

Fossilium Catalogus

II: Plantae.

Editus a

W. Jongmans.

Pars 14:

W. N. Edwards, et F. M. Wonnacott

Sapindaceae.



W. Junk

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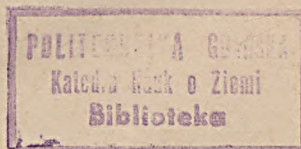
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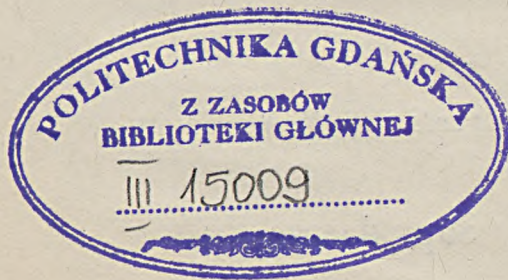
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Sapindaceae.

Foreword.

The family Sapindaceae includes about 130 living genera and well over a thousand species, occurring mainly in tropical and subtropical regions. Of these genera (apart from 14 recent species, belonging to 9 genera, from an African basalt-tuff of unknown age, but probably not very old) only 11 have been recorded in the fossil state, and several of these are not very well grounded. In addition, 21 form genera have been created for sapindaceous fossils which are either extinct or of more or less doubtful identification. A short review of the fossil genera is given by Berry, 1916 (pp. 106—8). Radlkofer and other authors have drawn attention to the possibilities of confusion with other families, such as the Meliaceae, Anacardiaceae, and Juglandaceae.

The present catalogue follows on general lines the arrangement of earlier parts of the Fossilium Catalogus, and the genera are given in strictly alphabetical order. Entries under each species are in chronological order. The synonymies, however, do not include complete references; these are arranged under authors' names in the bibliography, and may be found by means of the index date.

Thus, "1860 *Cupania grandis* Unger, p. 36 . . ." implies that the first reference or description of this species will be found in Unger 1860 on the page given. Subsequent references under the same name are cited thus:

"1861 *Cupania grandis* Unger: Ettingshausen, p. 244." When the generic name is changed, the reference is given thus:

"1874 *Cupanites grandis* (Unger) Schimper, p. 171", implying that Schimper was the authority for the change of name, and subsequent citations under the new name are in this form:

"1888 *Cupanites grandis* (Unger): Schenk, p. 548."

When two or more papers by the same author have been published in one year, they are distinguished by the addition of letters, thus: 1870, 1870a, 1870b, and so on.

Synonyms, *nomina nuda*, names of species which have been transferred to other families, and misidentifications are enclosed in square brackets. There is no special list of sapindaceous fossils originally referred to other families; these can be adequately traced by means of the index.

No attempt has been made to deal with all the species critically; occasional comments will be found, but the absence of critical remarks by no means implies that we accept the determinations.

In recording the distribution, full particulars of localities are usually given in the case of uncommon species, but not always for the common and widely distributed forms. Fuller details of the American localities may be found in Knowlton's catalogue (1919). The age of all the plant-bearing beds has not been critically examined. As a general rule, the age given by the original author has been cited, if there is no commonly-accepted revision of his estimate.

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Aphania Blume.

Aphania senegalensis Radlkofer.

1920 *Aphania senegalensis* Radlkofer: Menzel, p. 28.
Occurrence: ? Pleistocene; Kamerouns.

Aporrhiza Radlkofer.

Aporrhiza nitida Gilg.

1920 *Aporrhiza nitida* Gilg: Menzel, p. 28.
Occurrence: ? Pleistocene; Kamerouns.

Carpolithus Linnaeus.

[Carpolithus circumcinctus Saporta.]

1873 *Carpolithes circumcinctus* Saporta, p. 135, pl. XVIII, f. 34.
Remarks: ? Sapindaceae, or perhaps Juglandaceae.
Occurrence: Oligocene; Aix-en-Provence.

Carpolithus cupanoides Crié.

1886 *Carpolithes cupanoides* Crié, p. 1143.
Remarks: Described but not figured. Said to agree with
Cupanoides Bowerbank.
Occurrence: Eocene; western France.

Carpolithus euphoriaeoides Engelhardt.

1922 *Carpolithes euphoriaeoides* Engelhardt, p. 120, pl. XL, f. 25.
Remarks: Fruit, said to be reminiscent of *Euphoria* spp.
Occurrence: Eocene; Hessen (Messel near Darmstadt).

[Carpolithus sapindaceus Massalongo.]

1859 *Carpolithes sapindaceus* Massalongo, p. 122.
Remarks: Nomen nudum.

Carpolithus sapindiformis Engelhardt.

1922 *Carpolithes sapindiformis* Engelhardt, p. 94, pl. XXX, f. 11.
Remarks: Engelhardt says that perhaps this fruit belongs
to one of the *Sapindus* leaves described from the deposit.
Occurrence: Eocene; Hessen (Messel near Darmstadt).

Carpolithus sapindoides Engelhardt.

1922 *Carpolithes sapindoides* Engelhardt, p. 120, pl. XL, f. 26.
Remarks: Compared with *Sapindus* fruits.
Occurrence: Eocene; Hessen (Messel near Darmstadt).

Carpolithus sp.

1910 *Carpolithes* sp.: Menzel, p. 189, pl. XIV, f. 8, 9.

Remarks: Compared by Menzel with *Cupanoides inflatus* Bowerbank.

Occurrence: Upper Miocene; Posen.

Chytranthus Hooker f.**Chytranthus dinklagei** Gilg.

1920 *Chytranthus dinklagei* Gilg: Menzel, p. 28.

Occurrence: ? Pleistocene; Kamerons.

Conchotheca Mueller.**[Conchotheca turgida** Mueller.]

1874 (Sept.) *Conchotheca turgida* Mueller, p. 42, pl. X, f. 5—12.

1874a *Conchotheca turgida* Mueller, p. 24, pl. X, f. 5—12.

1925 *Conchotheca turgida* Mueller: Deane, p. 491, pl. LX, f. 11, 17—21.

Remarks: Deane says: "The alliance seems to me to be with *Sapindaceae*". Von Mueller gives no opinion on the affinities of the fruit.

Occurrence: Pliocene; Victoria.

Cupania Linnaeus.**[Cupania axonensis** Watelet.]

1866 *Cupania axonensis* Watelet, p. 227, pl. LVI, f. 5.

Remarks: Now referred by Fritel (1909, p. 261—2) to *Laurus regularis* Watelet.

