

NEW DICOT FOSSIL TRUNKS IN PYRRHOCLASTICS OF PRĂVĂLENI,  
METALLIFERI MTS.

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**Abstract.** -The paper comprises the anatomical study of 4 silicified fossil woods, found in a prevalent pyrrhoclastic formation of Upper Badenian-Sarmatian Age, from Prăvăleni, the Metalliferous Carpathians. Three of them were attributed to the following fossil species: *Carapoxylon porosum* (FELIX) MÁDEL 1960, (*Meliaceae*), *Platanoxylon bohemicum* PRAKASH 1971, (*Platanaceae*), *Magnolioxylon transilvanicum* NAGY&MÁRZA 1967, (*Magnoliaceae*) and the fourth was described as a new species: *Magnolioxylon acuminatum* n.sp. Thus we try to complete the paleoflora lists for the Zarand Sarmatian basin, and to bring new data for paleogeographical and paleoecological reconstructions.

**Key words.** Sarmatian, Dicotyledonatae, vessels, perforations, pits, rays, parenchyma, fibres

### 1. Introduction

Volcano-sedimentary and sedimentary formations which fill the Zarand Basin are considered of Neogene age: Upper Badenian-Sarmatian-Pannonian, without knowing if, in the Vârfuri-Prăvăleni area, there are formations older than of Badenian age, neither if the zone functioned before the Badenian as a connection between the Brad-Săcărâmb Basin and the Pannonic Basin. In the western marginal zone, at Miniş, the kossovian formations (Upper Badenian) start with a volcano-sedimentary term, probably equivalent to the tuffs with rhyolitic ignimbrites of Dej. Extracratereal eruptive rocks, prevalently andesitic, considered of Upper Badenian-Sarmatian age, may be at most Pannonian (after Berbelec et al., 1984), setting here, in the Prăvăleni Valley Basin, directly on Lower Cretaceous ofiolites and sedimentary, and are connected with Tălagiu-Bratosin Caldera situated in the neighbourhood. The formation is obviously pyrrhoclastic and passes laterally to epiclastic, preserving wood fragments and impressions and compressions of leaves, branches, seeds; it ranges gradually to the north-eastern part, to prevalent sedimentary rocks, more pelletical, with faunal elements which permitted to know its age and the correlations with similar formations of adjacent basins. From this formation of Prăvăleni were described by Nagy & Márza 1967, and Petrescu & Nuţu 1970, 1972, other fossil woods belonging to the genera *Magnolioxylon*, *Icacinoxylon*, *Laurinoxylon*, *Perseoxylon*, *Juglandoxylon*, *Quercoxylon*, *Alnoxylon* and *Taxodioxylon*. The presence of such a floristic association, constituted of tropical trees, suggests the paleoclimate of the Upper Miocene, for this area.

### 2. Systematic description

#### Family MAGNOLIACEAE

#### Genus *Magnolioxylon* HOFMANN 1952

#### *Magnolioxylon transilvanicum* NAGY&MÁRZA 1967

Plate I, Fig. 1-8.

**Macroscopical description:** A small piece of silicified wood was collected from the left side of the Prăvăleni Valley at the confluence with the Bodişteanu Brook, in the area of the village of Prăvăleni, from an Upper Badenian-Sarmatian

volcano-sedimentary formation; it is of 7/2/1.5 cm. in size and is light-coloured, redish-brown to rusty tinted. The wood structure is very fine, but under the magnifying glass one can observe wood rays, vessels and growth-rings typical of a mature Dicot.

