

## FRAGMENTARY PLANT REMAINS FROM THE HARTALA HILL, SOUTH REWA GONDWANA BASIN, INDIA

PANKAJ. K. PAL

Birbal Sahni Institute of Palaeobotany, 53 University Road, Lucknow 226 007, India

### ABSTRACT

A few fragmentary plant remains, belonging to *Pagiophyllum*, *Brachyphyllum* and *Desmiophyllum* from the hillock south-east of Hartala Village, Shahdol District, Madhya Pradesh have been described. On the basis of megafossil contents, Hartala Hill beds seem to be of Rhaetic-Liassic age.

*Key-words* — Megafossils, *Pagiophyllum*, *Brachyphyllum*, *Desmiophyllum*, Hartala Hill, Gondwana, Rhaetic-Liassic (India).

### सारांश

दक्षिण रीवा गोंडवाना द्रोणी (भारत) में स्थित हर्तला पहाड़ी से आँशिक पादप-अवशेष — पंकज कुमार पाल

मध्य प्रदेश में शहदोल जनपद के हर्तला गाँव से दक्षिण-पूर्व में स्थित एक पहाड़ी से प्राप्त पेजियोफिल्लम्, ब्रेक्किफिल्लम् एवं डेस्मिओफिल्लम् के आँशिक पादप-अवशेषों का वर्णन किया गया है। गुरुवनस्पतिजातों के आधार पर हर्तला पहाड़ी की संस्तर रिहैटिक-लिऐसिक आयु की प्रतीत होती है।

### INTRODUCTION

**T**HE hillock, lying SE of Hartala Village (23°49'29"N: 81°15'11"E; Survey of India Toposheet no. 64E/5) in Shahdol District, Madhya Pradesh consists of hard compact sandstone, dark-red ferruginous shales and white or pinkish-white fine-grained clays and shales. Rao (in Krishnan, 1958) reported the occurrence of *Pagiophyllum peregrinum* from this hillock. However, he did not describe or figure any of his specimens. A few fragmentary plant impressions described here were collected from the white or pinkish-white shales exposed at the top of the hillock.

### DESCRIPTION

#### CONIFERALES

*Genus* — *Pagiophyllum* Heer, 1881

*Pagiophyllum* sp.

Pl. 1, figs 1-4; Text-fig. 1A-C

*Description* — Leafy twigs, 6 mm wide, largest available specimen about 2 cm long,

incomplete at both ends. Leaves spirally disposed, linear-lanceolate, typically 2 mm long and 1 mm wide near middle region; decurrent at base; free-part distinctly keeled, spreading at an angle of 30°-50°, often slightly curving upwards; margin entire; apex acuminate.

*Remarks* — The specimens resemble *Pagiophyllum peregrinum* (Lindley & Hutton) Schenk described by Sahni (1928) from the Jabalpur Group (Jurassic-Cretaceous) of India, in gross features but their detail comparison is not possible due to the fragmentary nature and lack of cuticle.

*Genus* — *Brachyphyllum* Brongniart, 1828

*Brachyphyllum* sp.

Pl. 1, figs 5, 6; Text-fig. 1D

*Description* — Leafy twig, broken at both ends, available length 6.8 cm, about 5 mm wide. Leaves spirally borne, appressed to the stem, keeled, rhomboidal in shape, typically measuring 4×3 mm, base concealed by leaves lying immediately below, margin entire, apex subacute.

*Remarks* — In available gross features the present specimen resembles the specimens of *Brachyphyllum mamillare* Brongniart described from the Rajmahal Formation (Sahni, 1928, pl. 2, figs 19, 20) and *B. rhombicum* described from the Jabalpur Formation (Sahni, 1928, pl. 2, figs 23, 24). But both, *B. rhombicum* and *B. mamillare*, are known to be branched, whereas branching is not known in the present specimen.

#### INCERTAE SEDIS

Genus — *Desmiophyllum* Lesquereux, 1878

*Desmiophyllum* sp.

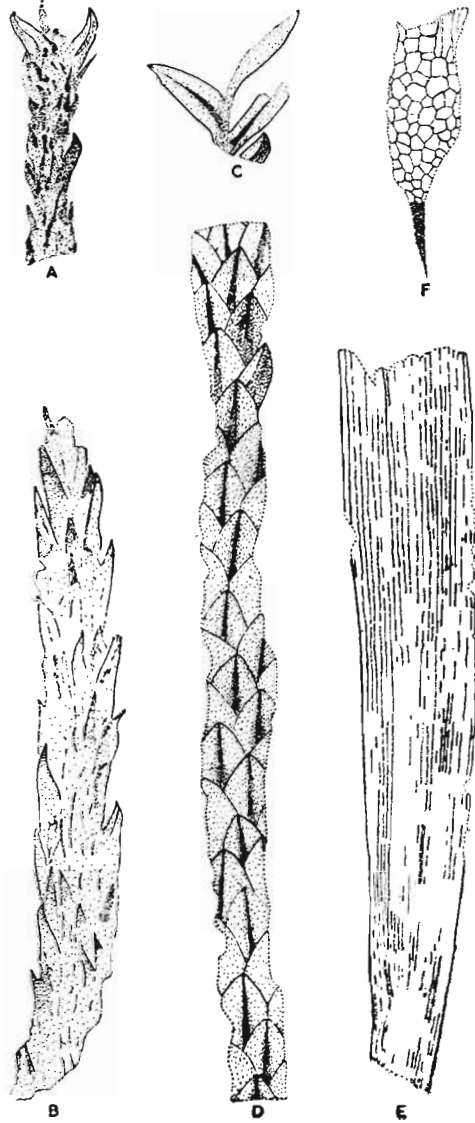
Pl. 1, fig. 7; Text-fig. 1E

*Description* — Leaves incomplete both near base and apex, ribbon-shaped, largest specimen about 10 cm long and 2 cm wide at one end, gradually tapering to 1 cm at the other end, slightly curved. Veins parallel, about 18 per cm.