[Cupania corrugata, depressa, etc.]

Synonyms of *Cupanoides corrugatus* etc., q. v.

[Cupania dryandraefolia Massalongo.]

1859 *Cupania dryandraefolia* Massalongo, p. 93.

Remarks: Nomen nudum.

[Cupania furcinervis (Rossmässler) Stur.]

1840 *Phyllites furcinervis* Rossmässler, p. 33, pl. VI, f. 25, pl. VII, f. 26—31 (32—36).

1845 *Quercus furcinervis* (Rossm.) Unger, p. 217.

1875 *Cupania furcinervis* (Rossm.) Stur, p. 164.

1881 *Cupania furcinervis* (Rossm.): Stur, p. 292.

Remarks: With additional material of Rossmässler's *Phyllites furcinervis* (which had been referred to *Quercus* by Unger, and closely compared with the Aachen *Dryophylla* by Debey), Stur concluded that it was a compound leaf, and he considered it to be probably a *Cupania*. In the material at his disposal Stur distinguished two species, and named the second *Cupania rossmässleri*, but without illustrating either. He further suggested that some of the *Dryophyllum* leaves from the Cretaceous of

Aachen might really be leaflets of *Cupania* or some other genus of Sapindaceae.

Following Unger, *P. furcinervis* has been accepted as a *Quercus* by numerous authors. In discussing the species, Friedrich (1883, p. 54), justly remarks that until Stur's Altsattel specimens have been figured, there is no adequate ground for abandoning the reference to *Quercus*. He further suggests that the large size of some specimens does not support Stur's contention that they are leaflets of a compound leaf.

Occurrence: Upper Oligocene; Bohemia (Altsattel).

[*Cupania grandis* Unger.]

Synonym of *Cupanites grandis*, q. v.

***Cupania grosseserrata* (Engelhardt) Berry.**

1890 *Benettia grosse-serrata* Engelhardt, p. 4 (nomen).

1890 *Thouinia philippii* Engelhardt, p. 4 (nomen).

1891 *Benettia grosseserrata* Engelhardt, p. 655, pl. XII, fig. 3.

1891 *Thouinia philippii* Engelhardt, p. 671, pl. IX, f. 13, pl. X, f. 4, 5.

1922 *Thouinia philippii* Engelhardt: Berry, pp. 82, 84, 96, 105, pl. IV, f. 1, 2.

1925 *Cupania grosseserrata* (Engelhardt) Berry, p. 212, pl. VI, f. 5.

Remarks: Berry points out the identity of the leaves from Chile referred by Engelhardt to *Benettia* (Compositae) and *Thouinia*, and considers (1925) that they are more properly to be placed in *Cupania*. The specific name *grosseserrata* is retained as it has priority of position.

Occurrence: Miocene; Chile and Patagonia.

***Cupania incerta* Berry.**

1925 *Cupania incerta* Berry, p. 215, pl. VIII, f. 3.

Occurrence: Miocene; Patagonia.

[*Cupania juglandina* Ettingshausen.]

Synonym of *Cupanites juglandinus*, q. v.

***Cupania latifolioides* Berry.**

1925 *Cupania latifolioides* Berry, p. 214, pl. VI, f. 4.

Occurrence: Miocene; Patagonia.

***Cupania* ? *longipes* Heer.**

1878 *Cupania* ? *longipes* Heer, p. 51, pl. XIV, f. 9.

Occurrence: Miocene; Sachalin.

[*Cupania melaena* Ettingshausen.]

1851a *Cupania melaena* Ettingshausen, p. 186.

Remarks: Nomen nudum.

[Cupania miocenica Ettingshausen.]

1850 *Cupania miocenica* Ettingshausen in Prinzing, p. 604.

Remarks: Name only; evidently synonymous with *Cupanoides miocenicus* Ettingshausen (see under *Cupanites*).

[Cupania neptuni (Unger).]

Synonym of *Cupanites neptuni*, q. v.

[Cupania palaeorhus Ettingshausen.]

Synonym of *Cupanites palaeorhus*, q. v.

[Cupania praetomentosa Krasser.]

1903 *Cupania praetomentosa* Krasser, p. 858.

Remarks: Ms. name of Ettingshausen. Nomen nudum.

Occurrence: Tertiary; Brazil.

[Cupania Rossmässleri Stur.]

1875 *Cupania rosmässleri* Stur, p. 164.

1881 *Cupania rosmässleri* Stur, p. 291.

Remarks: See *Cupania furcinervis*.

Occurrence: Upper Oligocene; Bohemia (Altsattel).

Cupania sp.

1862 *Cupania* sp.: De la Harpe & Salter, p. 117.

Remarks: Leaf, also said to resemble *Juglans*.

Occurrence: Eocene; England (? Alum Bay).

Cupanites Schimper 1874, p. 170.

Established for sapindaceous leaves of doubtful generic affinity, including those referred by Unger to *Cupania*. The genus *Cupanoides* should be restricted to fruits.

Schenk (1888, p. 548) is uncertain whether these leaves belong to *Sapindaceae*, and suggests that there is also a resemblance to *Juglandaceae* and *Anacardiaceae*.

Cupanites anomalus (Andrae) Schimper.

1855 *Cupanoides anomalus* Andrae, p. 23, pl. III, f. 3.

1867 *Cupanoides anomalus* Andrae: Stur, p. 179.

1874 *Cupanites anomalus* (Andrae) Schimper, p. 172.

1888 *Cupanites anomalus* (Andrae): Schenk, p. 548.

Remarks: "Too fragmentary for identification". (Schenk).

Occurrence: Oligocene; Transylvania (Thalheim).

Cupanites eoligniticus Berry.

1916 *Cupanites eoligniticus* Berry, p. 269, pl. LXIV, f. 8, 9; pl. LXV, f. 1—3.

Occurrence: Eocene (Wilcox); Tennessee, Louisiana.

Cupanites grandis (Unger) Schimper.

- 1860 *Cupania grandis* Unger, p. 36, pl. XV, f. 6.
 1861 *Cupania grandis* Unger: Ettingshausen, p. 244.
 1868 *Cupania grandis* Unger: Ettingshausen, p. 878, pl. V, f. 2.
 1874 *Cupanites grandis* (Unger) Schimper, p. 171.
 1883 *Cupania grandis* Unger: Pilar, p. 102.
 1888 *Cupanites grandis* (Unger): Schenk, p. 548, f. 312¹.
 1921 *Cupanites grandis* (Unger): Principi, p. 92.
 1926 *Cupanites grandis* (Unger): Principi, p. 76.