#### Microscopical description:

**Cross section.** *Growth-rings* distinct. *Vessels:* wood semi-ring-porous, wide growth-rings with a gradual diminution of the vessel diameter from early to late wood; the boundaries of annual rings marked by terminal parenchyma, absence of vessels and fewer flattened fibres; oval-shaped vessels solitary, but frequently as radial multiples of 2-3, sometimes up to 5; often touch the rays and are moderately thick-walled (3  $\mu$ ), sometimes to thick, similar to the fibres; the radial to tangential mean diameter ratio is  $\text{Ør}/\text{Øtg}=92/68\text{m}$ ; the density is 28-30 vessels on sq.mm. The *Parenchyma* is usually apotracheal, as terminal bands of 3-4 cells broad, and rarely diffuse as scattered cells among the fibres; sometimes scanty-paratracheal is added as some cells around the vessels; the parenchyma cells are thin-walled, polygonal and very similar to the fibres; the content is fairly grey. *Rays* constituted of elongated cells, 1-3-seriate and usually bordered by regularly arranged square fibres; at the boundary of the growth-rings the rays are fairly dilated and the ray cells become nearly square; near the vessels the rays are not inflected and sometimes touch them. *Fibres* polygonal, moderately thick-walled, sometimes determining small intercellular schizogenous spaces; they represent the major part of the ground tissue.

**Tangential section.** *Vessels* with simple and scalariform perforations, on very tilted plates; on the endings, in the overlapping zones, there are simple or indistinctly bordered pits, minute and numerous, sometimes mixed with bigger bordered pits; small, simple or indistinctly bordered pits there are scattered on the rest of the vessel, but here the big scalariform pits are prevalent; vessel elements of 0.6-0.8 mm in length. *Parenchyma* - as rare upright cells with grey content. *Rays* mostly biseriate, the triseriate ones are rare and the uniseriate are very rare; the uniseriate have (2)5-7(12) rounded or fairly elongated cells in height, sometimes with

short biseriate portions or secretory cells, rounded and visibly bigger; the biseriates are spindle-shaped and constituted of rounded cells fairly polygonal and 1-3 cells in the endings, so heterogeneous - of Type II A (Kribs 1935), with 1-29 cells in height: (266)560-650(750) $\mu$ m; often vertically fused by uniseriate bridges of up to 9 upright cells; the triseriate are, in fact, biseriate rays with, here and there, triseriate short portions; up to 10 secretory cells, probably oil-cells, to the endings of the rays, but not terminally, and in the middle of the triseriate rays, one under another or scattered; the density of rays is 7-9 on mm. *Fibres* septated, with moderately numerous pits; their mean length is 1.3 mm.

**Radial section.** *Vessels* with simple perforations, tilted plates, and minute bordered pits; on the narrower vessels one can observe fine spiral thickenings. *Parenchyma* visible in the late wood as upright cells with dark content and minute simple pits; strands of up to 16 cells. *Rays* with a particular structure: procumbent cells in the early wood pass by square to upright cells in late wood, all of the same height like the thickness of the procumbent ones, 1-3 marginal rows of higher cells (upright); frequently simple minute numerous pits; secretory cells indistinct. *Fibres* with similar pits as tangentially.

**Discussions:** This specimen has similar features with the family *Magnoliaceae*, and the first comparison was made with the fossil species described here in 1967 by Nagy L. and Mărza I. The result was a near identity between our specimen and *Magnolioxylon transilvanicum* NAGY & MĂRZA 1967, which has, like ours, bi- and triseriate rays, platanoid dilatations at the boundary of the growth-rings, simple and scalariform perforations, bordered pits elongated to scalariform on vessels, simple and bordered with slit-like apertures to the ray cells, tracheids with spiral thickenings and scalariform pits.

Other fossil species of *Magnolioxylon* described are anatomically different, so:

- *Magnolioxylon michelioides* HOFMANN 1952 which has radial multiples of 3-5-7 vessels, paratracheal and terminal parenchyma, rays of two size: broad of 3-5 cells and uniseriate numerous;

- *Magnolioxylon sp.* PETRESCU 1970, also described at Prăvăleni, from the same formation, has badly preserved anatomical details, but with solitary vessels or in 2-3 radial multiples and 1-4-seriate rays.

