

DICTYOPHYLLUM AND HAUSMANNIA FROM THE LOWER CRETACEOUS OF SAURASHTRA, INDIA

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ABSTRACT

Dictyophyllum indicum n. sp. and *Hausmannia pachyderma* Sukh-Dev, described here, were collected from clay pits near Than in Saurashtra. Both the species are based on sterile fronds. The overall shape of the sterile segments of *D. indicum* is more like the fertile segments of *D. rugosum* Lindley & Hutton.

Key-words — *Dictyophyllum*, *Hausmannia*, Fern fronds, Lower Cretaceous, Saurashtra (India).

सारांश

सौराष्ट्र, भारत के अधर क्रीटेशियस से डिक्टियोफिलम एवं हाउसमैनिया - महेन्द्रनाथ बॉस एवं ब्रजेन्द्रनाथ जाना

यहाँ वर्णित डिक्टियोफिलम इन्डिकम् न० जा० और हाउसमैनिया पेकिडर्मा सुखदेव सौराष्ट्र में थान के समीपस्थ मृत्तिका गतों से एकत्रित की गई थी। दोनों जातियाँ बंध्य-प्रपर्णों पर ही आधारित हैं। डि० इन्डिकम् के बंध्य-खंडों का समग्र आकार डि० रूगोसम लिन्डले एवं हट्टन के अबंध्य-खंडों के अधिक अनुरूप है।

INTRODUCTION

THE fossil record of the family Dip-teridaceae is rather poor in India. So far, the family was represented by a single genus *Hausmannia* Dunker. Only recently *Dictyophyllum* has been collected from a clay pit about 650 m north-west of Suraj Dewal which is about 2.5 km north of Than, Saurashtra. From the same locality three specimens of *Hausmannia pachyderma* Sukh-Dev have also been collected. The clay pits at Suraj Dewal are characterized by the dominance of pteridophytic and conifer remains. Some of them have already been described by Roy (1966, 1968), Kasat (1970) and Borkar and Chiplonkar (1973).

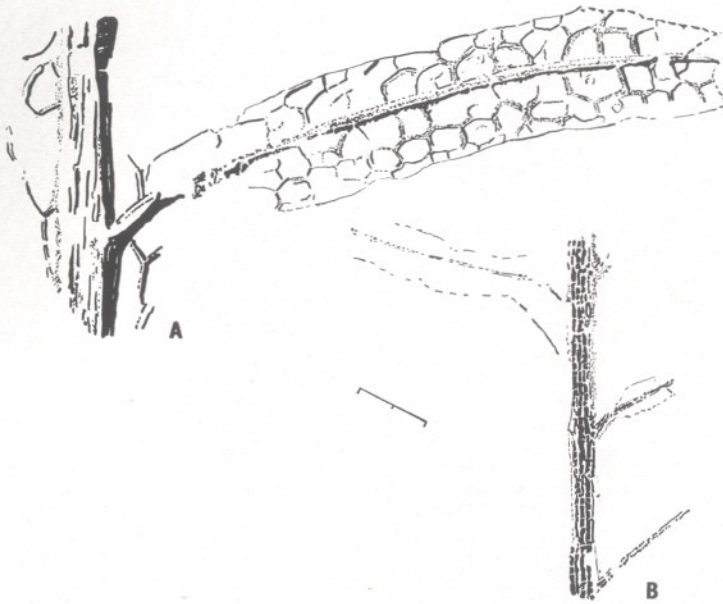
DESCRIPTION

Genus — *Dictyophyllum* Lindley & Hutton, 1834

Dictyophyllum indicum n. sp.

