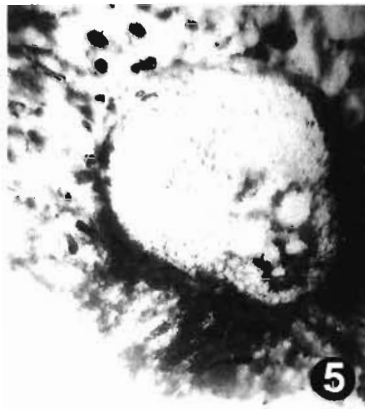
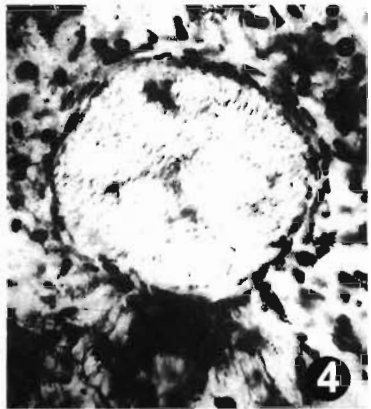
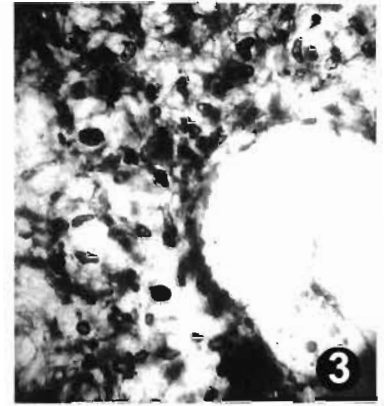
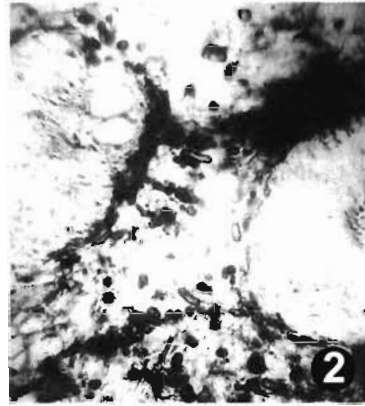
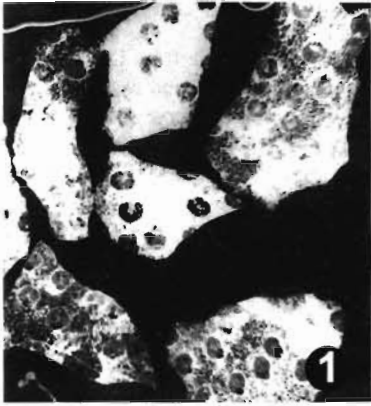


PLATE 1

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