For these reasons we have attributed our specimen to the species *Magnolioxylon transilvanicum* NAGY & MĂRZA 1967.

**Paratype** - I.G.R. Collection, no. 26280, (specimen P.28 and 3 sections)

**Locality** - Prăvăleni, Metalliferous Carpathians, Romania.

**Horizon** - Volcano-sedimentary Formation.

**Age** - Upper Badenian-Sarmatian.

### *Magnolioxylon acuminatum n. sp.*

(Plate II, Fig. 1-5)

**Diagnosis:** Growth-rings distinct. Wood semi-ring porous with unequal annual rings; vessels in radial multiples of 2-3,

up to 6-7 or in clusters of 2-4(7), rarely solitary or in tangential pairs, mean diameter ratio  $\text{Ør}/\text{Øtg}=84/66 \mu\text{m}$ , density is 105-120 vessels on sq.mm., simple perforations with horizontal or fairly tilted, moderately big pits, bordered, alternate to opposite, vasicentric tracheids with fine spiral thickenings, sometimes big tyloses thin-walled; vessel elements 0.44mm or more; apotracheal parenchyma as 2-3-uniseriate terminal bands inserted with fibres, sometimes sparse diffuse and rarely scanty paratracheal, but generally indistinct; rays badly preserved, usually uniseriate, short and with 1-4 or more secretory cells; homogeneous or slightly heterogeneous of type III (Kribs 1935); small in height (336-700  $\mu\text{m}$ ), density of 12-16 rays on mm.; ray cells with the same height, upright narrow and with a single big circular bordered pit, to procumbent with 1-2 rows of small bordered pits; fibres badly preserved, moderately thick to thick-walled, with rare minute bordered pits with point-like apertures.

**Macroscopical description:** The sample originates in the area of the village of Prăvăleni, in left side of the Prăvăleni Valley, at the confluence with the Bodișteanu Brook, and is a remnant of a silicified trunk with these sizes: 15/6/4 cm. The silicification is strong in the inner part of the sample and weaker superficially, where it is even spongy. The wood must have been dry before preservation, because it keeps insect traces. It is light-yellowish - superficially rusty tinted - and dark-brown in the inner part. Annual rings, pith rays and vessels conspicuous, typical of a Dicotyledonate. The original tree reconstructed after the curvature of growth-rings had approximately 40 cm. in diameter

### **Microscopical description:**

**Cross-section.** *Growth-rings* distinct, unequal. *Vessels:* wood semicircular-porous; in the early wood there are vessels with large lumina, closely arranged, while in the late wood the vessel diameter gradually diminishes and the vessels become more spaced; frequently radial multiples of 2-3 vessels, but up to 6-7, or in clusters of 3-4, up to 7 vessels in the early wood, in the late wood the multiples of 2-3 tending to predominate; rarely solitary vessels; sometimes tangential pairs appear in the multiples; the mean radial and tangential diameter ratio is  $\text{Ør}/\text{Øtg}=84/66 \mu\text{m}$ ; the density is 105-120 vessels on sq. mm. *Parenchyma* mostly destroyed, but appears to be of apotracheal type, as 2-3 uniseriate terminal bands inserted with fibres, and diffuse as scattered cells among the fibres; sometimes scanty-paratracheal as some cells around the vessels to incomplete sheaths. *Rays* uniseriate, badly preserved, rarely biseriate, especially in the early wood. *Fibres* polygonal, thick-walled in the late wood (6-7m), thinner in the early wood, when they are worse preserved.