Pl. 1, figs 1, 2; Text-fig. 1A, B

Diagnosis — Pinna sterile, incomplete, measuring 17 cm in length and 9 cm in breadth. Rachis stout, about 3 mm wide, finely striated. Pinna segments widely spaced, alternate, arising at an angle of 45°-65°. Largest segment 4.5 cm long and 0.9 cm broad; margins wavy; both acroscopic and basicopic margins curved; basicopic margin decurrent, joining the acroscopic margin of the segment lying below; apex not preserved. Midrib pro-



TEXT-FIG. 1 — *Dictyophyllum indicum* n. sp.: A, part of a segment showing venation; B.S.I.P. no. 35296 \times 2. B, a piece from the counterpart showing rachis and two incomplete segments; B.S.I.P. no. 35296A \times 1.

minent, about 0.8-1 mm wide; secondary veins arising at an angle of 90° , about 2.5-5 mm apart, forming irregular polygonal meshes; within meshes tertiaries making smaller polygons enclosing free vein endings.

Holotype — B.S.I.P. no. 35296.

Locality — About 2.5 km north of Than Railway Station, Saurashtra.

Age — Lower Cretaceous.

Comparison — In shape and venation pattern of the pinna segments, *Dictyophyllum indicum* resembles most the fertile pinnae of *D. rugosum* Lindley & Hutton described by Harris (1961) from Yorkshire. The sterile pinnae of *D. rugosum* are, however, more varied in shape and their segments are larger with lobed margins. *Dictyophyllum indicum* also matches the pinna segments of *D. elongata* Ôishi (1932) in general shape and venation. The latter species differs in having more closely set segments whose distal margins are slightly crenulate. The general pinnae form of *D. dunkeri* Nathorst, described by Salfeld (1909), may be compared with *D. indicum*, but the former has much narrower segments.

Genus — *Hausmannia* Dunker, 1846

Hausmannia pachyderma Sukh-Dev

Pl. 1, figs 3, 5; Text-fig. 2A-C

Description — Lamina incomplete, broadly reniform or (?)orbicular, measuring 3.5-4.7 \times 3.2-5.5 cm, margin entire or at places slightly crenulate, a slender vein running along margin. Petiole not preserved. Primary veins 3-4, originating and radiating from base of lamina, forking 2-3 times. Lateral veins arising from both sides of primary veins at an angle of 80° - 90° , forking and anastomosing in order to form squarish, rectangular or polygonal meshes which in turn forming smaller meshes. Finer meshes ending blindly in the mesophyll.

Collection — B.S.I.P. no. 1/1729.

Locality — About 2.5 km north of Than Railway Station, Saurashtra.

Age — Lower Cretaceous.

Comparison — The present specimens resemble the specimens of *Hausmannia pachyderma* Sukh-Dev (1972) described



TEXT-FIG. 2 — *Hausmannia pachyderma* Sukh-Dev: A, B.S.I.P. no. 1/1729B \times 1. B, B.S.I.P. no. 1/1729A \times 1. C, figure B enlarged to show venation \times 2.

from Bansa and Patparha (South Rewa Gondwana Basin) in gross features as well as venation. One of the specimens from Than (Pl. 1, fig. 4) is only slightly bigger than the largest specimen figured by Sukh-Dev (1972). The venation of *H. pachyderma* is somewhat like *H. buchii* (Andrae) described by Crookshank (1935). The latter species is too incomplete so further

comparison is not possible. *H. buchii* (Andrae) described by Richter (1906) has prominently lobed margin. *H. crookshankii* Shah & Singh (1964) shows a deep sinus at the petiolar end and it has 8 primary veins. *H. nariwaense* Ôishi (1930), too, has deep sinus at the basal end and has more than twice the number of primary veins.

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EXPLANATION OF PLATE

PLATE I

1. *Dictyophyllum indicum* n.sp. Holotype — B.S.I.P. no. 35296. × 1.
2. *D. indicum* n. sp. — a portion of the above magnified to show the venation. × 2.
3. *Hausmannia pachyderma* Sukh-Dev; B.S.I.P. no. 1/1729B. × 1.
4. *H. pachyderma* Sukh-Dev; B.S.I.P. no. 1/1729A. × 1.
5. *H. pachyderma* Sukh-Dev — portion of the above magnified to show the venation. × 4.

