Representatives of \( \text{Cryptocaryoxylon} \) have been reported in the literature only three times: a) type species \( \text{C. gippslandicum} \) Leisman (Leisman 1986) from the late Eocene-Oligocene (39 Ma) of Australia, b) \( \text{C. hancockii} \) Wheeler et Manchester, \( \text{C. meeksii} \) Wheeler et Manchester and \( \text{C. radiporosum} \) Wheeler et Manchester (Wheeler and Manchester 2002) from the middle Eocene of Oregon, USA and c) \( \text{C. oleiferum} \) Ramos, Brea et Kröhling which was recently found in the Late Pleistocene of Argentina (Ramos et al. 2015).

Leisman (1986) based the diagnosis of \( \text{Cryptocaryoxylon} \) on the characteristics of the extant genus \( \text{Cryptocarya} \), the wood anatomy had been fully described previously by Richter (1981).

Localities and geology

The specimens described herein are from a new locality in the southern part of the Island of Lesbos and from the Central-Eastern part of Lemnos Island in the Aegean Sea in north-eastern Greece (Text-fig. 1).

New plant fossiliferous localities from the southern part of Lesbos Island (Polichnitos Region) were discovered in 2011, and described in detail from a palaeoxylotomical, geological and stratigraphical point of view, along with new identification of...
the historical material from the western peninsula (Mantzouka et al. 2013, 2016, 2017, Mantzouka 2016). The fossil wood remnant studied here was found inside a volcanic layer of early Miocene age which is overlain by the Polichnitos Ignimbrite (PU Unit), dated at 17.2 Ma (Borsi et al. 1972, Lamera 2004, Lamera et al. 2004) in the area of Damandri.

The geology of Lemnos Island was studied in detail by Roussos (1993). In his opinion, the sedimentary basement rocks can be divided into a) a Lower Unit (late Eocene to early Oligocene), which covers the largest part of the island, and b) an Upper Unit (early Oligocene). Towards the top, the Upper Unit is composed of terrestrial fluvial sediments (including conglomerates and sandstone). Half of the sedimentary basement of Lemnos Island is unconformably overlain by lower Miocene volcanic rocks. The fossiliferous localities are found in the areas with lower Miocene volcanic tuffs. The fossil wood material studied in this paper comes from Moudros area which belongs to the Romanou Unit and is aged as 22.3 ± 0.7 Ma (Pe-Piper et al. 2009).

Material and methods

Preparation of the thin sections was carried out in the Department of Historical Geology and Paleontology, Faculty of Geology and Geoenvironment, National and Kapodistrian University of Athens. Microscopic observations were made with an Olympus BX51 microscope, Olympus DP73 camera and QuickPHOTO MICRO 3.0 image analysis software. Anatomical descriptions follow the IAWA Hardwood List (IAWA Committee 1989). Each vessel was assessed separately, both for density and for vessel grouping percentage, as proposed by Wheeler (1986). Identification was made with reference to the InsideWood Web site (InsideWood 2004–onwards, http://insidewood.lib.ncsu.edu/search (last visit 5. 11. 2017); Wheeler 2011). Idioblast frequency was determined from transverse sections. The path description follows the terminology proposed by Crivellaro and Schweingruber (2013). The material from Lesbos Island is housed at the Museum of Geology and Palaeontology in the National and Kapodistrian University of Athens and at the Natural History Collection of Vrisa – the Cultural, Research and Education Center of the National and Kapodistrian University of Athens. The studied material from Lemnos Island is housed in the Municipality of Moudros (Lemnos Island) and at the Museum of Geology and Palaeontology in the National and Kapodistrian University of Athens.

New names of plant fossils are being registered in the Plant Fossil Names Registry (PFNBR), which is hosted and operated by the National Museum, Prague for the International Organisation of Palaeobotany (IOP), each with a unique registry number.

Systematic palaeobotany

Family Lauraceae Juss.

Fossil Genus Cryptocarya xylon Leisman

Cryptocarya xylon lesbium Mantzouka sp. nov.