**Tangential section.** *Vessels* with simple perforations on transversal or slightly tilted plates, but very tilted too; determining overlapping tapered vessel endings; moderately big bordered pits, alternate to somewhat opposite; few vasicentric tracheids with fine spiral thickenings; sometimes big and thin-walled tyloses; vessel elements of 0.44 mm. or more in length. *Parenchyma* indistinct. *Rays* exclusively uniseriate, with (10)15-24(36) cells in height (336-464m up to 700  $\mu\text{m}$ ), nearly square shaped and with 1-4 or more oval cells fairly larger, but equally high, interspersed among the

ordinary ones, having a bright grey content, probably oil or mucilage; the terminal cells are higher and narrower; heterogeneous of type III (Kribs 1935); ray cells sometimes with dark deposits; density of 12-16 rays on mm. *Fibres* with rare small and bordered pits with point-like apertures.

**Radial section.** *Vessels* with simple tilted perforations, with moderately big bordered pits, alternate to opposite; tyloses present. *Parenchyma* indistinct. *Rays* from upright narrow cells with a single big circular bordered pit, passing by square cells with the same height to procumbent cells with the thickness like the height of the upright ones, and with small bordered pits arranged in 1-2 rows; sometimes the outer cell walls of the marginal row are slightly swollen out. *Fibres* with rare minute pits.

**Discussions:** The essential features of this specimen are similar to those of *Magnoliaceae*, and much more, to the *Magnolia* genus, which has small numerous vessels, rarely solitary, usually as 2-3(4-7) radial multiples or clusters of 2-7 vessels, simple perforations, big bordered pits opposite to scalariform, apotracheal parenchyma as short uniseriate bands and scanty-paratracheal, uniseriate rays, short and heterogeneous with 1-4 secretory cells, 12-16 rays on mm, fibres bordered pitted (after Metcalfe & Chalok 1950). The similarity with extant species *Magnolia acuminata* L is very obvious., as described by Greguss 1959 in "Hölzanatomie der Europäischen Laubhölzer und Sträucher", p. 150, Plate 80. The comparison with fossil species is unsatisfactory, so:

- *Magnolioxylon michelioides* HOFMANN 1952 has radial multiples of 3-5-7 vessels, paratracheal and terminal parenchyma, two size rays: of 3-5 cells broad and uniseriate numerous;

- *Magnolioxylon sp.* described by Petrescu in 1970, on a badly preserved sample from the same formation, has usually solitary vessels or small multiples of 2-3, and 1-4-seriate rays;

- *M. transilvanicum*, the species described at Prävăleni by Nagy & Mărza in 1967, has bi- and triseriate rays with platanoid dilatations at the growth ring boundary, scalariform perforations rarely simple, elongated to scalariform bordered pits on the vessels, bordered pits with slit-like apertures on the fibres and simple pits on the ray cells, and tracheids with spiral thickenings and scalariform pits;

- Our specimen has exclusively simple perforations, not very obvious terminal parenchyma, exclusively uniseriate rays with 1-4 secretory cells and the pattern of distribution of the vessels in cross section is different from the Nagy & Mărza species.

Because of the obvious similarity with extant species *Magnolia acuminata* L., we decided to name our specimen *Magnolioxylon acuminatum* n. sp.

**Holotype** - I.G.R. Collection, no.26281, (specimen P.26 and 3 sections)

**Locality** - Prävăleni, Metalliferous Carpathians, Romania.

**Horizon** - Volcano-sedimentary Formation.

**Age** - Upper Badenian-Sarmatian.

## Family MELIACEAE

### Genus *Carapoxylon* MÄDEL 1960

#### *Carapoxylon cf. porosum* (FELIX) MÄDEL 1960 (Plate III, Fig. 1-6)

**Macroscopical description:** The sample was found on the left side of the Prävăleni Valley, at the confluence with Bodișteanu Brook, in Prävăleni village area, in an andesitic volcano-sedimentary formation of Upper Badenian-Sarmatian age; it was like a splinter, a little curved, of silicified fossil wood, with these sizes: 7/4/3.5cm., white-yellowish to brownish coloured, which got fragmented when it was worked. Under the magnifying glass you can see annual rings, short fine and fairly sinuous pith rays and vessels, typical features of a Dicotyledonate.

