

## Occurrence of Bamboo in the Siwalik beds near Ranital, Himachal Pradesh

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Impressions of leaves and culms of a bamboo have been described from the Lower Siwalik sediments near Ranital, district Kangra, Himachal Pradesh. Due to insufficiency of the preserved data it has not been possible to arrive at any definite identification of the bamboo.

**Key-words**—Leaf impressions, Culms, Bamboo, Siwalik beds, Tertiary (India).

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### सारांश

हिमाचल प्रदेश में रानीताल के समीपस्थ शिवालिक संस्तरो में बाँस की उपस्थिति

राजेन्द्र नाथ लखनपाल, ए० पी० तिवारी एवं नीलाम्बर अवस्थी

हिमाचल प्रदेश के काँगड़ा जनपद में रानीताल के समीपस्थ अधर शिवालिक अवसादों से बाँस के तने एवं पत्तियों की छापें वर्णित की गई हैं। अपर्याप्त परिरक्षित आँकड़ों के कारण बाँस का निश्चित अभिनिर्धारण सम्भव नहीं हो पाया।

A FEW years ago a party of geologists working with one of us (A.P.T.) collected some plant fossils from near Ranital, district Kangra, Himachal Pradesh, which is regarded as a locality of the Lower Siwalik sediments. In lithology these specimens are very much like those collected from Balu-Goloa, about 8 km east of Ranital and also considered as Lower Siwalik. While several kinds of plants have been described from Balu-Goloa (Lakhanpal, 1965, 1966, 1968, 1969; Lakhanpal & Dayal, 1966; Lakhanpal & Guleria, 1987), this is the first report from Ranital.

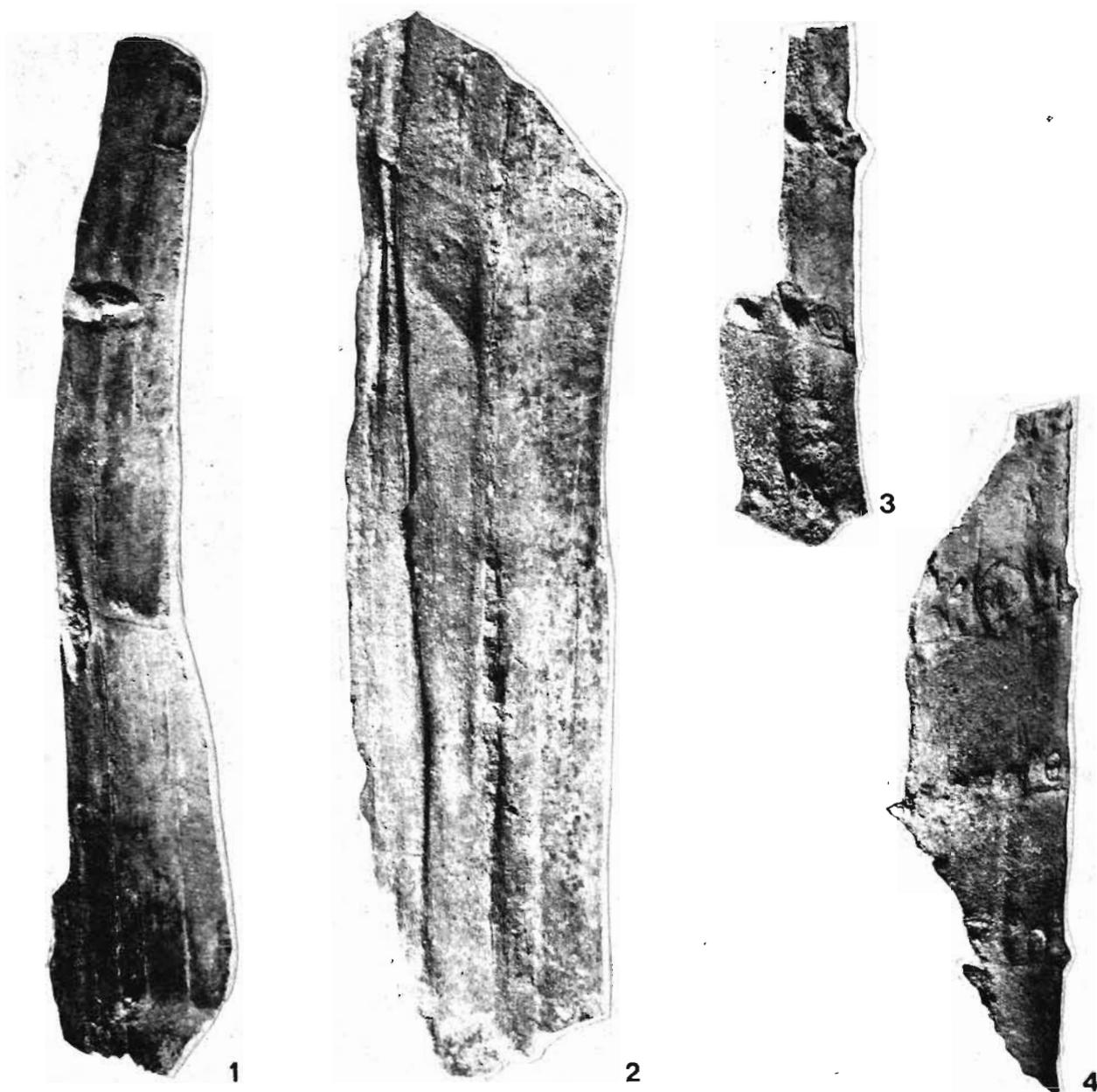
*Description*—There are eight specimens in the collection, which bear fragmentary plant remains showing obvious affinities with a bamboo. They consist of several leaf impressions and two impressions of culms.

