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A NEW CONTRIBUTION TO THE KNOWLEDGE OF ROMANIAN FOSSIL FLORA

RAZVAN GIVULESCU [1], VLAD CODREA [2] and MATEI VREMIR [2]

[1] Donath str. 17/M2/66, 3400 Cluj-Napoca, Romania
[2] University "Babes-Bolyai", Dept. of Geology-Paleontology, Kogalniceanu Str., 3400 Cluj-Napoca, Romania

ABSTRACT. A new fossil plant material for the Romanian palaeoflora is described: endocarps of *Mastxia amygdalaeformis*. It was found in the Miocene deposits located at Oarda de Jos, near Alba Iulia, the main town of Alba County (Transylvania).

KEY WORDS: *Mastixia amygdalaeformis*, Miocene, Romania

INTRODUCTION

On the occasion of some geological and paleontological surveys carryed on in the Oarda de Jos area, one of the authors succeded in finding an interesting paleobotanical material. It enrichs with a new family and genus the Neogene fossil flora from Romania.

GEOGRAPHICAL AND GEOLOGICAL FRAME

The material was discovered in the deposits cropping out in the right bank of Sebes Valley, into the Oarda de Jos (Alba County) communal limits, exactly in line with the built landmark announcing the entrance in the city of Alba Iulia (Fig. 1). Here, in a little outcrop, a fragment of an incarbonized trunk was discovered. This trunk yelded some endocarps preserved well enough. The succession comprises mainly psephites, but also thin, discontinuous layers of coals. In fact, these deposits are lying under the classical profile from "Râapa Roşie", the famous geological reservation from Sebes-Alba. In this area, Meszaros et al. (1969) distinguished:

a. an "old" variegated complex, beginning with conglomerates and sandstones followed by aleurites and silts. The age of this complex was assigned to the interval comprised between Upper Cretaceous-Upper Eocene;

b. Upper Eocene-Lower Oligocene marine deposits;

c. a "new" variegated complex, subdivided in:

c.1. – a lower part, deposed between the Lower Oligocene and Egerian, ended by an *Ostrea aginensis* level and

c.2. – an upper part, which age was estimated as an Egerian-Lower Badenian one.

Recently, Mészáros (personal communication) separed on these arguments three formations: Sard, Bilag and Rapa Rosie. Among these three formations, the last one is of special interest for us. This formation is dominated by red deposits, where psammo-psephites are extremely well represented. As for the fossiliferous content, we can mention that the paleontological material is very scarce and dispersed. It belongs mainly to tetrapods: here has been collected skeleton fragments of chelonians and dinosaurs, but all these bones are marked by reworking processes (Grigorescu 1987 and some materials collected by us, unpubl.). It is worth to mention that a similar paleontological material (unfortunately lost), collected probably by the end of the last century, unleashed a dispute between Koch (1900) and Nopcsa (1905). The first assigned these re-

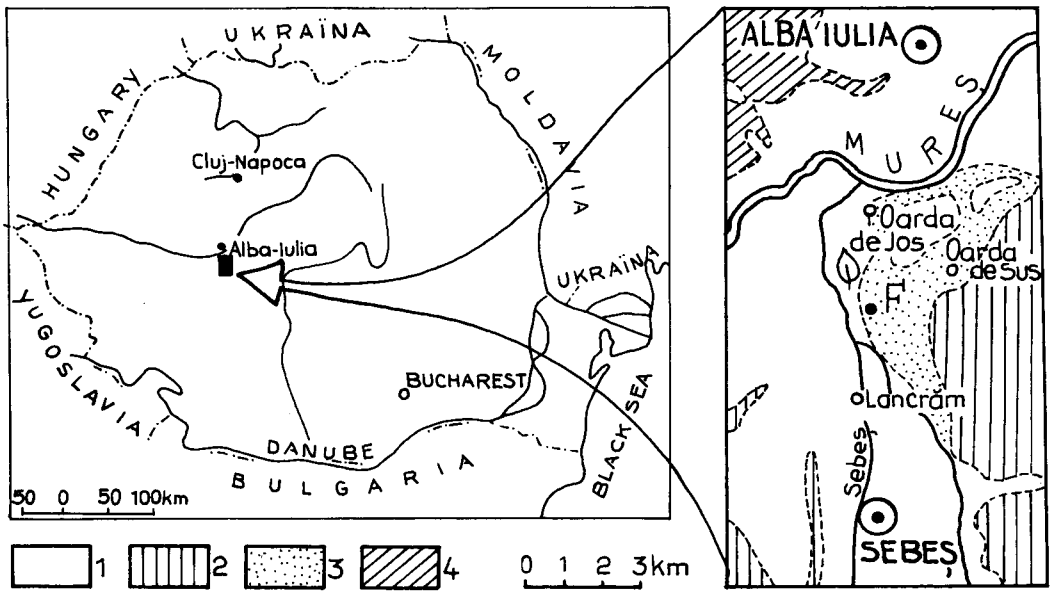

Fig. 1. Location of the occurrence on the map of Romania. 1. Quaternary 2. Neogene 3. Egerian 4. Eocene

mains to a rhinocerotid, "*Aceratherium* cf. *goldfussi*", while the second one believed that the same material belonged to sauropod dinosaurs, rejecting a mammalian appartenence. In any case, in the same occurrence, we succeded in finding some remains belonging undoubtly to mammals.

As for the age, on the geological map of Romania (1968, scale 1: 200 000), on the southwestern margin of the Transylvanian Basin, the whole area comprised between the localities: Vurpar-Ighiel-Hapria-Sebes was assigned to the Oligocene. However, such a simple geological situation is however unreal. Recently, Grigorescu (1987) gave an almost complete synthesis of discussions concerning the disputed age of these deposits.

