Xenoxylon yixianense sp. nov. from Lower Cretaceous of Yixian, Western Liaoning, China

Zhang Wu & Shang Ping

Zhang Wu & Shang Ping 1996. *Xenoxylon yixianense* sp. nov. from Lower Cretaceous of Yixian, Western Liaoning, China. *Palaeobotanist* **45** : 389-392.

A new species of *Xenoxylon, X. yixianense* is described from the Lower Cretaceous deposits of Western Liaoning. It differs from the known species of this genus in having transverse resin canals. The presence of transverse resin canals may indicate a traumatically abnormal condition or a taxonomic relationship between this species and Pinaceae.

Key-words—Fossil wood, *Xenoxylon yixianense*, Early Cretaceous, Western Liaoning (China).

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सारांश

चीन में पश्चिमी लियाओनिंग में यिक्सियान के अधरि क्रीटेश्यस कल्प से *जीनॉक्सीलॉन यिक्सियानेन्से* नव जाति

झाँग वु एवं शाँग पिंग

पश्चिमी लियाओनिंग के अधरि क्रीटेश्यस युगीन निक्षेपों से प्राप्त *जीनॉक्सीलॉन यिक्सियानेन्से* नव जाति का वर्णन किया गया है। एक अन्य ज्ञात जाति से यह अनुप्रस्थ रेजिन वाहीनिकाओं की उपस्थिति के कारण भिन्न है। इन रेजिन वाहीनिकाओं के कारण यह नई जाति पाइनेसी कुल से सम्बन्ध व्यक्त करती है।

THE material was collected from the purple-red sandstone at the lower part of the Lower Cretaceous Shahai Formation of Baitazigou, Yixian County, western Liaoning, China. Associated with the material, there are some other fossil woods, such as *Ginkgoxylon?* sp. (sp. nov.?), *Cupressinoxylon* sp. (sp. nov.?), *Xenoxylon hopeiense* Chang and *X. latiporosum* (Gram.) Gothan (Text-figure 1).

DESCRIPTION

Genus—*Xenoxylon* Gothan

Xenoxylon yixianense sp. nov.

Pl. 1, figs 1-5; Pl. 2, figs 1-5

Diagnosis—Pycnoxylic wood of the *Xenoxylon*-type. Growth rings visible. Tracheids with large, flattened, oval bordered pits on radial walls. Cross fields with a large window-like oval pit. Wood rays uniseriate. Transverse resin canals present.

Holotype—SZ001.

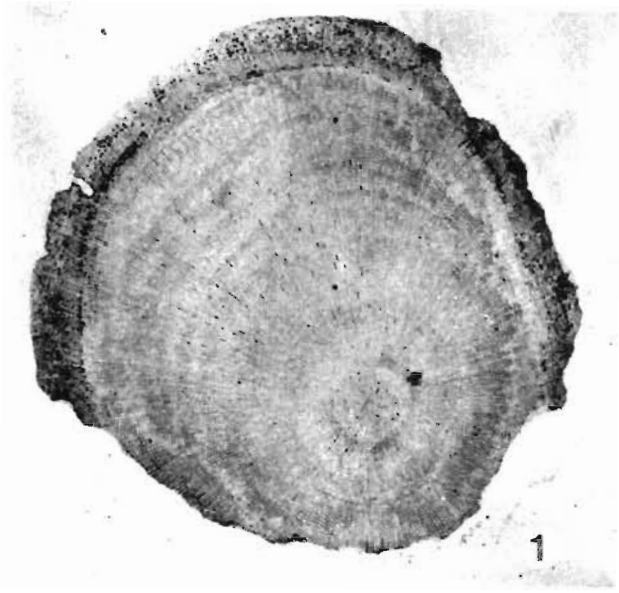
Repository—Fuxin Mining College, Fuxin, China.