#### **Microscopical description:**

**Cross section.** *Growth-rings* distinct. *Vessels:* wood semi-ring-porous, with numerous solitary vessels, but in radial multiples of 2-3(4-5) too; oval-shaped, rarely circular; moderately thick-walled; frequently solid brown deposits; into a growth-ring, the lumina is gradually diminishing; mean diameters ratio is:  $\text{Ør}/\text{Øtg}=87/57\mu$ ; density is 40-60 vessels on sq. mm. *Parenchyma* of apotracheal type, as some short uniseriate lines or longer, inserted between the uniseriate lines of fibres and realising terminal bands; diffuse - as scattered cells between the fibres; the parenchyma cells are very similar to the fibres in shape and size, and have dark contents. The *Rays* are rather thin, of two sizes: the broad ones have on 2-3 annual rings continuity and the thin ones have on only one; in the proximity of the vessels have a fair inflexion and they can touch them, but generally they have a specific curly tract; dark content in the ray cells. *Fibres* polygonal, thin-walled but moderately thick at the boundary of the growth ring.

**Tangential section.** *Vessels* with simple perforations; spiral thickenings on small lumina vessels, conspicuous and narrow spaced; round to oval bordered pits, numerous and small, opposite to alternate, with circular apertures ( $6\mu$ ) to horizontally elongated, sometimes coalescent; rarely big tyloses thin-walled; sometimes a yellowish substance fills portions of vessels; vascular elements of 0.50-0.64 mm in length. *Parenchyma* indistinct. *Rays* of two sizes: the uniseriate, relatively numerous, with 3-12 cells in height (up to 200  $\mu$ ), round or fairly upright - mixed; the multiseriate, of 2-4 cells broad and 10-77 cells in height ( $600-800\mu$ ); the uniseriate endings are of 1-8 rounded cells, the terminal narrower and elongated; heterogeneous of Type II A (Kribs 1935), though tend to be homogeneous, with the component cells more rounded and more equal in size ( $12\mu$ ); gum-remnant content; sometimes one can observe marginally, bright, bigger, rounded cells, which are probably secretory ones. The density is 8-10 rays on mm. *Fibres* badly preserved, with simple, rare, minute pits, in a single vertical row.

**Radial section.** *Vessels* with small bordered pits, opposite to scalariform, coalescent apertures - especially at the extremities of the vessels, in the early wood; in the late wood the pits on the vessels are mixed, big simple with smaller borders, smaller but with visible circular apertures; pits with coalescent apertures can be found on all the narrower vessels; usually they contain rare solitary crystals, but in some vessels there

one can observe a crystal-sand of fine reddish crystals, with a fine-glomerular aspect, sometimes closing the lumina. *Parenchyma* constituted of nearly square cells, empty, appear in strands of up to 2-4. *Rays* formed of procumbent cells in the early wood, passing by square cells to upright narrow cells, of the same height, in the late wood; small bordered pits (3 $\mu$ ) in two rows on the procumbent cells (early wood), and a single pit, big round to oval, with circular aperture in the late wood; sometimes big solitary crystals; usually 1 row of marginal upright cells. *Fibres* with fine spiral thickenings, visible in the late wood; minute rare simple pits; septated.

**Discussions:** The essential features of our specimen seems to be similar to the features of *Meliaceae* Family (after Metcalfe & Chalk 1950, Greguss 1959, Mädel 1960), sending to the genus *Carapa* AUBL., usually known as mahogany.