Remarks: Compared with the living *C. micrantha* of Brazil.

Occurrence: Oligocene; Italy (Chiavon).
 Miocene; Croatia (Radoboj, Sused, Dolje).
 Germany (Salzhausen).

Cupanites juglandinus (Ettingshausen) Schimper.

- 1858 *Cupania juglandina* Ettingshausen, p. 534, pl. III, f. 2, 6.
 1861 *Cupania juglandina* Ett.: Ettingshausen, p. 244.
 1874 *Cupanites juglandinus* (Ett.) Schimper, p. 171.
 1879 *Cupania juglandina* Ett.: Hauer, p. 171.
 1888 *Cupanites juglandinus* (Ett.) Schenk, p. 548.
 1902 *Cupania juglandina* Ett.: Engelhardt, p. 287, pl. II, f. 24.
 1922 *Cupania juglandina* Ett.: Engelhardt, p. 95, pl. XXXII, f. 5.

Remarks: Ettingshausen remarks that similar leaves are found in *Rhus* and *Juglans*. Engelhardt agrees that the identification is uncertain.

Occurrence: Eocene; Hessen (Darmstadt)
 Oligocene (Chattian); Styria (Sotzka), Bosnia
 (Zenica).
 Miocene; Hessen (Himmelsberg).

Cupanites lanceolatus Principi.

- 1921 *Cupanites lanceolatus* Principi, p. 92 (nomen)
 1926 *Cupanites* (?) *lanceolatus* Principi, p. 77, pl. IX, f. 7.

Occurrence: Oligocene: Italy (Chiavon).

Cupanites loughridgii Berry.

- 1888 *Myrica copeana* Lesquereux, p. 12.
 1916 *Cupanites loughridgii* Berry, p. 269, pl. LXV, f. 4.
 Remarks: Affinities uncertain. Not identical, according to Berry, with Lesquereux's *Myrica copeana* from Florissant.

Occurrence: Eocene (Lagrange); Kentucky.

Cupanites miocenicus (Ettingshausen) Schimper.

- 1850 *Cupania miocenicus* Ettingshausen in Prinzinger, p. 604
 (nomen).
 1851 *Cupanoides miocenicus* Ettingshausen, p. 22, pl. V, f. 1.
 1851b *Cupanoides miocenicus* Ett.: Ettingshausen, p. 44.
 1852 *Cupanoides miocenicus* Ett.: Massalongo, p. 28.
 1861 *Cupanoides miocenicus* Ett.: Ettingshausen, p. 244.
 1867 *Cupanoides miocenicus* Ett.: Stur, p. 179.
 1874 *Cupanites miocenicus* (Ett.) Schimper, p. 170.

Remarks: Considered by Ettingshausen to be related to *Nephelium*, *Sapindus*, or *Cupania*. Attribution very doubtful, but probably *Sapindaceae*, according to Schimper.

Occurrence: Miocene; Austria (Laa near Vienna).

Cupanites neptuni (Unger) Schimper.

- 1850 *Samyda neptuni* Unger, p. 443.
 [1860 *Saurauja neptuni* Ettingshausen MS.: Unger, p. 35.]
 [1860 *Saurauja radobojana* Ettingshausen MS.: Unger, p. 35.]
 1860 *Cupania neptuni* (Unger) Unger, p. 35, pl. XV, f. 7, 8, pl. XVI, f. 1-4.
 1861 *Cupania neptuni* (Unger): Ettingshausen, p. 244.
 1869 *Cupania neptuni* (Unger): Engelhardt, p. 152.
 1870 *Cupania neptuni* (Unger): Engelhardt, p. 25, pl. VII, f. 1.
 1870a *Cupania neptuni* (Unger) (pars): Ettingshausen, p. 887, and table 8.
 1874 *Cupanites neptuni* (Unger) Schimper, p. 171.
 1883 *Cupania neptuni* (Unger): Pilar, p. 103.
 1891a *Cupania neptuni* (Unger): Engelhardt, p. 30.
 1892 *Cupanites neptuni* (Unger): Keller, p. 108, pl. XI, f. 1.
 1898 *Cupania neptuni* (Unger): Engelhardt, p. 105, pl. X, f. 29.
 1901 *Cupanites neptuni* (Unger): Squinabol, p. 55, pl. IV, f. 1.
 1911 *Cupania neptuni* (Unger): Engelhardt, p. 418, pl. XLIV, f. 14.
 1922 *Cupania neptuni* (Unger): Engelhardt, p. 95, pl. XXXII, f. 2.

Remarks: Ettingshausen (1870a, p. 886) referred Unger's figs. 7 and 8, pl. XVI to *Bombax*; Friedrich (1883, p. 145) went further and referred all Unger's figures to *Bombax*. Later authors have reverted to *Cupania* or *Cupanites*.

Occurrence: Upper Eocene; Italy (Novale), Hessen (Darmstadt). Oligocene; Bohemia (Berand), Hessen (Wieseck), Saxony. Miocene; Bohemia (Birkigt), Croatia (Radoboj, Sused, Dolje), Switzerland (St. Gallen).

Cupanites nigricans (Lesquereux) Berry.

- 1872 *Myrica nigricans* Lesquereux, p. 6.
 1878a *Myrica nigricans* Lesq.: Lesquereux, p. 132, pl. XVII, f. 9-12.
 1924 *Cupanites nigricans* (Lesq.) Berry, p. 176, pl. XXXIV, f. 7.
 Occurrence: Eocene (Jackson, Green River); Georgia, Wyoming.

Cupanites novae-zeelandiae Ettingshausen.

- 1887 *Cupanites novae-zeelandiae* Ettingshausen, p. 188, pl. IX, f. 18-20.
 1890 *Cupanites novae-zeelandiae* Ett.: Ettingshausen, p. 306, pl. XXXII, f. 18, 20.
 Occurrence: Upper Cretaceous; N. Zealand (Grey River & Pakawan).

Cupanites oligocenicus Principi.

- 1921 *Cupanites oligocenicus* Principi, p. 92 (nomen).
 1926 *Cupanites oligocenicus* Principi, p. 77, pl. IX, f. 6.
 Occurrence: Oligocene; Italy (Chiavon).

Cupanites palaeorhus (Ettingshausen) Schimper.

- 1869 *Cupania palaeorhus* Ettingshausen, p. 27, pl. XLVI, f. 12.
 1874 *Cupanites palaeorhus* (Ett.) Schimper, p. 172.
 1911 *Cupania palaeorhus* Ett.: Kafka, p. 29.
 Occurrence: Miocene; Bohemia (Bilin).