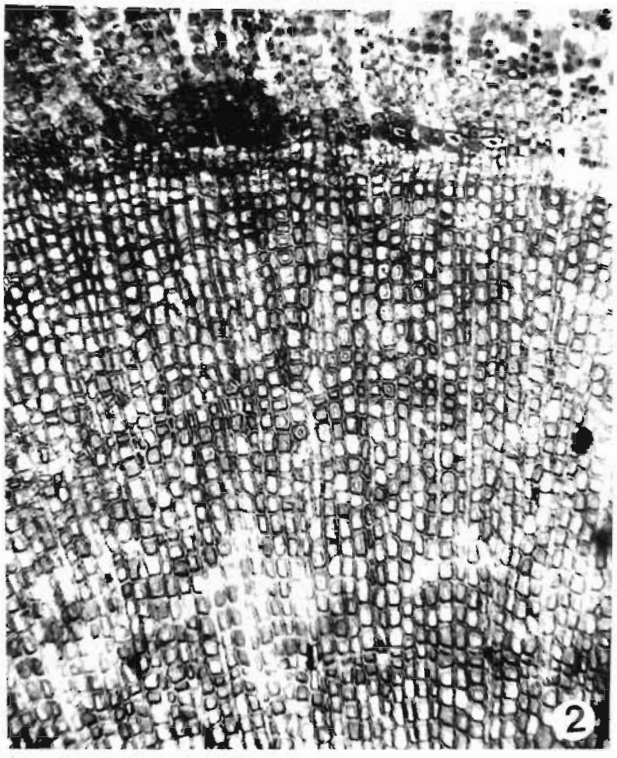
Etymology—Yixian, name of county from where the new species was found.

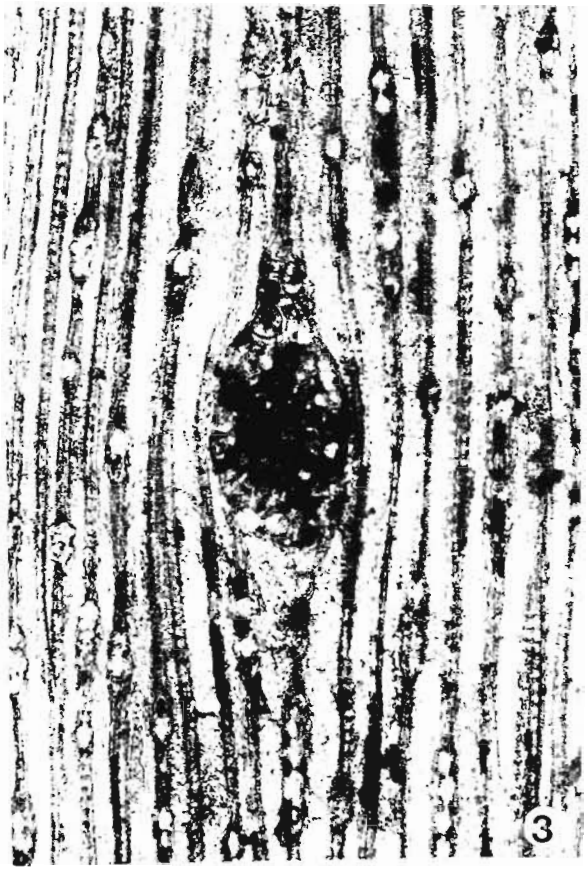
PLATE 1

All photographs are taken from the slides of the Holotype SZ001.

1-5. *Xenoxylon yixianense* sp. nov.
1-2. Transverse section: 1, showing growth rings and cortex, x 7; 2, enlarged from 1, showing early and late woods of xylem, and cortex and rays, x 32.
3. Tangential section showing uniseriate ray cells and transverse resin canals, x 200.
4. Radial section showing phloem parenchymatous cell (left), x 100.
5. Showing window-like pits in the cross-fields, x 300.







