

*PALMOXYLON PANTII*, A NEW SPECIES OF PETRIFIED  
PALM STEMS FROM THE DECCAN INTERTRAPPEAN  
SERIES OF INDIA<sup>1</sup>

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ABSTRACT

A new species of *Palmoxylon*, *P. pantii* from the Deccan Intertrappean series is described here. In this species the fibrovascular bundles are reniform. Stegmata are present. Ground tissue consists of elongated parenchyma cells. One layer of radially arranged parenchyma cells are present round the fibrovascular bundles.

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End plates of vessels with 3-5 bars are seen. The present species is comparable to *P. mathuri* Sahni and *P. blanfordi* Schenk and comes within the sub-group 'Reniformia' of the petrified palm stems.

### INTRODUCTION

In December 1965 the senior author paid a visit to Mohgaon Kalan and collected a large number of petrified plant specimens, quite a few of these are palms; many of them are well preserved. From Mohgaon Kalan few species of well preserved palm stems have been described. In our collection many species appear to be distinct from those already known from this locality. We have already described two new species of *Palmoxylon* some time back (Trivedi and Surange 1968, 1970). These belong to the sub-group "Cordata", a third new species, *P. pantii* belonging to the sub-group Reniformia of cocos-like palms, is being described here in detail.

### DESCRIPTION

In the main, the terminology used here is the same as the one suggested by Sahni (1943, 1964).

*External characters*—The specimen is a brownish piece which before sectioning measured 2.5 cm in length and 2 cm in diameter at the base. Dermal and subdermal zones are missing. The central zone is well preserved.

*Central zone*—(Figs. 1-6). It is about 1-2 cms in radius. Fibrovascular bundles are broadly ovate and reniform, measuring  $59 \mu \times 49 \mu$  (figs. 2, 3). Approximately 10-15 bundles occur per  $\text{cm}^2$ . F/v ratio of these bundles is 2/1. All these bundles are irregularly oriented, xylem is well developed, it has 3-6 round, excluded vessels. Fibrous bundles are absent throughout the central zone. Stegmata are present in the fibres of the fibrovascular bundles. Leaf traces are present in this

zone. Sclerenchyma is reniform. Median sinus is shallow and broad while the lobes are rounded.

Ground tissue is made up of generally elongated loosely arranged parenchyma cells (Fig. 4). Tabular parenchyma is radially arranged round the fibrovascular bundles. End plates of vessels are seen in L. S. with 3-5 bars (Fig. 6). The plates are obliquely placed. Fibres cut in L. S. show stegmata on their surface which are somewhat spherical in shape (Fig. 5).

### DISCUSSION

So far there is no satisfactory system for the natural classification of petrified palm stems. They are, therefore, all grouped under a single form genus *Palmoxylon*. Kaul in 1935, tentatively suggested that this large and artificial genus could be split up into various genera on the basis of the structure of their ground tissue but as no detailed treatment of this nature is available to date we are unable to utilize this character in the study of palm anatomy. For generic identification the only course, therefore, open is to classify the genus artificially. For this purpose Professor Sahni's scheme (1943 pp. 218-219) based essentially on the classifications of Mohl (1845) and Stenzel (1904) is adopted as it is both convenient and useful. According to this scheme *P. pantii* falls under the sub-group "Reniformia" of cocos-like palms.