Cupanites parvulis Berry.1924 *Cupanites parvulis* Berry, p. 70, pl. XII, f. 5.

Occurrence: Eocene (Yegua); Louisiana.

Cupanites selwyni Ettingshausen.1886 *Cupanites selwyni* Ettingshausen, p. 126, pl. XIV, f. 12, 12a.1888a *Cupanites selwyni* Ett.: Ettingshausen, p. 161, pl. XIV, f. 12, 12a.

Occurrence: Tertiary; Australia.

Cupanoides Bowerbank 1840.[1828 *Amomocarpum* Brongniart, p. 130.][1849 Non "*Cupanoides* Bow.": Brongniart, p. 83.]

Remarks: In 1828 Brongniart described some Sheppey fruits and proposed the designation *Amomocarpum* on the supposition that they belonged to *Amomum*, but in 1849 he abandoned this identification and accepted Bowerbank's name.

Schenk (1888, p. 548) thinks it possible that these fruits might belong to some other genus or family.

The name has occasionally been used for leaf impressions, but should be confined to fruits.

[Cupanoides anomalus Andrae.]Synonym of *Cupanites anomalus*, q. v.**Cupanoides carniolicus** Unger.1866 *Cupanoides carniolicus* Unger, p. 51, pl. XVI, f. 5.1874 *Cupanoides carniolicus* Ung.: Schimper, p. 173.1888 *Cupanoides carniolicus* Ung.: Schenk, p. 548.

Remarks: "Doubtful" (Schenk).

Occurrence: Tertiary; Carniola (Salberg).

Cupanoides corrugatus Bowerbank.1840 *Cupanoides corrugatus* Bowerbank, p. 69, pl. XI, f. 3, 4.1850 *Cupanoides corrugatus* Bowb.: Unger, p. 458.1852 *Cupanoides corrugatus* Bowb.: Massalongo, p. 25.1874 *Cupanoides corrugatus* Bowb.: Schimper, p. 173.1879 *Cupania corrugata* (Bowb.) Ettingshausen, p. 395.[1880 *Cupania corrugata* (Bowb.): Ettingshausen, p. 235.]1888 *Cupanoides corrugatus* Bowb.: Schenk, p. 548, f. 312^s.

Remarks: Ettingshausen's record from Alum Bay (1880) refers to a leaf.

Occurrence: Eocene (London Clay); England (Sheppey).

Cupanoides depressus Bowerbank[1828 ? *Amomocarpum depressum* Brongniart, pp. 137, 209 (nomen nudum)].1840 *Cupanoides depressus* Bowerbank, p. 74, pl. XI, f. 23.1850 *Cupanoides depressus* Bowb.: Unger, p. 458.1852 *Cupanoides depressus* Bowb.: Massalongo, p. 27.1874 *Cupanoides depressus* Bowb.: Schimper, p. 173.1879 *Cupania depressa* (Bowb.) Ettingshausen, p. 395.

[1880 *Cupania depressa* (Bowb.): Ettingshausen, p. 235.]

Remarks: Ettingshausen's Alum Bay record refers to a leaf.

Occurrence: Eocene (London Clay): England (Sheppey).

Cupanoides grandis Bowerbank.

1840 *Cupanoides grandis* Bowerbank, p. 71, pl. XI, f. 10—12.

1850 *Cupanoides grandis* Bowb.: Unger, p. 458.

1852 *Cupanoides grandis* Bowb.: Massalongo, p. 26.

1861 *Cupanoides grandis* Bowb.: Ettingshausen, p. 244.

1874 *Cupanoides grandis* Bowb.: Schimper, p. 173.

1879 *Cupania grandis* (Bowb.) Ettingshausen, p. 395. (Non Unger)

[1880 *Cupania grandis* (Bowb.): Ettingshausen, p. 235.]

Remarks: Ettingshausen's Alum Bay record refers to a leaf.

Occurrence: Eocene (London Clay): England (Sheppey).

Cupanoides inflatus Bowerbank.

1840 *Cupanoides inflatus* Bowerbank, p. 73, pl. XI, f. 18—22.

1850 *Cupanoides inflatus* Bowb.: Unger, p. 458.

1852 *Cupanoides inflatus* Bowb.: Massalongo, p. 27.

1874 *Cupanoides inflatus* Bowb.: Schimper, p. 173.

1879 *Cupania inflata* (Bowb.): Ettingshausen, p. 395.

1888 *Cupanoides inflatus* Bowb.: Schenk, p. 548, f. 312⁶.

Remarks: See also *Carpolithus* sp.

Occurrence: Eocene (London Clay): England (Sheppey).

Cupanoides lobatus Bowerbank.

1840 *Cupanoides lobatus* Bowerbank, p. 69, pl. XI, f. 1, 2.

1850 *Cupanoides lobatus* Bowb.: Unger, p. 457.

1852 *Cupanoides lobatus* Bowb.: Massalongo, p. 25.

1861 *Cupanoides lobatus* Bowb.: Ettingshausen, p. 244.

1874 *Cupanoides lobatus* Bowb.: Schimper, p. 172.

1879 *Cupania lobata* (Bowb.) Ettingshausen, p. 395.

[1880 *Cupania lobata* (Bowb.): Ettingshausen, p. 235.]

Remarks: In 1861 Ettingshausen included *C. corrugatus*, *C. depressus*, and *C. subangulatus* as synonyms of this species, but apparently he abandoned this view later. His Alum Bay record (1880) refers to a leaf.

Occurrence: Eocene (London Clay): England (Sheppey).

[Cupanoides miocenicus Ettingshausen.]

Synonym of *Cupanites miocenicus*, q. v.

Cupanoides peruvianus Berry.

1927 *Cupanoides peruvianus* Berry, p. 126, pl. XIX, f. 1, 1a, 1b.

Occurrence: Oligocene; Païta, Peru.

Cupanoides pygmaeus Bowerbank.

1840 *Cupanoides pygmaeus* Bowerbank, p. 75, pl. XI, f. 24.

1850 *Cupanoides pygmaeus* Bowb.: Unger, p. 459.

1852 *Cupanoides pygmaeus* Bowb.: Massalongo, p. 27.

1861 *Cupanoides pygmaeus* Bowb.: Ettingshausen, p. 244.