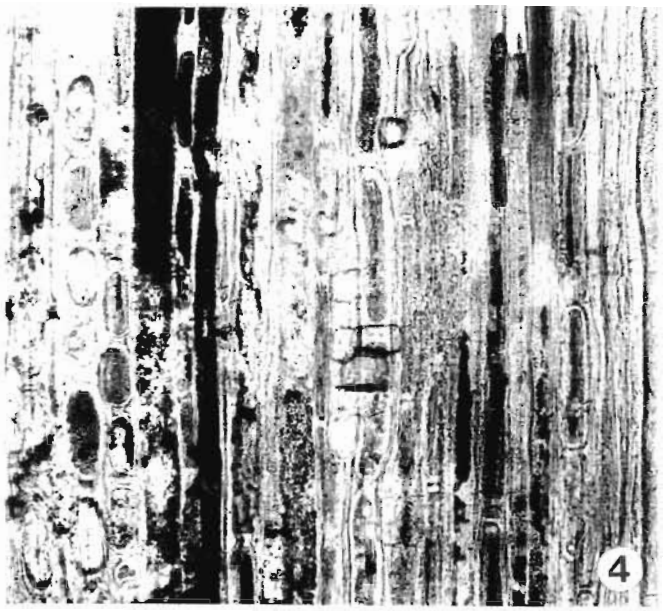
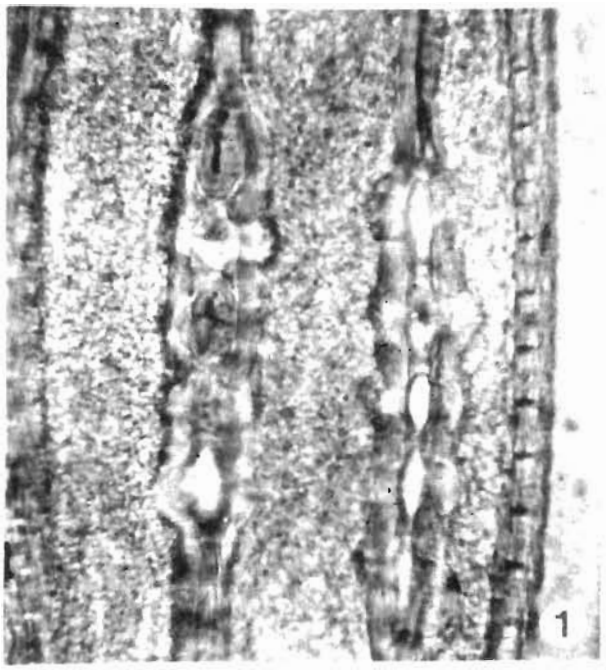
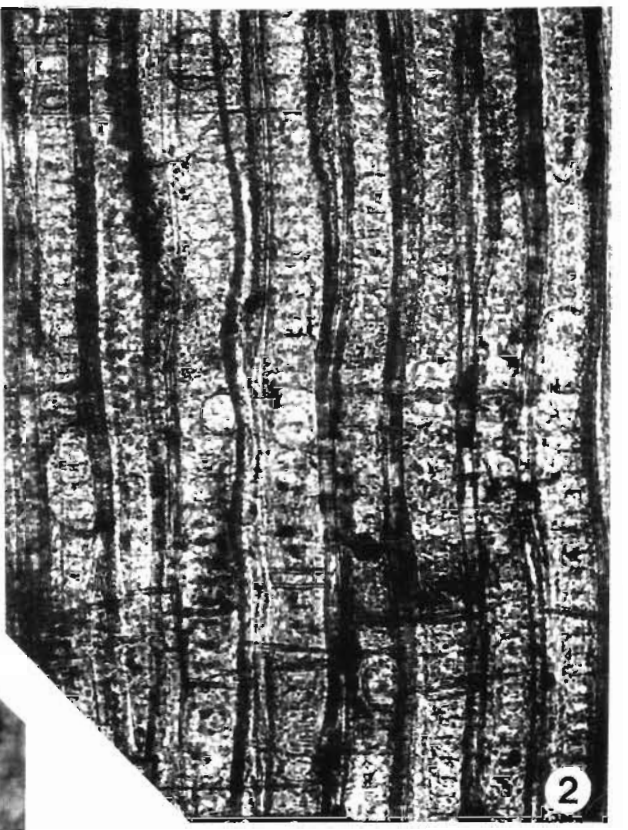