Pl. 1, Figs. 1–6

Holotype. Designated here. Specimen DM17 (Repository: Natural History Collection of Vrisa – Cultural, Research and Education Centre of the National and Kapodistrian University of Athens), 3 slides (Repository: Museum of Geology and Palaeontology in the National and Kapodistrian University of Athens).

Plant Fossil Names Registry Number. PFN000086 (for new species).

Etymology. The epithet, lesbium, is due to the origin of the described material (Lesbos Island, Greece).

Type horizon. Under Polichnitos Ignimbrite (PU unit), inside volcanic material.

Age. Early Miocene.

Type locality. Damandri, Southeastern Lesbos, Greece.

Diagnosis. Heteroxylous wood, growth rings present, diffuse porosity, numerous vessels per sq. mm; vessels generally in radial multiples of 2 to 4, single and in clusters, circular to oval in outline, tyloses present; exclusively simple perforation plates; alternate intervessel pits, polygonal; non-septate fibres; paratracheal axial parenchyma, scanty; apotracheal axial parenchyma in marginal bands of up to a width of 3 cells; rays numerous, exclusively heterocellular, short to medium sized; mostly biseriate and triseriate; no aggregate rays present; idioblasts numerous, associated with the ray parenchyma cells only; no crystals present.

Description. Macroscopic description. The sample is from a small stem of diameter 2.5 cm which was enclosed in volcanic material. It is silicified, light, porous, whitish and red-brown with distinct growth ring boundaries that can be seen with the naked eye.

Microscopic description. Pith: of square/rectangular or polygonal shape (Pl. 1, Figs 5, 6). — Growth rings: distinct (Pl. 1, Fig. 1). — Wood: diffuse-porous (Pl. 1, Fig. 1). — Vessels: 40–100 (60–70) vessels/sq. mm.; 19 % solitary, 50 % in groups of two, 13 % in groups of 3, 2 % in groups of 4 and 16 % in clusters; tangential diameter 50 to 90 μm, mean: 70 μm; radial diameter of the solitary vessels 50 to 110 μm, mean: 80 μm; outline of solitary vessels round to oval (Pl. 1, Figs 1, 2); vessel walls thin; perforation plates exclusively simple; tyloses common (Pl. 1, Fig. 4); intervessel pits alternate and polygonal in outline, about 10 μm across (medium to large in size). — Rays: heterocellular (Pl. 1, Fig. 3) 1 to 3 cells wide (25–30 μm) (Pl. 1, Figs 2–4), commonly 2–3-seriate and 180–550 μm high, body of multiseriate rays composed of procumbent cells with one row of upright cells; no crystals observed; 13–20 (mean 15) rays per mm. — Axial parenchyma: scanty paratracheal with a tangential width of 15–25 μm, in marginal bands 1–3 cells wide (Pl. 1, Fig. 2). — Fibres: most probably non-septate — Idioblasts: associated with the ray parenchyma cells only (Pl. 1, Figs 2, 3); mean radial × tangential diameter of the idioblasts in transverse section: 12.30 × 25.50 μm; number of idioblasts per sq. mm (transverse section): 35–45.

Comparison with fossil wood. See Table 1. The anatomical characteristics of sample DM17 to some degree resemble Laurinoxylon genus Type 1 (Mantzouka et al. 2016), with idioblasts associated only with the ray parenchyma cells. The only feature (of great taxonomic
Table 1. Comparison of the anatomical characteristics among species of Cryptocaryoxylon. GR – growth ring boundaries; V Grps – vessel groupings (sol: solitary, rms: in radial multiples, cls: in clusters); VTD – radial diameter of vessel lumina; V/mm² – vessels per square millimetre; MTD – tangential diameter of vessel lumina; PP simple/PP scalariform – perforation plates simple/scalariform; IVP – intervessel pit size (sm: small, med: medium, lrg: large); AP – axial parenchyma (scp: scanty paratracheal, vc: vasicentric, alf: aliform, con: confluent, mg: marginal); RW (cell no.) – ray width (no. of cells); RH – ray height; R/mm – rays per millimetre; SepFib – septate fibres; Idioblasts per mm² (R:, A:, F:, o:, c:); Idioblasts size (R: radial, T: tangential).