- 1874 *Cupanoides pygmaeus* Bowb.: Schimper, p. 173.
 1879 *Cupania pygmaea* (Bowb.) Etingshausen, p. 395.
 Occurrence: Eocene (London Clay): England (Sheppey).

***Cupanoides subangulatus* Bowerbank.**

- 1840 *Cupanoides subangulatus* Bowerbank, p. 70, pl. XI, f. 7—9.
 1850 *Cupanoides subangulatus* Bowb.: Unger, p. 458.
 1852 *Cupanoides subangulatus* Bowb.: Massalongo, p. 26.
 1874 *Cupanoides subangulatus* Bowb.: Schimper, p. 173.
 1879 *Cupania subangulata* (Bowb.) Etingshausen, p. 395.
 [1880 *Cupania subangulata* (Bowb.): Etingshausen, p. 235.]
 Remarks: Etingshausen's Alum Bay record refers to a leaf.
 Occurrence: Eocene (London Clay): England (Sheppey).

***Cupanoides tumidus* Bowerbank.**

- 1840 *Cupanoides tumidus* Bowerbank, p. 72, pl. XI, f. 13—17.
 1850 *Cupanoides tumidus* Bowb.: Unger, p. 458.
 1852 *Cupanoides tumidus* Bowb.: Massalongo, p. 26.
 1861 *Cupanoides tumidus* Bowb.: Etingshausen, p. 244.
 1874 *Cupanoides tumidus* Bowb.: Schimper, p. 173.
 1879 *Cupania tumida* (Bowb.) Etingshausen, p. 395.
 [1880 *Cupania tumida* (Bowb.): Etingshausen, p. 235.]
 1888 *Cupanoides tumidus* Bowb.: Schenk, p. 548, f. 3124.⁵
 Remarks: Etingshausen in 1861, but not in 1879, included *C. inflatus* in this species. His Alum Bay record (1880) refers to a leaf.
 Occurrence: Eocene (London Clay): England (Sheppey).

[*Cupanoides zanardinii* Massalongo.]

- 1858a *Cupanoides zanardinii* Massalongo, p. 102. [Not seen].
 1858 *Cupanoides zanardinii* Mass.: Massalongo & Scarabelli, p. 361, pl. XXVI; pl. XXVII, f. 32, pl. XLIV, f. 1.
 1885 *Cupanoides zanardinii* Mass.: Sacco, p. 277.
 1893 *Cupanoides zanardinii* Mass.: Meschinelli & Squinabol, p. 365.
 1896 *Laurus* (?) *tetrantheroides* Etingshausen: Paolucci, p. 80.
 1908 *Laurus tetrantheroides* Ett.: Principi, p. 50.
 1916 *Laurus tetrantheroides* Ett.: Principi, p. 100.
 Remarks: A leaf impression now accepted as a *Laurus*.
 Occurrence: Miocene; Italy (Senigaglia).

***Deinbollia* Schumacher.**

***Deinbollia calophylla* Gilg.**

- 1920 *Deinbollia calophylla* Gilg: Menzel, p. 28.
 Occurrence: ? Pleistocene; Kamerons.

***Deinbollia cuneifolia* Baker.**

- 1920 *Deinbollia cuneifolia* Baker: Menzel, p. 28.
 Occurrence: ? Pleistocene; Kamerons.

***Deinbollia pycnophylla* Gilg.**

- 1920 *Deinbollia pycnophylla* Gilg or *reticulata* Gilg: Menzel, p. 28.
 Occurrence: ? Pleistocene; Kamerons.

Djambioxylon Kräusel.

Djambioxylon sumatrense Kräusel.

1922 *Djambioxylon sumatrense* Kräusel, p. 272, pl. II, f. 2 pl. IV, f. 7; pl. V, f. 1, 6—8; pl. VII, f. 7—9, 12.

1923 *Djambioxylon sumatrense* Kräusel: den Berger, p. 148.

Remarks: Kräusel and den Berger both suggest that this wood may belong to the *Sapindaceae*.

Occurrence: Miocene; Sumatra.

Dodonaea Linnaeus.

Remarks: Berry (1916, p. 271) makes critical comments on several of the European species.

Dodonaea allemanica Heer.

1859 *Dodonaea allemanica* Heer, p. 64, pl. CXXI, f. 15.

1861 *Dodonaea allemanica* Heer: Ettingshausen, p. 243.

1874 *Dodonaea allemanica* Heer: Schimper, p. 177, pl. C, f. 21.

1888 *Dodonaea allemanica* Heer: Schenk, p. 551.

Remarks: Fruit.

Occurrence: Miocene; Baden (Oeningen).

Dodonaea anthracotheriana Massalongo.

1858 *Dodonaea anthracotheriana* Massalongo, p. 16.

1859 *Dodonaea anthracotheriana* Mass.: Massalongo, p. 95.

1893 *Dodonaea anthracotheriana* Mass.: Meschinelli & Squinabol, p. 367.

Remarks: Fruit.

Occurrence: Oligocene; Italy (Vicentino).

Dodonaea antiqua Ettingshausen.

1869 *Dodonaea antiqua* Ettingshausen, p. 28, pl. XLVI, f. 18.

1870 *Dodonaea antiqua* Ett.: Ettingshausen, p. 83.

1874 *Dodonaea antiqua* Ett.: Schimper, p. 175.

1885 *Dodonaea antiqua* Ett.: Engelhardt, p. 352, pl. XVIII, f. 5.

1888 *Dodonaea antiqua* Ett.: Ettingshausen, p. 343, pl. VII, f. 15.

1898 *Dodonaea antiqua* Ett.: Engelhardt, p. 105.

1903 *Dodonaea antiqua* Ett.: Menzel, p. 17.

1911 *Dodonaea antiqua* Ett.: Kafka, pp. 29, 42, 63.

Remarks: Leaf.

Occurrence: Upper Oligocene; Bohemia (Kundratiz, Preschen, Berand). Miocene: Styria (Leoben).

Dodonaea apocynophyllum Ettingshausen.

1869 *Dodonaea apocynophyllum* Ettingshausen, p. 28, pl. XLVI, f. 19, 20.

1874 *Dodonaea apocynophyllum* Ett.: Schimper, p. 175.

1877 *Dodonaea apocynophyllum* Ett.: Ettingshausen, p. 190, pl. XV, f. 23.

1879 *Dodonaea apocynophyllum* Ett.: Engelhardt, p. 296.

1891c *Dodonaea apocynophyllum* Ett.: Engelhardt, p. 185, pl. XII, f. 25.

1911 *Dodonaea apocynophyllum* Ett.: Kafka, pp. 29, 42.