PALEONTOLOGICAL DESCRIPTION

The material at our disposal comprises four seeds, obviously reworked, but very typical. It allowed us to assign doubtless to the taxon *Mastixia amygdalaeformis* (v. Schlotheim) Kirchheimer. Specimens are housed in the paleobotanical collection of the Museum of Transylvanian Basin (MTB) from Cluj, inv. No 703.

Mastixiaceae
Mastixia Blume
Mastixia amygdalaeformis
(v. Schlotheim 1822) Kirchheimer 1957
(Fig. 2)

1822. *Carpolithes amygdalaeformis* v. Schlotheim. Nachträge z. Petrefaktenkunde: 98, T. 21, f. 7.
1832. *Carpolithes amygdalaeformis* v. Schlotheim. Merkwürdige Versteinerungen aus der Petrefaktensammlung des Freiherrn von Schlotheim : 21, T. 2, fig. 7.
1852. *Nyssa rugosa* Weber. Palaeontogr. 2: 185, T. 20, f. 10.
1864. *Zizyphus pistacina* Unger. Denkschr. k. Akad. Wiss. math. nat. wiss. Kl. 22: 16, T. 3, f. 38.
1913. *Zizyphus pistacina* Ung. Menzel. Jb. Preuss. geol. L.A. 34: 44–45, T. 4, f. 30 c.
1934. *Mastixia pistacina* (Unger) Kirchheimer. Braunkohle 33: 773, fig. 11.
1957. *Mastixia amygdalaeformis* Kirchheimer. Laubgew. Braunkohlenzeit: 223, T. 9, f. 6, T. 39, f. 155.

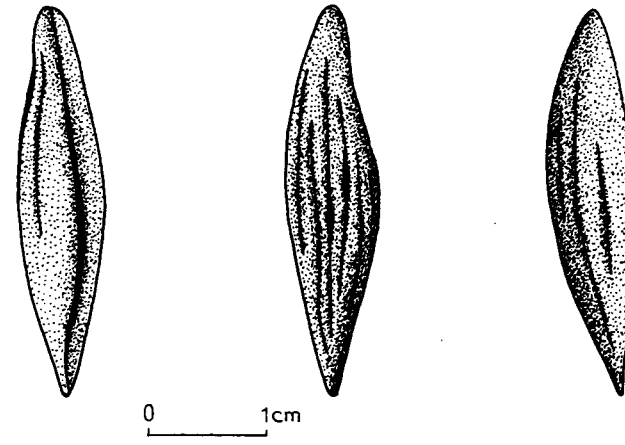

Fig. 2. *Mastixia amygdalaeformis*. Endocarps. Oarda de Jos

1961. *Mastixia amygdalaeformis* (v. Schloth.) Kirch., Szafer. Mioc. flora Gliwic: 77, T. 2, f. 9–14.
1964. *Mastixia amygdalaeformis* (v. Schloth.) Kirch. Mai. Palaont. Abh. 2,1: 42, 81, 97, 114, T. 8, f. 1, 2, T. 12, f. 16, 17, T. 15, f. 15, 16.
1991. *Mastixia amygdaloides* (v. Schloth.) Kirch. Mai et Walther. Abh. Staatl. Mus. Mineral. Geol. Dresden. 38: 112.

Description. Endocarps, 33.0–36.6 mm long and 7.0–8.5 mm broad, spindleshape, with pointed tips: the upper less pointed, the lower more or less pointed. The surface of materials well preserved is rough, with longitudinal, anastomosis furrows. At our material, these furrows are not so conspicuous, because they here destroied by transport and reworking. The ventral side of endocarp is weakly bended, while the dorsal one is traversed longitudinaly by a narrow groove, resulted by invagination. In this manner, endocarps present a bilateral symmetry.

DISCUSSION

Our material obviously resembles with that was described in the paleobotanical literature under the name *Mastixia amygdalaeformis*. According to Kirchheimer (1957), which had the possibility to measure a very great number of endocarps, their dimensions are comprised between the following intervals: lengths – 9–35 mm; widths (in the middle) – 4–16 mm. Our dimensional data agree very well with.

Mastixia amygdalaeformis is a typical form for the young floras with Mastixioideae, largerly spread in Central and Western Europe between Upper Oligocene-Miocene. According to Szafer (1961) and Mai (1964) the last occurrence seems to be positionated in the Upper Badenian from Gliwice.

The *Mastixia* genus is nowadays restricted to South-Eastern Asia. It includes trees growing in the area of evergreen rain-forests or in mountain rain-forests. It is a typical paleotropical element (or of tropical-subtropical type, in Szafer's classification (1961)), with hidromegatherm exigences (Mai 1964). As a paleoclimatic marker, Mai and Walther (1985) agree that it would indicate "humidsubtropische" conditions, i.e. wet subtropical conditions. Also Mai (1981), mentioned some types of a subtropical vegetation, north from tropics, or in highland areas of tropical zones.

It worths mentioning also that in the Lower Badenian from Castau (Orastie), 35 km westward, a little flora has been discovered, including: *Daphnogene polymorpha, Neolitsea magnifica, Ocoteophyllum badenicum, Laurophyllum* cf. *pseudoprinceps, Pinus* sp., *Fraxinus ungeri* and *Ulmus bronni* (Marincas & Givulescu, 1955, Givulescu, in printing). The endocarps described here would fit very well, from a paleoclimatic point of view with this flora, completing the general vegetational picture of this area.

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