*Remarks* — The specimens have been referred to *Desmiophyllum* because in none of them apex is preserved, therefore it cannot be said whether the veins are converging towards apex or ending at different levels towards margin. Moreover, such strap-shaped leaf-fragments may also be the portions of large-sized cycadophytic fronds.

#### DISCUSSION

About two dozen fragmentary specimens belonging to *Pagiophyllum*, *Brachyphyllum* and *Desmiophyllum* were collected from the Hartala Hill. Out of these *Pagiophyllum* is most common in occurrence. There is also a specimen of cone-like organ, an ovate body bearing crowdedly arranged tubercles on its surface, represented by both part and counterpart (Pl. 1, figs 8-10; Text-fig. 1F). In this collection there is not a single piece of frond comparable to *Lepidopteris* or *Dicroidium*. The Hartala Hill beds overlie the rocks of Tiki Formation which is known to be of Upper Triassic age (Roy-Chowdhury *et al.*, 1975; Maheshwari *et al.*, 1978). The complete absence of characteristic Triassic forms like *Lepidopteris* and *Dicroidium* which are abundant in the Tiki Formation and the frequent



TEXT-FIG. 1 — A-C, *Pagiophyllum* sp.: A, B.S.I.P. specimen no. 35521,  $\times 2$ ; B, B.S.I.P. specimen no. 35449,  $\times 2$ ; C, B.S.I.P. specimen no. 35519,  $\times 3$ ; D, *Brachyphyllum* sp., B.S.I.P. specimen no. 35450,  $\times 2$ ; E, *Desmiophyllum* sp., B.S.I.P. specimen no. 35523,  $\times 1$ ; F, cone-like organ, B.S.I.P. specimen no. 35451,  $\times 2$ .

occurrence of *Pagiophyllum* which is more prevalent in the Indian Jurassic also suggest that the beds exposed at the top of hillock are younger in age than that of the Tiki Formation. As such the Hartala Hill beds appear to be of Rhaetic-Liassic age.

## REFERENCES

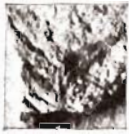
- KRISHNAN, M. S. (1958). General report of the Geological Survey of India for the year 1954. *Rec. geol. Surv. India*, **88** (3): 10-12.
- MAHESHWARI, H. K., KUMARAN, K. P. N. & BOSE, M. N. (1978). The age of the Tiki Formation with remarks on the miofloral succession in the Triassic Gondwanas of India. *Palaeobotanist*, **25**: 254-265.
- ROY-CHOWDHURY, M. K., SASTRY, M. V. A., SAH, S. C., SINGH, C. & GHOSH, S. C. (1975). Triassic floral succession in the Gondwana of Peninsular India. *Gondwana Geology, 3rd int. Gondwana Symp., Canberra*: 149-157.
- SAHNI, B. (1928). Revisions of Indian fossil plants: Part I—Coniferales (a. Impressions and In-crustations) *Mem. geol. Surv. India Palaeont. indica*, n. ser., **11**: 1-49.

## EXPLANATION OF PLATE

- 1-4. *Pagiophyllum* sp.  
 1. B.S.I.P. specimen no. 35521.  $\times 1$ .  
 2. B.S.I.P. specimen no. 35449.  $\times 1$ .  
 3. Same as fig. 1.  $\times 4$ .  
 4. B.S.I.P. specimen no. 35522, counterpart of specimen in text-fig. 1C.  $\times 2$ .
- 5, 6. *Brachyphyllum* sp.  
 5. B.S.I.P. specimen no. 35450.  $\times 1$ .
6. Same as fig. 5.  $\times 2$ .
7. *Desmiophyllum* sp. B.S.I.P. specimen no. 35523.  $\times 1$ .
- 8-10. Cone-like organ.  
 8. B.S.I.P. specimen no. 35451.  $\times 1$ .  
 9. B.S.I.P. specimen no. 35540, counterpart of specimen in fig. 8.  $\times 1$ .  
 10. Same as fig. 8.  $\times 4$ .



1



4



8



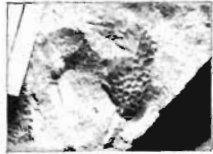
10



2



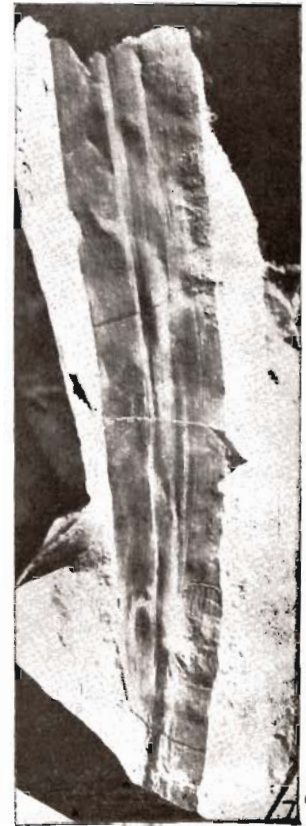
5



9



6



3

PLATE I