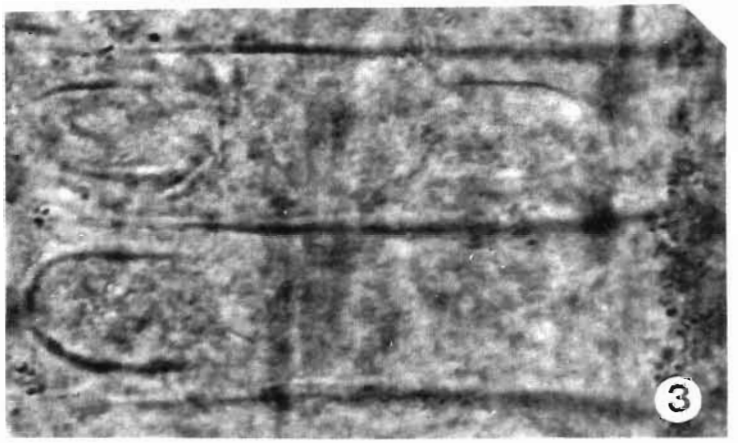
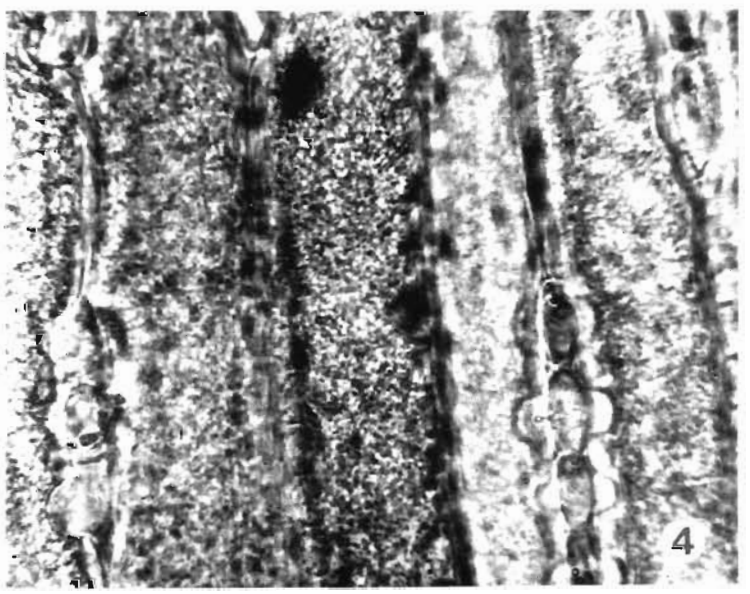