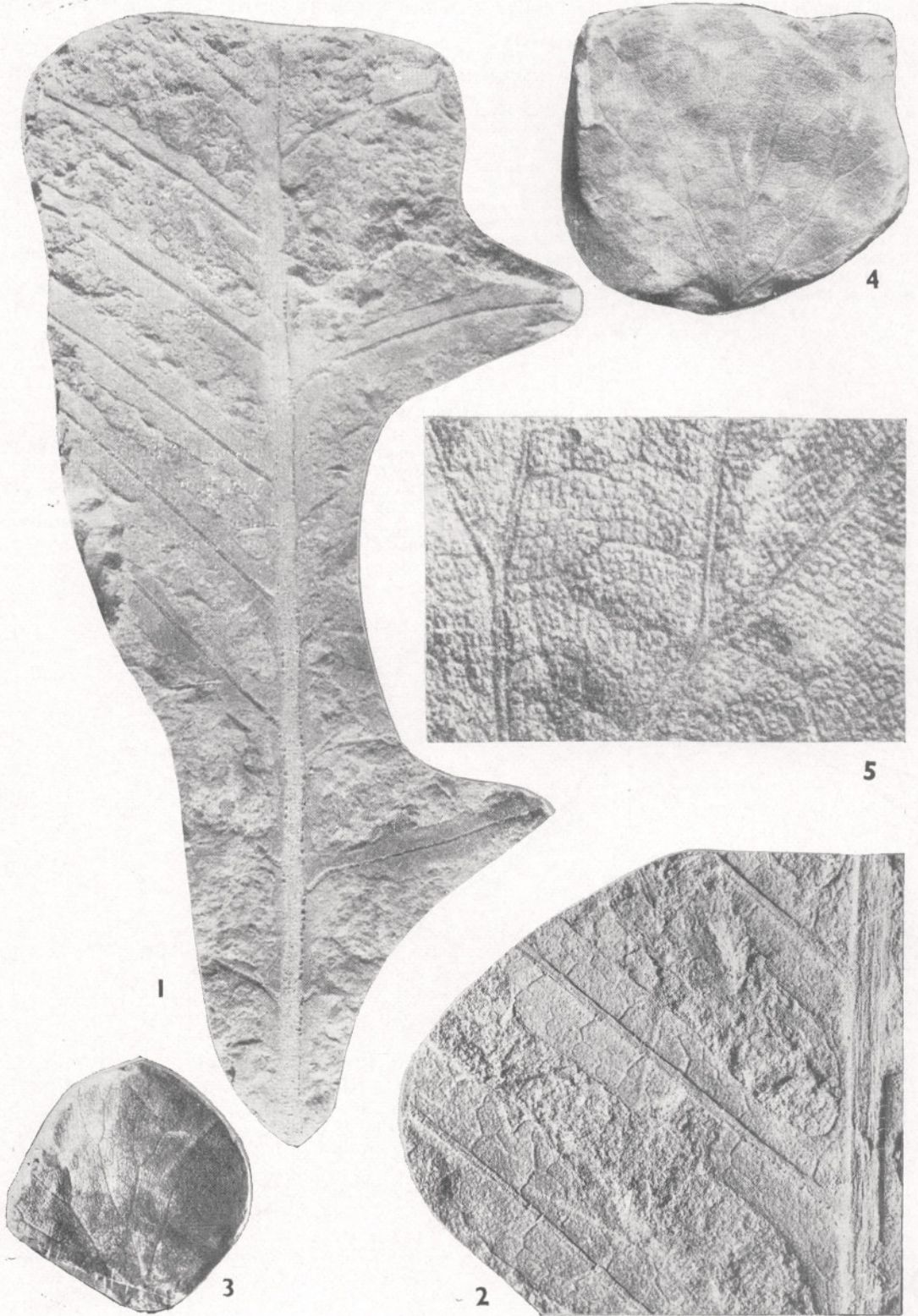


PLATE 1