The fossil genus *Carapoxylon* MÄDEL 1960 shows similitudes in the pattern of vessels distribution and of the relatively thin rays, in the presence of simple perforations and of the terminal parenchyma and also of the solitary crystals in ray cells and vessels. From the fossil species described so far, our specimen is most similar to *Carapoxylon porosum* (FELIX) MÄDEL 1960. This species initially described by Felix in 1894 as *Taenioxylon porosum* (*Sapotaceae*), was revised and redescribed by Erica Mädel (1960), as nov. comb.: *Carapoxylon porosum*. Our specimen is very similar to it by the distribution pattern of the vessels, of the rays and of the terminal parenchyma, by the presence of the simple perforations, the small pits and the crystals in ray cells, but in our specimen we described a tendency of coalescence to scalariform pits at the extremities of vessels, and we did not observe crystals in parenchyma cells. By the absence of some specific features, our specimen is different from these fossil species:

- *Carapoxylon fasciatum* (FELIX) MÄDEL 1960, which has paratracheal and banded parenchyma, and secretory ducts;

- *C. ornatum* MÄDEL 1960, which has banded apotracheal parenchyma, secretory ducts and crystals in parenchyma cells;

- *C. heteroradiatum* PETRESCU 1978, with mostly solitary vessels, medium sized, only alternate pits, mostly triseriate rays and weakly developed parenchyma as terminal, scanty paratracheal or very few diffuse;

- *Entandrophragmoxylon lateparenchyma-tosum* PETRESCU 1978, with exclusively simple perforations, only alternate pits and without spiral thickenings or tyloses on the vessels, terminal parenchyma very developed (4-8-10-20 rows broad);

- *Meliaceoxylon matrense* GREGUSS 1969 has paratracheal parenchyma and longitudinal ducts with golden-yellow or darker coloured content of latex, gums or resins.

The features of our specimen can be so summarised as: semi-ring-porosity, oval small vessels, solitary and in 2-3(4-5) radial multiples, 40-60 vessels on sq.mm., simple perforations, spiral thickenings, small pits opposite or alternate, sometimes scalariform, solid deposits and more rarely crystals and tyloses in the vessels, elements of 0.50-0.64mm in length; terminal parenchyma; 8-10 rays on mm., curled, with limited development: the uniseriate numerous,

on a single growth ring, the multiseriate (2-4 cells broad) on 2-3 rings; heterogeneous rays, with a tendency to become homogeneous, sometimes with secretory marginal cells; pits, dark gums and solitary crystals in the ray cells; fibres thin to moderately thick-walled, septated, with spiral thickenings and simple pits.

After a critical analysis of these comparisons we decided to assign our specimen to the species revised and redescribed by Erica Mädel from the European Tertiary, by the name of *Carapoxylon cf. porosum* (FELIX) MÄDEL 1960.

**Paratype** - I.G.R. Collection, no.26279, (specimen P.26 and 3 sections)

**Locality** - Prăvăleni, Metalliferous Carpathians, Romania.

**Horizon** - Volcano-sedimentary Formation.

**Age** - Upper Badenian-Sarmatian.

#### Family PLATANACEAE

Genus *Platanoxylon* ANDREÁNSZKY 1951

*Platanoxylon bohemicum* PRAKASH 1971

(Plate IV, Fig. 1-6.)

**Macroscopical description:** The remains of silicified fossil wood found on the left side of the Prăvăleni Valley, at the confluence with the Bodișteanu Brook, in the area of the village of Prăvăleni, was a piece of 7/2.5/2.5 cm., which got fragmented when it was worked. It is black coloured, probably it was carbonized before silicification, and has fine fissures filled with white opal. By the magnifying glass one can see transversal, annual rings, broad pith rays and vessels, typical structure of a Dicotyledonate.

#### Microscopical description:

**Cross-section.** *Growth-rings* distinct. *Vessels:* wood semi-ring-porous with the fine histological details badly preserved; circular to oval solitary vessels, sometimes in radial multiples of 2-3 and tangential pairs due to the overlapping endings, rarely as clusters of 4-5 smaller vessels in the late wood; the diminution of the vessels from early to late wood is gradual; the limit of the growth-ring is marked by terminal bands of fibres; the mean radial and tangential diameter ratio is:  $\text{Ør}/\text{Øtg} = 75/57\mu$ ; the density is 110-120 - up to 160 vessels on sq. mm. *Parenchyma* indistinct. *Rays* mostly broad, up to 200  $\mu$ , frequently dissected; the inner part of the rays is fairly disintegrated, so the cell shapes are not distinct in this section, but the rows of marginal cells with a dark content, preserved the shape of the rays; fine rays are very rare. *Fibres* polygonal, thick-walled.