Remarks: A leaf species, but in 1877 Ettingshausen used the same name for a fruit. Principi (1916, p. 138) thinks that it should probably be included in *D. salicites* Ett.

Occurrence: Oligocene and Miocene; Bohemia (Bilin basin), Carniola (Sagor).

[Dodonaea bilinicus.]

1911 "Dodonaea bilinicus Ett.": Kafka, p. 63.

Remarks: Presumably a mistake for *Sapindus bilinicus* Ett.

Dodonaea confusa Saporta.

1863 *Dodonaea confusa* Saporta, p. 86, pl. X, f. 3.

1874 *Dodonaea confusa* Sap.: Schimper, p. 176.

Remarks: Fruit. "Correctly identified" (Berry 1916, p. 271).

Occurrence: Oligocene; France (St. Zacharie).

[Dodonaea cupanoides.]

1911 "Dodonaea cupanoides Ett.": Kafka, p. 63.

Remarks: Apparently a mistake for *Sapindus cupanoides* Ett.

Dodonaea cycloptera Saporta.

1863 *Dodonaea cycloptera* Saporta, p. 87, pl. X, f. 4.

1874 *Dodonaea cycloptera* Sap.: Schimper, p. 176, pl. C, f. 23, 24.

Remarks: Fruit. "Correctly identified" (Berry 1916, p. 271).

Occurrence: Oligocene; France (St. Zacharie).

Dodonaea emarginata Heer.

1859 *Dodonaea emarginata* Heer, p. 301.

1874 *Dodonaea emarginata* Heer: Schimper, p. 177.

Remarks: Fruit.

Occurrence: Miocene; Bavaria (Bischoffsheim).

Dodonaea helvetica Keller.

1896 *Dodonaea helvetica* Keller, p. 317, pl. XI, f. 10.

Occurrence: Miocene; Switzerland (St. Gallen).

Dodonaea knowltoni Berry.

1916 *Dodonaea knowltoni* Berry, p. 271, pl. LXIV, f. 3.

Remarks: Well-preserved fruits, nearest to the living *D. viscosa* L.

Occurrence: Eocene (Lagrange); Tennessee.

Dodonaea orbiculata Heer.

1859 *Dodonaea orbiculata* Heer, p. 65, pl. CXXI, f. 17.

1861 *Dodonaea orbiculata* Heer: Ettingshausen, p. 243.

1874 *Dodonaea orbiculata* Heer: Schimper, p. 177, pl. C, f. 25.

1883 *Dodonaea orbiculata* Heer: Steger, p. 24.

Remarks: Fruit.

Occurrence: Miocene; Baden (Oeningen).

[**Dodonaea prae-salicites** Ettingshausen.]

1880 *Dodonaea prae-salicites* Ettingshausen, p. 235.

Remarks: Nomen nudum.

Occurrence: Eocene; England (Alum Bay).

Dodonaea prisca Weber.

1851 *Dodonaea prisca* Weber, p. 403 (nomen).

1852 *Dodonaea prisca* Weber, p. 199, pl. XXII, f. 8.

1853 *Dodonaea prisca* Weber: Ettingshausen, p. 96.

1855 *Dodonaea prisca* Weber: Wessel & Weber, p. 120.

1861 *Dodonaea prisca* Weber: Ettingshausen, p. 243.

1874 *Dodonaea prisca* Weber: Schimper, p. 176.

1888 *Dodonaea prisca* Weber: Schenk, p. 553, f. 314¹⁰.

1926 *Dodonaea prisca* Weber: Wilckens, p. 37.

Remarks: Leaf and fruit.

Occurrence: Upper Oligocene and Lower Miocene; Rhineland (Rott, Quegstein, Allrott, etc.). ?Tyrol (Häring) and Styria (Sotzka).

Dodonaea pteleaefolia (Weber) Heer.

1851 *Rhus pteleaefolia* Weber, p. 403 (nomen).

1852 *Rhus pteleaefolia* Weber, p. 213, pl. XXIII, f. 13.

1855 *Rhus pteleaefolia* Weber: Wessel & Weber, p. 156, pl. XXVIII, f. 7.

1858 *Rhus pteleaefolia* Weber: Ludwig, p. 149, pl. XXX, f. 4.

1858a *Pyrus ovatifolia* Ludwig, p. 160, pl. XXXV, f. 14. (teste Schindehütte).

1859 *Rhus pteleaefolia* Weber: Massalongo, p. 104.

1859 *Dodonaea pteleaefolia* (Weber) Heer, p. 64, pl. CXXI, f. 9-12.

1860 *Rhus pteleaefolia* Weber: Ludwig, p. 140, pl. LIV, f. 8.

1861 *Dodonaea pteleaefolia* (Weber): Ettingshausen, p. 243.

1874 *Dodonaea pteleaefolia* (Weber): Schimper, p. 175, pl. C, f. 20.

1881 *Dodonaea pteleaefolia* (Weber): Engelhardt, p. 311, pl. XVI, f. 14.

1888 *Dodonaea pteleaefolia* (Weber): Schenk, p. 551.

1891c *Dodonaea pteleaefolia* (Weber): Engelhardt, p. 184, pl. XII, f. 11, 12, 17, 20.

1893 *Dodonaea pteleaefolia* (Weber): Meschinelli & Squinabol, p. 367.

1907 *Dodonaea pteleaefolia* (Weber): Schindehütte, p. 59.

1914 *Dodonaea pteleaefolia* (Weber): Principi, p. 184.

1916 *Dodonaea pteleaefolia* (Weber): Principi, p. 137, pl. LXI, f. 3.

1921 *Dodonaea pteleaefolia* (Weber): Principi, p. 92.

1926 *Dodonaea* (?) *pteleaefolia* (Weber): Principi, p. 78, pl. VIII, f. 28.

1926 *Dodonaea pteleaefolia* (Weber): Wilckens, p. 37.

Remarks: Both leaves and fruits have been referred to this species. The leaves were compared by Heer with those of the living *D. viscosa*.

Berry and Principi express some doubts as to the certainty of the generic attribution.

Occurrence: Oligocene; Rhineland (Rott, etc.), Italy (Chiavon, S. Giustina). Miocene; Rhineland, Hessen (Eichelskopf), Switzerland (Wangen etc.), Bohemia (Grasseth, Dux).

Dodonaea radoboensis Ettingshausen.1870a *Dodonaea radoboensis* Ettingshausen, p. 890, pl. I, f. 17.1874 *Dodonaea radoboensis* Ett.: Schimper, p. 175.