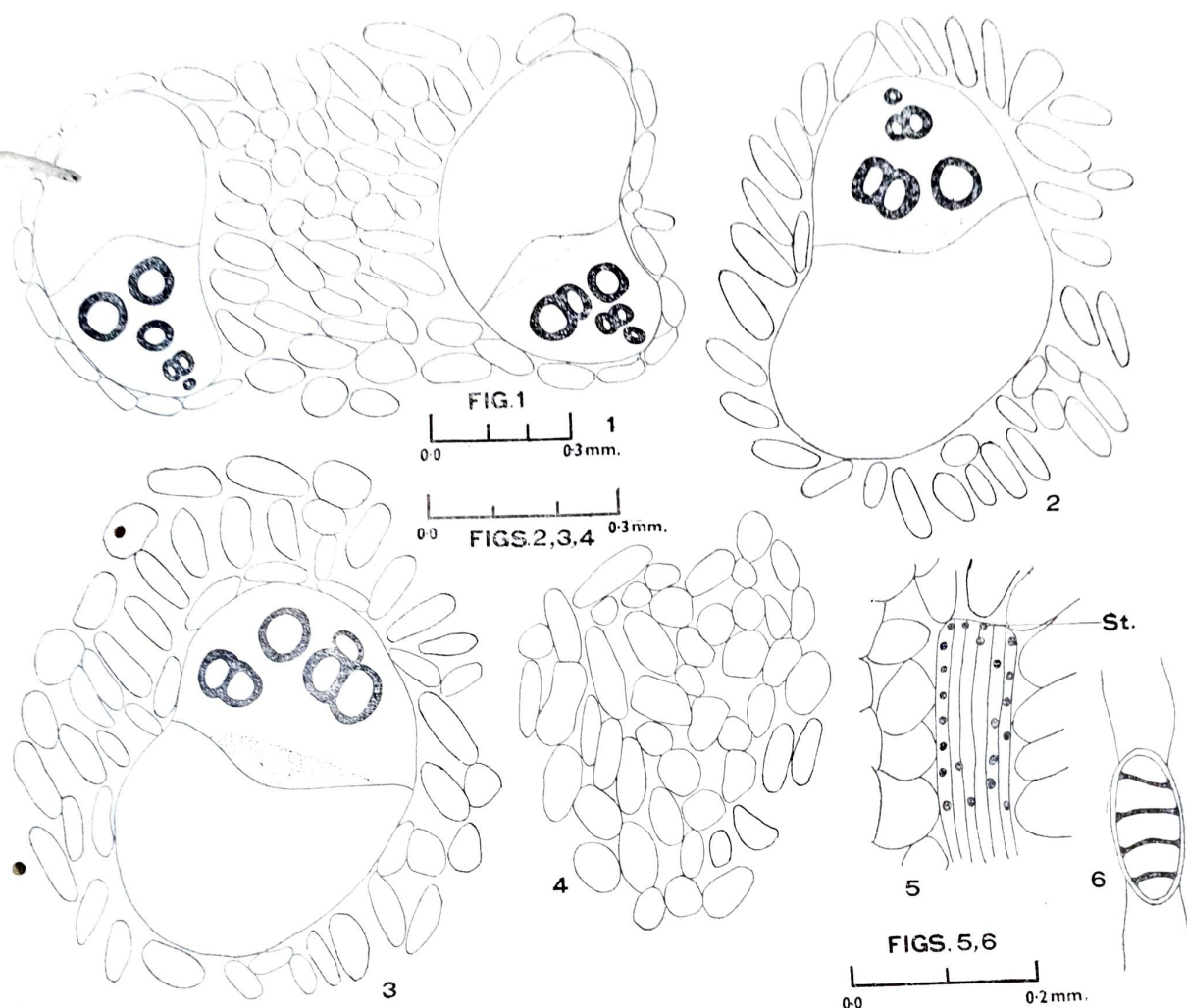
Our species is quite distinct in many characters from all the species already described in the sub-group "Reniformia". Since the present species only resembles *P. mathuri* Sahni and *P. blanfordi* Schenk it is compared with those in detail. Our



species resembles *P. mathuri* Sahni in the general form, shape and distribution of fibrovascular bundles. In other characters, however, the two species are quite distinct.

The distribution of fibrovascular bundles per  $\text{cm}^2$  is 24-25 in *P. mathuri* whereas it is 10-15 per  $\text{cm}^2$  in *P. pantii*. The F/v

network with large meshes in *P. mathuri* whereas it is elongated and without a network in *P. pantii*. Xylem is bi-vesselled in *P. mathuri* whereas it consists of 3-5 vessels in *P. pantii*. No end plates are seen in *P. mathuri* whereas the end plates of vessels with normally 3-5 bars are present in *P. pantii*.



FIGS. 1-6. Fig. 1. Central zone with irregularly oriented fibrovascular bundles and ground parenchyma. Figs. 2, 3. Fibrovascular bundles from the central zone. Fig. 4. Ground tissue showing elongated and round parenchymatous cells. Fig. 5. Longitudinal section of fibres showing stigmata, St. Fig. 6. End plate of vessel with four bars.

ratio of central bundles is 2/3 in *P. mathuri* whereas it is 2/1 in *P. pantii*. Fibrous bundles are present without stigmata in *P. mathuri* whereas no fibrous bundles are seen in *P. pantii*. Stigmata, however, are present in the fibres of the fibrovascular bundles in *P. pantii*. Ground tissue is lacunar, the trabecular cells form a loose

Our species resembles *P. blanfordi* Schenk in the general shape and form of fibrovascular bundles and in the absence of fibrous bundles. In the rest of the characters our species differs from it as shown below:

The distribution of bundles in central zone is 14 per  $\text{cm}^2$  in *P. blanfordi* whereas

it is 10-15 per  $\text{cm}^2$  in *P. pantii*. F/v ratio of bundles is 2-3/1 in *P. blanfordi* whereas it is 2/1 in *P. pantii*. Fibrous bundles and stigmata are absent in *P. blanfordi* whereas fibrous bundles are absent but stigmata are present in the fibres of the fibrovascular bundles in *P. pantii*. General ground tissue is lacunar and triangular air spaces are present in *P. blanfordi* while ground tissue is made up of elongated cells without any air spaces in *P. pantii*. Xylem is bivesselled in *P. blanfordi* whereas it consists of usually 3-5 vessels in *P. pantii*.

#### DIAGNOSIS

Genus — *Palmoxylon*  
 Sub-group — *Reniformia*  
*Palmoxylon pantii* sp. nov.

Stem in type specimen is 2 cm in diameter. Fibrovascular bundles in central zone reniform, xylem of 3-5 vessels excluded, fibrous bundles absent but stigmata present in the fibres of the fibrovascular bundles. Fibrovascular bundles 10-15 per  $\text{cm}^2$ , F/v ratio 2/1. Ground parenchyma of elongated cells, tabular parenchyma present. Median sinus shallow and broad lobes rounded. End plates of vessels oblique, with 3-5 bars.

We take pleasure in naming the species after Professor D. D. Pant of Allahabad.

Locality — Mohgaon Kalan  
 Horizon — Deccan Intertrappean series

Collection — B. S. Trivedi.  
 Holotype specimen No. 17 at present with B. S. Trivedi, Botany department Lucknow University, Lucknow.

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