PLATE 1









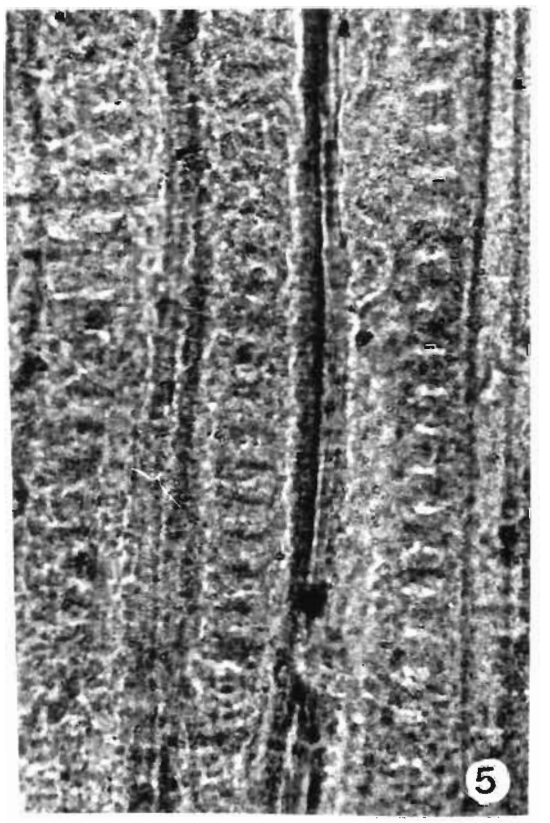
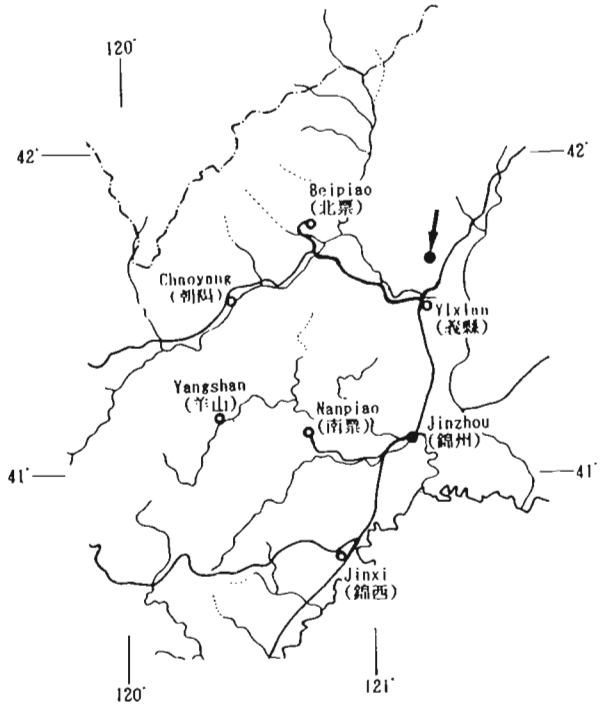


PLATE 2



Text-figure 1

Description—Anatomically, the wood consists of cortex, xylem tracheids, transverse resin canals and wood rays. The cortex is rather thick. Growth rings can be recognized but not so distinct in transverse section. The early wood is wider than the late one, ranging from 0.3-1.0 cm in width, while the late wood is 2-3 cells wide, all the cell walls are rather thin. In transverse section, the tracheid radial walls bear dense, uniserial bordered pits on the whole surface. In tangential section, transverse striations can be seen on the tracheid walls. In radial section, the cross-fields bear window-like oval pits with border or without. Wood rays are uniseriate, spindle-shaped with and straight and smooth transverse walls. The transverse resin canals can be seen in tangential section, spindle in shape, about 100 x 150 μm in size and 0-2 in number per mm^2.

Comparison and discussion—The new species differs from the known species of *Xenoxylon* (Cramer, 1868; Gothan, 1905; Sze *et al.*, 1963) in having transverse resin canals. Since transverse resin canals may be traumatically abnormal in nature, the new species is attributed to *Xenoxylon*. However, so far resin canals have never been found in the genus *Xenoxylon*. It seems not improbable that the new wood belongs to a new genus transitional taxonomically between *Xenoxylon* and the extant *Pinus*.

Palaeoclimatically, the thicker cortex, somewhat indistinct growth rings, narrower late wood, weakly thickened cell walls and the large resin canals in the new species seem to imply that the wood were probably growing under hot and arid climate which was seasonal but not so much varied in temperature. The purple-red sandstone bearing the wood from the lower part of the Shahai Formation also indicates hot and arid climatic situation during the earlier Early Cretaceous time.

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PLATE 2

1-5. *Xenoxylon yixianense* sp. nov

1, 4. Tangential section: showing ray parenchymatous cell and transverse striations on the tracheid wall, x 400.

2, 3, 5. Radial section: 2. showing pits on tracheids, and cross-fields, x 200; 3. showing window-like pits in the cross-fields, x 900. 5. showing uniseriate tracheid pits, x 300.