<table>
<thead>
<tr>
<th>Locality</th>
<th>Cryptocaryoxylon gippslandicum</th>
<th>Cryptocaryoxylon hancockii</th>
<th>Cryptocaryoxylon radiporosum</th>
<th>Cryptocaryoxylon meeksi</th>
<th>Cryptocaryoxylon oleiferum</th>
<th>Cryptocaryoxylon lesbium</th>
<th>Cryptocaryoxylon lemnium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>Eocene – early Oligocene</td>
<td>Eocene</td>
<td>middle Eocene</td>
<td>Late Pleistocene</td>
<td>early Miocene</td>
<td>early Miocene</td>
<td>early Miocene</td>
</tr>
<tr>
<td>GR</td>
<td>Distinct</td>
<td>Indistinct</td>
<td>Distinct</td>
<td>Distinct</td>
<td>Distinct</td>
<td>Distinct</td>
<td>Distinct</td>
</tr>
<tr>
<td>Porosity</td>
<td>Diffuse</td>
<td>Diffuse</td>
<td>Diffuse</td>
<td>Diffuse</td>
<td>Semi-Ring/Diffuse</td>
<td>Diffuse</td>
<td>Semi-Ring/Diffuse</td>
</tr>
<tr>
<td>V Grps</td>
<td>sol &amp; in rms of 2–4</td>
<td>sol (10 %), in rms of 2–11 (90 %) (mostly 2–6)</td>
<td>sol (7 %), in rms of 2–10 or more (93 %)</td>
<td>sol, in rms of 2 and rarely of 3</td>
<td>sol (45 %), in rms of 2–3 (47 %), of 4–7 (8 %)</td>
<td>sol (19 %), in rms of 2 (50 %), of 3 (13 %), of 4 (2 %) and clusters (16 %)</td>
<td>sol (30 %), in rms of 2 (50 %), of 3 (10 %), and clusters (10 %)</td>
</tr>
<tr>
<td>VTD: Mean (range) µm</td>
<td>80–550</td>
<td>345–375 (279–500)</td>
<td>393</td>
<td>294–381</td>
<td>90 (38–140)</td>
<td>80 (50–110)</td>
<td>120 (100–150)</td>
</tr>
<tr>
<td>MTD</td>
<td>100–200 (60–250)</td>
<td>56–67</td>
<td>101</td>
<td>87–136</td>
<td>76 (43–114)</td>
<td>70 (50–90)</td>
<td>100 (90–120)</td>
</tr>
<tr>
<td>Tyloses</td>
<td>Present</td>
<td>Not observed</td>
<td>–</td>
<td>–</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
</tr>
<tr>
<td>PP simple/PP scalariform</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>–</td>
<td>–</td>
<td>Yes/No</td>
<td>Yes/No</td>
<td>Yes/No</td>
</tr>
<tr>
<td>IVP size (µm) (width of intervessel pits)</td>
<td>10–13</td>
<td>3–5</td>
<td>9–12</td>
<td>6–10</td>
<td>med</td>
<td>med – lrg, 10</td>
<td>8–10 (med)</td>
</tr>
<tr>
<td>AP</td>
<td>scp, mg</td>
<td>vc, alf, con, (sometimes in diffuse strands and in uniseriate terminal bands; strands usually of 4 cells)</td>
<td>scp, mg (strands 4–8 cells)</td>
<td>scp, vc (4–8 cells)</td>
<td>vc, alf, con, mg</td>
<td>scp, mg</td>
<td>vc, alf, mg</td>
</tr>
<tr>
<td>RW (cell no.)</td>
<td>1–4–(5)</td>
<td>1–4 (mostly 2–3)</td>
<td>1–3</td>
<td>1–2(–3)</td>
<td>1–2</td>
<td>1–3, mostly 2–3</td>
<td>1–5</td>
</tr>
<tr>
<td>R/mm</td>
<td>–</td>
<td>7–10</td>
<td>5–7</td>
<td>5–7</td>
<td>13 (12–16)</td>
<td>15 (13–20)</td>
<td>7–9</td>
</tr>
<tr>
<td>SepFib</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Idioblasts per mm²</td>
<td>Numerous, R, A, F</td>
<td>o, R, F (occasional)</td>
<td>o, R, F</td>
<td>c, R</td>
<td>c, R, A</td>
<td>35–45, c, R</td>
<td>15–23, c, R, F</td>
</tr>
<tr>
<td>Idioblasts size (µm); radial, tangential, height</td>
<td>large size and cylindrical shape (found only in Cryptocarya)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>sporadic occurrence of crystals of A type (sensu Richter 1981) inside ray idioblasts (Ramos et al. 2015: 63, fig. 21; confirmed by Dr. Ramos)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Prismatic crystals</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Silica bodies (crystalliferous elements mainly of “agglomerate” type C (sensu Richter 1981) observed inside the rays’ idioblasts
importance) not in accordance with the emended diagnosis of *Laurinoxyylon* was the existence of axial parenchyma in marginal bands. The fossil Lauraceae include – with the exception of *Laurinoxyylon felix* (previously also *Laurinium ungeri*, *Ulminium ungeri* and other genera) – many other genera, such as: *Beilschmiedia* (*Duperon-Laudoueneix et Duperon*, *Caryodaphnopsoxylon* Gottwald, *Cinnamomoxylon* Gottwald, *Cryptocaryoxylon* Leisman, *Mezitaurinoxylon* Wheeler et Manchester, *Parasperoxylon* Wheeler et Manchester and *Sassafrasoxylon* Brezinová et Süss (Leisman 1986, Brezinová and Süss 1988, Gottwald 1992, 1997, Wheeler and Manchester 2002, Duperon-Laudoueneix and Duperon 2005). Based on the anatomical characteristics of modern Lauraceae wood as described by Richter (1981), we can say that the existence of marginal bands is the main characteristic of the tribe *Cryptocaryeae* Nees, so the fossil genus *Cryptocaryoxylon* is similar to our sample. A comparison of DM17 and the already described representatives of this genus has indicated some differences (see Tab. 1) which support the delimitation of a new species.