**Tangential section.** *Vessels* with simple perforations; opposite bordered pits with circular to coalescent apertures on big lumina vessels and transitional to scalariform pits, even reticulate, on small lumina vessels; sometimes remnants of red solid deposits. *Ground tissue elements* indistinct. *Rays* exclusively multiseriate, broad (310-528 $\mu$ ), and high (2.0-4.9mm); broad sheets of rather indistinct marginal cells with frequent rhomboidal big solitary crystals, sometimes with ghosts of hypertrophied cells with a reddish content, probably of secretory cells; the inner part of the rays appear to be

disintegrated.

**Radial section.** Vessels with simple perforations and scalariform: tilted plates with up to 20 fine and rare bars; alternate to opposite bordered pits with oval to horizontal slit-like apertures, sometimes coalescent; on small lumina vessels the pits are scalariform. Ground tissue elements indistinct.

Rays with the sheets of up to 4 cells broad, all procumbent but taller than inner cells, where all are procumbent, narrow and mixed with almost square empty cells of the same height; marginal parts of the ray constituted of 1-7 rows of procumbent cells taller than the ordinary ones and fewer upright cells; heterogeneous of Type II A (Kribs 1935), with a tendency to become homogeneous; there is sometimes, in the taller cells, a crystal-sand of small transparent crystals; pits on the ray cells.

**Discussions:** The vessel distribution pattern and the platanoid dilatations of the rays at the growth-rings boundary suggest that our specimen can belong to *Magnoliaceae* or *Platanaceae*. But *Liriodendron tulipifera* L. (after Metcalfe & Chalk 1950, Greguss 1959, Prakash, Brezinova & Buzek 1971) and similarly *Liriodendroxylon tulipiferum* PRAKASH 1971 have exclusively simple perforations, or our specimen has simple and scalariform perforations, as the planes have.

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- From the extant *Platanaceae*, the anatomical features of *Platanus orientalis* L. (in Greguss 1959, pl. 79) and *P. acerifolia* WILLD. (in Prakash, Brezinowa, Buzek 1971, pl. 39, Fig. 45, 47), are very similar to those of our specimen.
- The comparison with fossil species shows differences of *Plataninium* sp. (UNGER) emend. VATER 1884, and of *Hedycarioxylon subaffine* (VATER) SUSS 1960, revised after *Plataninium subaffine* VATER 1884 and included in Monimiaceae. Also, it is not similar to *Platanoxylon porosum* (FELIX) PETRESCU 1970, in the vessel distribution pattern, the perforations and the pits of the vessels and of the fibres. It is different from *P. obbruxelense* (STOCK.) PETRESCU 1970, which has a disorganised structure, very small vessels, rays not broad (under 300 $\mu$ ), and scalariform perforations.
- Because it has similitudes up to identity with *Platanoxylon bohemicum* PRAKASH 1971, (described by Prakash in Prakash, Brezinowa, Buzek 1971, p. 115, pl. 39, Fig. 44, 46), we have attributed our specimen to this species.
- Paratype** - I.G.R. Collection, no.26282, (specimen P.26 and 3 sections)
- Locality** - Prävăleni, Metalliferous Carpathians, Romania.
- Horizon** - Volcano-sedimentary Formation.
- Age** - Upper Badenian-Sarmatian.
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## Captions of Plates

### PLATE 13. I

Figs. 1-8 - *Magnolioxylon transilvanicum* NAGY&MÂRZA 1967. I.G.R. Coll., no. 26280.