Remarks: Leaf.

Occurrence: Miocene (Aquitanian); Croatia (Radoboj).

Dodonaea salicites Ettingshausen.1853 *Dodonaea salicites* Ettingshausen, p. 68, pl. XXIII, f. 36—43.1859 *Dodonaea salicites* Ett.: Heer, p. 299.1861 *Dodonaea salicites* Ett.: Ettingshausen, p. 243.1869 *Dodonaea salicites* Ett.: Ettingshausen, p. 28, pl. XLVII, f. 11.1874 *Dodonaea salicites* Ett.: Schimper, p. 175.1876 *Dodonaea salicites* Ett.: Engelhardt, p. 390, pl. VII, (XXII), f. 14.1877 *Dodonaea salicites* Ett.: Ettingshausen, p. 190.1879 *Dodonaea salicites* Ett.: Sandberger, p. 180.1888 *Dodonaea salicites* Ett.: Schenk, p. 552, f. 314⁹.1891a *Dodonaea salicites* Ett.: Engelhardt, p. 37.1891c *Dodonaea salicites* Ett.: Engelhardt, p. 185, pl. XII, f. 6, 7.1898 *Dodonaea salicites* Ett.: Engelhardt, p. 105.1911 *Dodonaea salicites* Ett.: Kafka, pp. 29, 53, 63.1911 *Dodonaea salicites* Ett.: Engelhardt, p. 379, pl. XLI, f. 64.1914 *Dodonaea salicites* Ett.: Principi, p. 184.1916 *Dodonaea salicites* Ett.: Principi, p. 138, pl. LXI, f. 4 5.1922 *Dodonaea salicites* Ett.: Engelhardt, p. 95, pl. XXXII, f. 6.Remarks: According to Berry (1916, p. 271), this is correctly determined. Principi (1916) compares it with the living *D. laurifolia*, and thinks that *D. apocynophyllum* should probably be united with it. Ettingshausen includes both leaves and fruits.

Occurrence: Eocene; Hessen (Messel). Oligocene; Tyrol (Häring), Carniola (Sagor), Italy (S. Giustina), Bohemia (Kutschlin, Berand etc.), Hessen (Florsheim). Miocene; Bohemia (Holai-kluk), Rhone (Sieblos).

Dodonaea saportana Laurent.1899 *Dodonaea saportana* Laurent, p. 127, pl. XIII, f. 9.

Remarks: Fruit. "The best preserved fossil species heretofore noted" (Berry, 1916, p. 271).

Occurrence: Oligocene; France (Célas).

Dodonaea sotzkiana Ettingshausen.1851 *Celastrus elaeagnus* Unger (pars) pl. LI, f. 21.1858 *Dodonaea sotzkiana* Ettingshausen, pp. 504, 535.1861 *Dodonaea sotzkiana* Ett.: Ettingshausen, p. 243.1874 *Dodonaea sotzkiana* Ett.: Schimper, p. 174.

Remarks: Leaf.

Occurrence: Oligocene (Chattian); Styria (Sotzka).

[Dodonaea subglobosa Ettingshausen.]1880 *Dodonaea subglobosa* Ettingshausen, p. 235.1883 *Dodonaea subglobosa* Ett.: Crié, p. 612.

Remarks: Nomen nudum. In Ettingshausen's list of Alum Bay plants, and also recorded by Crié from the Eocene of Sarthe, but apparently never figured.

Dodonaea vera Hollick & Berry.

- 1924 *Dodonaea vera* Hollick & Berry, p. 80, pl. VII, f. 11—13.
Occurrence: Late Tertiary; Brazil (Bahia).

Dodonaea vetusta Heer.

- 1859 *Dodonaea vetusta* Heer, p. 64, pl. CXXI, f. 13, 14.
1861 *Dodonaea vetusta* Heer: Ettingshausen, p. 243.
1874 *Dodonaea vetusta* Heer: Schimper, p. 174.
1890 *Dodonaea cf. vetusta* Heer: Mieg, Bleicher & Fliche, p. 418.
Occurrence: Miocene; Switzerland (Monod).

Dodonaea viscosaformis Berry.

- 1922 *Dodonaea viscosaformis* Berry (in Singewald & Berry), pp. 42, 107, pl. VII, f. 17.
Occurrence: Pliocene; Bolivia (Corocoro and Potosi).

Dodonaea viscosoides Berry.

- 1914 *Dodonaea viscosoides* Berry, p. 142, pl. XXVIII, f. 4—8.
1924 *Dodonaea viscosoides* Berry: Berry, pp. 70, 176, pl. XII f. 7, pl. XXXIV, f. 11—13, pl. XLII, f. 1.
Occurrence: Eocene (Jackson, Yegua, Lisbon); Georgia, Louisiana, Missouri.

Dodonaea wilcoxiana Berry.

- 1916 *Dodonaea wilcoxiana* Berry, p. 270, pl. XXXVIII, f. 2.
Remarks: Leaf, very similar to *D. viscosoides*; also resembles *Gaylussacia tertiaria* Engelhardt (*Ericaceae*) from Bolivia.
Occurrence: Eocene; Mississippi.

Dodonaea sp.

- 1883 *Dodonaea* sp.: Lesquereux, p. 182, pl. XXXVI, f. 5.
1888 *Dodonaea* sp.: Schenk, p. 552, f. 314^a.
1908 ?*Ptelea modesta* Cockerell, p. 98.
1916 *Dodonaea* sp.: Knowlton, p. 276.
Remarks: Berry (1914, p. 143) suggests that this fruit belongs to *Ulmus*. Knowlton (1916, 1919) retains it in *Dodonaea*.
Occurrence: Miocene; Colorado (Florissant).

Dodonaea sp.

- 1892 *Dodonaea* sp.: Bleicher & Fliche, p. 185.
Occurrence: Tertiary (Bornkappel Beds); Alsace (Mulhouse).

[Dodonaea sp.]

Depape (1922, p. 216) states that *Dodonaea* sp., recorded by Boulay from the Pliocene of St. Marcel, is a leaf of *Notelea excelsa* Webb. (We have not seen Boulay's original reference.)

Dodonaeites Saporta.**Dodonaeites decaisnei Saporta.**

1863 *Dodonaea* or *Fraxinus* Gervais, p. 318, pl. X, f. 8.

1865a *Dodonaeites decaisnei* Saporta, p. 184, pl. IX, f. 13.

1888 *Dodonaeites decaisneana* [sic] Saporta: Schenk, p. 552.