**Botanical affinities.** *Cryptocaryoxylon lemmium* has axial parenchyma in marginal bands of up to a 3-cell width. Marginal bands are also found in the Cryptocaryeae Nees tribe of the Lauraceae, thus the possible botanical affinities of our specimen include: *Beilschmiedia*, *Endiandra*, *Potameia/Syndicus*, *Triadodaphne*, *Cryptocarya*, *Ravensara*, *Licaria wilhelminensis*. From the above-mentioned genera, we can exclude those which have different characteristics not in accordance with our sample: *Endiandra* contains species with idioblasts in the fibres, *Potameia/Syndicus* and *Triadodaphne* don’t have idioblasts in ray parenchyma, *Ravensara* has only species which contain A type crystals and *Licaria wilhelminensis* has only 1-row of parenchyma in marginal bands. So our sample could be closer to the present day genus *Cryptocarya* and more precisely to the 20% of species in this genus which have idioblasts in rays (only) and to an even more reduced percentage of species in this genus which have no crystals (Richter 1981). Taking into account the work by Richter (1981) and the vessel diameters in our specimen, we could hypothesise that our sample is more similar to *Cryptocarya* species from Chile than *Cryptocarya* species from New Guinea.

**Cryptocaryoxylon lemmium** MANTZOUKA sp. nov.  
Pl. 1, Figs 7–15

**Holotype.** Designated here. Specimen DMLHM11 (Repository: Municipality of Moudros, Lemnos Island), 3 slides (Repository: Museum of Geology and Palaeontology in the National and Kapodistrian University of Athens).

**Plant Fossil Names Registry Number.** PFN000087 (for new species).

**Etymology.** The epithet, *lemnium*, is due to the origin of the described material (Lemnos Island, Greece).

**Type horizon.** Inside volcanic tuff (Romanou Unit).

**Age.** Early Miocene.

**Type locality.** Moudros, Central-Eastern Lemnos Island, Greece.

**Diagnosis.** Heteroxylous wood, growth rings present, semi-ring/diffuse porosity, numerous vessels per sq. mm; vessels generally in radial multiples of 2 to 3, also single and in clusters, circular to oval in outline, tyloses present; exclusively simple perforation plates; alternate intervessel pits, polygonal; non-septate fibres; paratracheal axial parenchyma, vasicentric to aliform and banded parenchyma with up to 3-cell wide rows and seemingly marginal bands; numerous rays, exclusively heterocellular, short to medium sized; mostly biseriate and triseriate, but up to a width of 5 cells; no aggregate rays present; idioblasts numerous, associated with ray parenchyma cells and among the fibres; silica bodies (crystalliferous elements / aggregate grains) inside rays’ idioblasts.