The leaves (Pl. 1, figs 1, 2) are linear, 2.0-3.5 cm broad with entire margin. The base and apex are not preserved in any specimen nor is any midrib discernible. Details of venation are not well preserved but one specimen shows the lamina bearing parallel longitudinal

veins of two kinds: prominent veins placed at intervals of about 7 mm, each interval having a median vein with 7-8 finer interstitial veins on either side of it, without cross-veins.

The two fragments of culms are rather narrow, preserved width of one (Pl. 1, fig. 3) is about 2 cm and that of the other (Pl. 1, fig. 4) 3.4 cm. The former is about 8 cm and the latter about 10.5 cm in length. They represent the lower parts of the culms as both bear impressions of roots and vegetative buds at the nodes. The internodes are also short, about 2.5-3.5 cm in length. The impressions of roots are more or less oval, 1.5 × 3.0 to 3.0 × 5.0 mm across. The vegetative buds are broadly elliptic, measuring about 7.0 × 13.0 mm to 9.0 × 13.0 mm across. As preserved, there are up to 7 root scars in a row visible at the node. At some nodes, there is a thin linear impression of the junction of the sheath membrane, just below the row of root scars.

*Discussion*—The preservation of the present specimens is far from satisfactory for a definite identification with any known taxa of bamboos.



However, the available data indicate that the Ranital bamboo had a narrow culm with short internodes, specially near the basal part. There were about a dozen root scars around the basal nodes, arranged in a single row. The vegetative buds were small and appeared broadly elliptic in outline. The leaves were of medium width and not very large.

Keeping the above features in view, an attempt was made to compare the fossil bamboo with those growing

in the Arboretum of the Forest Research Institute, Dehradun. Four bamboos, viz., *Dendrocalamus strictus*, *D. longispathus*, *Melocanna baccifera* and *Neobouzeaua dullooa* are comparable to our fossil in the width of the stem. However, in characters of roots and buds *Melocanna* and *Neobouzeaua* are quite different, particularly *N. dullooa* in which the roots coming out in several circular rows form a sort of a band at the node. *Dendrocalamus strictus* and *D. longispathus* show more

### PLATE 1

(All figures are of natural size)

1. A fragment of leaf-impression of a bamboo. B.S.I.P. specimen no. 35893A.
2. Another specimen of a leaf-impression B.S.I.P. specimen no. 35893B.

3. An impression of a bamboo culm showing vegetative buds and a sheath membrane. B.S.I.P. specimen no. 35894.
4. Another impression of a culm clearly showing root scars and vegetative buds at the nodes. B.S.I.P. specimen no. 35893C.

↑

resemblance with the fossil. The size of the vegetative buds is similar in both. However, the internodes are shorter in *D. strictus* and longer in *D. longispathus*. The roots also seem more like those of the fossil in *D. strictus* than in *D. longispathus*. But in leaves, *D. longispathus* shows closer similarity than *D. strictus*.

The above comparisons are only tentative as our specimens are fragmentary and without enough characters warranting a definite identification. On the basis of the presently available information it can only be stated that a bamboo was growing around Ranital in the Lower Siwalik times. Its taxonomic affinities would be established only when better specimens are collected from this locality in future.

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