- Fig. 1. Cross-section: annual rings marked by terminal parenchyma, vessel distribution, fine rays with platanoid dilatations at the ring-boundaries. x 30.
- Fig. 2. Cross-section: biseriate rays with platanoid dilatations at the ring boundary, pores solitary, short radial multiples and clusters, fibres-fibrotacheids, terminal parenchyma. x 75.
- Fig. 3. Cross section: uni- and biseriate dilated at ring-boundary rays, solitary pores and fibres rather indistinct, terminal parenchyma band. x 75.
- Fig. 4. Tangential section: biseriate spindle-shaped rays, intervessel scalariform pits. x 125.
- Fig. 5. Radial section: detailed Fig. 8, pits in cross-fields. x 300.
- Fig. 6. Tangential section: uni- and biseriate rays, intervessel scalariform pits, slightly tilted plates simple perforated. x 125.
- Fig. 7. Tangential section: detailed Fig. 6, vessel scalariform pitted. x 300.
- Fig. 8. Radial section: ray cells all procumbent, more than 4 rows of marginal cells taller. x 150

### PLATE 13. II

Figs. 1-5. - *Magnolioxylon acuminatum* n. sp. I.G.R. Coll., no. 26281.

- Fig. 1. Cross-section: annual rings, semi-ring-porosity, vessel distribution. x 30.
- Fig. 2. Cross-section: big vessels in radial multiples in early wood, to smaller paired or solitary vessels in late wood; uniseriate rays rather indistinct; fibres. x 50.
- Fig. 3. Tangential section: uniseriate rays, horizontal or tilted plates simple perforated. x 70.
- Fig. 4. Tangential section: uniseriate rays, secretory ray cells (bright), simple perforated plates, very numerous vessels. x 70.
- Fig. 5. Tangential section: uniseriate rays with bright secretory cells, bordered pits very indistinct (right), short elements, fibres. x 85.
- Fig. 6. Radial section: procumbent and square ray cells pitted in cross-field, pits on the vessel wall. x 160.

### PLATE 13. III

Figs. 1-6. - *Carapoxylon cf. porosum* (FELIX)MÄDEL 1960. I.G.R. Coll., no. 26279.

- Fig. 1. Cross-section: annual rings with boundaries marked by terminal parenchyma, curled rays, distribution of vessels. x 30.
- Fig. 2. Cross-section: detail, round or oval solitary pores with or without brown content, curled rays, terminal parenchyma. x 100.
- Fig. 3. Tangential section: spindle-shaped rays, dark gums in ray cells, simple perforated plates slightly tilted. x 30.
- Fig. 4. Tangential section: two sizes rays, multiseriates high, dark gums in ray cells, simple perforation. x 60.
- Fig. 5. Tangential section: intervessel bordered pits opposite to alternate, with circular apertures. x 160.
- Fig. 6. Radial section: elliptical simple perforation, opposite pits on vessel, pits in cross-field rather indistinct, on procumbent ray cells. x 160.

### PLATE 13. IV

Figs. 1-6. - *Platanoxylon bohemicum* PRAKASH 1971. I.G.R. Coll., no. 26282.

- Fig. 1. Cross section: semi-ring-porosity, rays of two sizes with platanoid dilatations at the boundary of annual rings. x 45.
- Fig. 2. Cross-section: details of Fig. 1, distribution of the pores, fibres, ray cells indistinct. x 70.
- Fig. 3. Tangential section: two size rays, broad rays with small ray cells. x 70.
- Fig. 4. Tangential section: intervessel bordered pits spaced and crowded, opposite to scalariform, with circular, but most elliptical to coalescent apertures. x 150.
- Fig. 5. Tangential section: opposite to scalariform pits on crowded vessels, uniseriate ray. x 200.
- Fig. 6. Radial section: ray cells all procumbent, someones with dark content, someones empty. x 130.