**Description.** Macroscopic description. Part of a silicified stump, 15 × 10 × 8 cm (Pl. 1, Fig. 7).

**Microscopic description.** Growth rings: distinct (Pl. 1, Fig. 8). — Wood: semi-ring/diffuse-porous, numerous vessels per sq. mm.; vessels generally in radial multiples of 2 to 3, also single and in clusters, circular to oval in outline, tyloses present; exclusively simple perforation plates; alternate intervessel pits, polygonal; non-septate fibres; paratracheal axial parenchyma, vasicentric to aliform and banded parenchyma with up to 3-cell wide rows and seemingly marginal bands; numerous rays, exclusively heterocellular, short to medium sized; mostly biseriate and triseriate, but up to a width of 5 cells; no aggregate rays present; idioblasts numerous, associated with ray parenchyma cells and among the fibres; silica bodies (crystalliferous elements / aggregate grains) inside rays’ idioblasts.

**Cryptocaryoxylon lemmium** MANTZOUKA sp. nov.  
Pl. 1, Figs 7–15

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**Etymology.** The epithet, *lemnium*, is due to the origin of the described material (Lemnos Island, Greece).

**Type horizon.** Inside volcanic tuff (Romanou Unit).
axial parenchyma vasicentric-aliform of up to 3-seriate bands wide, b) axial parenchyma being seemingly in marginal bands and c) the occurrence of idioblasts in rays (abundant) and in fibres (sporadic) along with the existence of silica bodies inside rays’ idioblasts. The combination of features described above leads us to assign our specimen to Cryptocaryoxylon. The same result is obtained if we take into account Richter’s classification (Richter 1981, 1987) based on the correlation of vessel-ray parenchyma pits and diameter classes of the intervessel pits, according to which our sample, DMLHM11, belongs to class b (with intervessel pits 8–12 μm, with vessel-ray pits variable in shape, round to oval, to elongate horizontally, vertically or diagonally).

DMLHM11 was compared with C. gippsslandicum Leisman (Leisman 1986) from the Tertiary of eastern Victoria but there are differences concerning the intervessel pits’ size, the apotracheal parenchyma, the exact location of the idioblastic cells, and the existence of siliceous inclusions in the material from Lemnos (Tab. 1).

Although the age of the findings in Nut Beds (Middle Eocene) is not particularly similar to ours (Early Miocene), we compared our specimen with Cryptocaryoxylon hancockii, C. radiporosum and C. meeksi and although there are a lot of similarities it seems that DMLHM11 is not identical with any of the latter species (Tab. 1). The major differences between Cryptocaryoxylon lemnium and C. hancockii are found in growth rings, vessel grouping, size and numbering, and intervessel pits’ size. Cryptocaryoxylon lemnium and C. radiporosum differ in growth rings, vessel grouping, size and numbering, intervessel pit size, rays’ width and exact location of idioblasts. A comparison of C. lemnium and C. meeksi revealed differences in vessel size (radial diameter), apotracheal parenchyma, rays’ width, exact location of idioblasts and the existence of crystalliferous elements (silica bodies). Although there are also some “blobs” inside the rays’ idioblasts in Cryptocaryoxylon radiporosum, which resemble silica bodies of C or even B type sensu Richter (1981) (Wheeler and Manchester 2002: 71, fig. 19f), they most probably represent residues of oils/extracts in the cells (Dr. Wheeler pers.com.). There are also differences when compared with C. oleiferum (Ramos et al. 2015) especially related to the idioblasts occurrence and crystals type (the sporadic occurrence of A type crystals inside rays’ idioblasts in C. oleiferum was confirmed by Dr. Ramos, pers. com.).

