

OCCURRENCE OF *BOUEA* IN THE NEYVELI LIGNITE DEPOSITS, INDIA

ANIL AGARWAL

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

Abstract

A carbonised wood resembling that of *Bouea* Meissn. of Anacardiaceae is described from the Neyveli Lignite Mine II. The genus *Bouea* is presently distributed in the tropical evergreen forests of the Indo-Malayan region.

Introduction

In the Neyveli Lignite deposits the carbonised woods are found in abundance. Systematic studies of such woods have been initiated by Awasthi (1984) who described the woods of *Hopea*, *Gluta*, *Corallia*, *Diospyros* and *Cordia* from the Mine I. Subsequently, Awasthi and Agarwal (1987) reported a new species of *Parinari* from the same mine. Besides, a monocotyledonous shoot with leaf bases comparable to *Dracaena* has been described by Ambwani (1982).

With a view to build up the flora of the Neyveli Lignite, a number of carbonised woods were investigated. The wood specimens were cut to thin sections and studied. Some of them being very well preserved could be identified with that of extant genus *Bouea* of Anacardiaceae.

Description

Family—Anacardiaceae

Genus—*BOUEA* Meissn.

Bouea neyveliensis sp. nov.

Pl. 1, figs. 1-5

Material—The following description is based on a number of well preserved specimens of carbonised woods.

Wood diffuse porous (Pl. 1, fig. 1). *Growth rings* indistinct; tangential lines of parenchyma give some impressions of growth rings. *Vessels* usually small to medium, rarely very small, t. d. 32-72 μm , r. d. 40-108 μm , solitary as well as in radial multiples of 2-3, round to oval when solitary, with flat contact walls when in multiples, 7-8 per sq mm; vessels often filled with dark reddish brown contents (Pl. 1, fig. 1); vessel-members 32-200 μm in length usually with truncate ends; perforations simple; intervessel pits medium to large, alternate, bordered, about 8-12 μm in diameter, oval in shape with linear apertures (Pl. 1, fig. 6). *Parenchyma* both paratracheal and apotracheal; paratracheal parenchyma scanty; apotracheal parenchyma lines or bands broken as well continuous, irregular in distribution; parenchyma cells thin-walled; 80-160 μm in length and 12-24 μm in diameter.

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Xylem rays fine, 1-2 seriate, mostly uniseriate, 16-40 μm wide, 4-30 cells high, 13-16 per mm; ray tissue heterogeneous; rays heterocellular consisting of procumbent cells in the central portion and 1-2 upright cells at one or both ends; procumbent cells 30-40 μm in tangential height, 60-75 μm in radial length; upright cells 40-50 μm in tangential height 15-20 μm in radial length. *Fibres* usually rectangular in shape, moderately thick-walled, about 10-12 μm in diameter, non-septate, 400-800 μm in length.

Affinities—The important and diagnostic characters of the fossil wood are vessels small to medium, parenchyma scanty paratracheal and apotracheal irregularly distributed thin bands or lines; xylem rays 1-2 seriate, heterocellular and fibres non-septate. These features collectively show close resemblance of the fossil with that of *Bouea* of Anacardiaceae (Pearson & Brown, 1932; Metcalfe & Chalk, 1950; Kribs, 1959; Miles, 1978; Ghosh & Purkayastha, 1963). In the nature and distribution of vessels and parenchyma it also shows gross resemblance with *Gluta* Linn. (syn. *Melanorrhoea* Wall.) and *Swintonia* Griff. However, it differs from these in the absence of multiseriate rays having radial gum canals. Out of five species of *Bouea*, thin section of only *Bouea burmanica* could be available for comparison. This species appears very similar to the fossil in all the anatomical characters (Pl. 1, figs. 2,4).

As far as the author is aware this is first report of the occurrence of *Bouea* in the geological past. In view of its resemblance with the woods of *Bouea*, the carbonised wood is named as *Bouea neyveliensis* sp. nov.

The genus *Bouea* Meissn. consists of five species which are distributed in the Indo-Malayan region (Santapau & Henry, 1973). *Bouea burmanica* is a moderate-sized tree distributed in Sundarbans and in the evergreen forest of Andamans. It is also found in Martaban and Tenasserim of Lower Burma (Ghosh & Purkayastha, 1963; Santapau & Henry, 1973). Occurrence of *Bouea* in the Neyveli Lignite deposits also indicates the existence of tropical evergreen forest in this area at the time of the deposition of lignite.

Holotype—Specimen no. BSIP 36216.

Locality—Neyveli Lignite Mine II.

Age—Miocene.

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Explanation of Plate

Plate 1

1. *Bouea neyveliensis* sp. nov.—Cross section of the fossil wood showing nature and distribution of vessels and parenchyma. $\times 30$; Slide no. B.S.I.P. 36216-I.
2. *Bouea burmanica*—Cross section showing similar shape, size and distribution of vessels and parenchyma. $\times 30$.
3. *Bouea neyveliensis* sp. nov.—Tangential longitudinal section showing xylem rays. $\times 80$; Slide no. B.S.I.P. 36216-II.
4. *Bouea burmanica*—Tangential longitudinal section showing similar xylem rays. $\times 80$.
5. *Bouea neyveliensis* sp. nov.—Radial longitudinal section showing heterocellular ray tissue. $\times 125$; Slide no. B.S.I.P. 36216-III.
6. *Bouea neyveliensis* sp. nov.—Magnified inter vessel pits. $\times 250$; Slide no. B.S.I.P. 36216-IV.
7. *Bouea burmanica*—Inter vessel pits similar in shape and size as in fossils. $\times 250$.