Botanical affinities. Richter (1981, 1990) clarified the existence of axial paratracheal and marginal parenchyma. He described the occurrence of paratracheal, mostly abundant vasicentric to aliform, often confluent with multisericate bands 2–6(–10) cells wide (Richter 1981: tab. 7, fig. 17a) in Beilschmiedia, Endiandra, Potameia/Syndiclis and Triadodaphne, the existence of paratracheal mostly sparse to slightly vasicentric multi-seriate bands 2–4(–8) cells wide (Richter 1981: tab. 7, fig. 17b) in Cryptocarya and Ravensara and the occurrence of paratracheal incomplete to closed vasicentric bands of exclusively one-line in Licaria wilhelminensis as well as marginal (or seemingly marginal), fine, up to three cell wide bands in L. subbullata (Richter and Dallwitz 2000–onwards: Commercial timbers: descriptions, illustrations, identification, and information retrieval. Version: 25th June 2009; http://delta-intkey.com); the latter two species are apparently synonyms according to The Plant List (Version 1.1., published on-line in 2013; http://www.thelplantlist.org/ (last visit 13. 9. 2017)). The occurrence of aliform to aliform-confluent paratracheal parenchyma has been observed in Hypodaphnis and Eusideroxylon (and/or Potoseylon, since some Eusideroxylon species have been moved to Potoseylon, and possibly Litsea garciae and L. sandakanensis) (Richter 1981).

Taking into account the latter characteristics along with the fact that SiO₂ was observed in Beilschmiedia, Endiandra, Potameia, Triadodaphne inaequipepala, Cryptocarya, Mezilaurus, Licaria wilhelminensis, Litsea, Dehauzia, Endlicheria, Anaeria and Clinostemon (Richter 1981: tab. 11) we came to the conclusion that the closest modern genus is Cryptocarya which (according to Richter 1981) has the following characteristics: simple perforation plates, intervessel pits of 9–11 μm in diameter, large distinct bordered pits in fibres which are horizontally layered, paratracheal vasicentric to aliform or to confluent parenchyma, terminal bands of parenchyma, (2–)3–(5–7)-celled rays, rays with a maximum height of 0.4–0.75–1.5 mm, idioblasts mainly in rays but also in fibres, crystals of A type and SiO₂ of “agglomerate” type C (found only in 15 % of its species).

According to Carlquist (2001) the existence of SiO₂ (silica bodies) is of relevance to wood anatomists because its presence is often of diagnostic value as only a minority of dicotyledonous woods contain visible silica accumulations. Representatives of the Lauraceae which contain silica according to the latter author are: Cryptocarya, Licaria, Mezilaurus, Ocotea.

Regarding silica bodies, the function as load-bearing structures, as strengthening elements when in connection with Young’s modulus or perception as a beneficial element is still under research (Mosbrugger 1990, Channing and Edwards 2013). Future research into the occurrence of silica dioxide crystals and druses in fossil woods would help clarify what had been the function of these elements and their complexity.

From study of the wood anatomy in DMLHM11 we recognized that the occurrence of SiO₂ (mainly “agglomerate” type C sensu Richter 1981) is mainly restricted to the interior of rays’ idioblasts. This diagnosis, along with the previously described characteristics of our sample, leads us to assign our specimen to Cryptocaryoxylon. The result is also the same if we consider the classification by Richter (1981, 1987) based on a correlation of the vessel-ray parenchyma pits with diameter size classes of the intervessel pits. According to this classification our sample DMLHM11 belongs to class b (with intervessel pits 8–12 μm, with vessel-ray pits variable in shape, round to oval, to elongate horizontally, vertically or diagonally).

Conclusion

This is the first identification of the genus Cryptocaryoxylon from the Neogene of Eurasia. Until now Cryptocaryoxylon has been reported only three times: a) with the species Cryptocaryoxylon gippsslandicum Leisman (Leisman 1986) from the late Eocene-Oligocene of Australia, b) with the species C. hancockii, C. meeksi
and *C. radiporosum* Wheeler et Manchester (Wheeler and Manchester 2002) from the middle Eocene of North America and c) with the species *Cryptocarya oleiferum* Ramos, Brea et Kröhling which has been found recently in the Late Pleistocene of Argentina (Ramos et al. 2015).

The modern genus *Cryptocarya* belongs to *Cryptocaryae* Nees which is related to the Southern hemisphere tribe (Richter 1981, van der Werff and Richter 1996, Rohwer et al. 2014) in contrast to the *Laurinoxylon* species and *Quercyloxylon* findings already described from Greece (Lemnos Islands, Eastern Mediterranean) which are related to the North hemisphere and the Asian/Neotropics genera. This information should be re-examined and evaluated in some future study to provide further information regarding palaeeoecography, evolutionary trends in woods which formed the Miocene forest of Lesbos and Lemnos and the distribution of their present day representatives.

Finally, it is crucial that further research is directed towards the distinction between residues of oils/extracts and silica bodies which in fossil recrystallized woods (and especially in not well preserved specimens) appears problematic.

**Acknowledgments**

This research is sincerely dedicated to Professor Zlatko Kvaček, a great scientist who I admire, an inspiring, kind, helpful, open and generous teacher, a hard-working man passionate about palaeobotany and with whom I had the honor and privilege to learn, work and collaborate. Special thanks to the Institute of Geology and Palaeontology, Faculty of Science, Charles University, Prague, to Jiří Kvaček and the Palaeontological Department of the National History Section of the National Museum, Prague. I would also like to thank the Department of Historical Geology and Paleontology, Faculty of Geology and Geoenvironment, National and Kapodistrian University of Athens for permission to use their facilities for producing detailed anatomic descriptions and consequently taxonomic identification of the new material. Special thanks to Jakub Sakala and Marzena Klusek who reviewed this work and made significant comments and suggestions which greatly improved the present paper. Thanks also to Elisabeth Wheeler and Rita Soledad Ramos for their collaboration and scientific advice.

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Explanations of plates

PLATE 1

Cryptocaryoxylon lesbium Mantzouka sp. nov. (DM17)

1. Growth rings distinct, diffuse-porous wood.

2. Growth rings distinct, wood diffuse-porous, outline of solitary vessels round to oval, rays up to 4-seriate, idioblasts: associated with the ray parenchyma cells, axial parenchyma in marginal bands.

3. Idioblasts: associated with the ray parenchyma cells (usually at the edges of the rays, but also within their body).

4. Vessels with common tyloses.

5, 6. Pith of square/rectangular or polygonal shape.

Cryptocaryoxylon lemnium Mantzouka sp. nov. (DMLHM11)

7. The dimensions of the specimen are: 15 × 10 × 8 cm.

8. Growth ring boundaries distinct, semi-ring/diffuse-porous wood, vessels in multiple groups of up to 3 and in clusters, tyloses common, 7–9 rays per millimeter, vasicentric paratracheal to aliform parenchyma, seemingly marginal bands of parenchyma.

9. Solitary vessels’ outline round to oval, vasicentric paratracheal to aliform parenchyma, with rows up to 3-cells in width.

10. Rays heterocellular up to 5 cells wide, idioblasts associated with the ray parenchyma cells and among the fibres.

11. Idioblasts associated with the ray parenchyma cells and among the fibres, perforation plates: polygonal alternate and medium in size.

12. Rays 200–600 μm high, idioblasts associated with the ray parenchyma cells and among the fibres, silica bodies (crystalliferous elements) observed inside the rays’ idioblasts.

13, 14. Body of multiseriate rays composed of procumbent cells with one row of upright and/or square marginal cells, idioblasts associated with the ray parenchyma cells and among the fibres, silica bodies (crystalliferous elements) observed inside the rays’ idioblasts.

15. Perforation plates simple.

Scale bar = 50 μm in 2, 3, 6, 10; 100 μm in 4, 9, 11, 12, 13, 14, 15; 500 μm in 5, 8; 1,000 μm in 1. 1, 2, 5, 6, 8, 9, 10 = TS; 13, 14, 15 = RLS; 3, 4, 11, 12 = TLS. TS, RLS and TLS denote transversal, radial and tangential longitudinal sections, respectively. In addition, IR denotes Idioblasts associated with Rays (IR) and IF denotes Idioblasts associated with Fibres (IF). MB denotes axial parenchyma in Marginal Bands (MB).