Remarks: Fruit. According to Reid and Chandler (Bembridge Flora 1926, p. 149) the difficulties in the ascription of this species to *Dodonaea* are insuperable.

Occurrence: Oligocene; S. France (Armissan).

Enourea Aublet.**Enourea tetraceraefolia Massalongo.**

1858a *Enourea tetraceraefolia* Massalongo, p. 103 (Not seen).

1858 *Enourea tetraceraefolia* Mass.: Massalongo & Scarabelli, p. 363, pl. XXXV, f. 17, a, b, c.

1893 *Enourea tetraceraefolia* Mass.: Meschinelli & Squinabol, p. 367.

Occurrence: Miocene; Italy (Sinigaglia).

Eriocoelum Hooker f.**Eriocoelum cf. macrocarpum Gilg.**

1920 *Eriocoelum cf. macrocarpum* Gilg: Menzel, p. 28.

Occurrence: ?Pleistocene; Kamerons.

Eriocoelum racemosum Radlkofer.

1920 *Eriocoelum racemosum* Radlkofer: Menzel, p. 28.

Occurrence: ?Pleistocene; Kamerons.

Euphoria Comm. ex Juss.**[Euphoria jovis (Unger).]**

Synonym of *Nephelium jovis*, q. v.

[Euphoria phaetontis Massalongo.]

Synonym of *Euphoriopsis phaetontis*, q. v.

Euphoriaecarpum Menzel 1913.**Euphoriaecarpum litchiforme Menzel.**

1913 *Euphoriaecarpum litchiforme* Menzel, p. 43, pl. IV, f. 28, 29.

Remarks: A fragment of woody fruit wall, compared by Menzel with recent species of *Euphoria* and *Litchi*; also a seed, particularly resembling that of *Litchi*.

Occurrence: Miocene (?Lower); Lower Rhine (Herzogenrath).

Euphoriopsis Massalongo 1852, p. 12.**[Euphoriopsis berica Massalongo.]**1852 *Euphoriopsis berica* Massalongo, p. 16, pl. III, f. 8, 9.1859 *Euphoriopsis berica* Mass.: Massalongo, p. 94.1867 *Euphoriopsis berica* Mass.: Molon, p. 84.

Remarks: Heer (1856, p. 63) says that Massalongo's fig. 8 probably belongs to *Ficus multinervis* Heer, and that fig. 9 is probably a *Rhamnus*.

Occurrence: Oligocene; Italy (Salcedo).

Euphoriopsis phaetontis (Massalongo).1851 *Euphoria phaetontis* Massalongo, p. 192.1852 *Euphoriopsis phaetontis* (Mass.) Massalongo, p. 14, pl. II, f. 5.1859 *Euphoriopsis phaetontis* (Mass.): Massalongo, p. 93.1893 *Euphoriopsis phaetontis* (Mass.): Meschinelli & Squinabol, p. 366.1921 *Euphoriopsis* (?) *phaetontis* (Mass.): Principi, p. 92.1926 *Euphoriopsis* (?) *phaetontis* (Mass.): Principi, p. 122.

Remarks: Listed by Principi (1926) with a query, but without further comment.

Occurrence: Oligocene; Italy (Chiavon).

Euphoriopsis scopoliana Massalongo.1852 *Euphoriopsis scopoliana* Massalongo, p. 15, pl. II, f. 6, 7.1859 *Euphoriopsis scopoliana* Mass.: Massalongo, p. 94.1893 *Euphoriopsis scopoliana* Mass.: Meschinelli & Squinabol, p. 366.

Occurrence: Eocene; Italy (Monte Bolca).

Euphoriopsis torriana Massalongo.[1857 *Rhamnus eridani* Unger: Massalongo, p. 26.]1858a *Euphoriopsis torriana* Massalongo, p. 103 [Not seen].1858 *Euphoriopsis torriana* Mass.: Massalongo & Scarabelli, p. 362, pl. XXVI—XXVII, f. 33, pl. XLIII, f. 2.1893 *Euphoriopsis torriana* Mass.: Meschinelli & Squinabol, p. 366.

Occurrence: Miocene; Italy (Sinigaglia).

Fraasia Unger.**Fraasia sapindoides Unger.**1850 *Fraasia sapindoides* Unger, p. 457.1852 *Fraasia sapindoides* Unger: Massalongo, p. 24.1861 *Fraasia sapindoides* Unger: Ettingshausen, p. 244.1890 *Fraasia sapindoides* Unger: Kaiser, p. 26.

Remarks: Petrified wood, apparently never figured. Kaiser gives a reference to "Unger, Litteraturbericht der zool. botan. Gesellsch. zu Wien 1850—53, p. 267" but we have been unable to trace this.

Occurrence: Tertiary; probably Hungary.

Glossolepis Gilg.**Glossolepis macrobotrys Gilg.**1920 *Glossolepis macrobotrys* Gilg: Menzel, p. 28.

Occurrence: ?Pleistocene; Kamerons.

Koelreuteria Laxmann.

For a review of the fossil species, see Edwards (1927).

Koelreuteria alleni (Lesquereux) Edwards.1873 *Ophioglossum alleni* Lesquereux, p. 371.1878 *Salvinia alleni* (Lesq.) Lesquereux, p. 65, pl. V, f. 11.1883 *Salvinia alleni* (Lesq.): Lesquereux, p. 136, pl. XXI, f. 10, 11.1894 *Tmesipteris alleni* (Lesq.) Hollick, p. 256, pl. CCV, f. 12.1896 *Salvinia alleni* (Lesq.): Lindgren & Knowlton, p. 889.1908 *Tmesipteris alleni* (Lesq.): Cockerell, p. 77.1913 *Carpolithes alleni* (Lesq.) Cockerell, p. 500.1916 *Tmesipteris alleni* (Lesq.): Knowlton, p. 247.1919 *Phyllites alleni* (Lesq.) Florin, p. 254.1923 *Carpolithes alleni* (Lesq.): Hollick, p. 211. pl. X, f. 6—11; pl. XI, f. 1—3.1927 *Koelreuteria alleni* (Lesq.) Edwards, p. 109.

Remarks: Impressions of fruits. For accounts of this species see particularly Hollick (1923) and Edwards (1927).

Occurrence: Miocene; Colorado (Florissant).

Koelreuteria bettiana Massalongo.1852 *Koelreuteria bettiana* Massalongo, p. 18, pl. IV, f. 13.1859 *Koelreuteria bettiana* Mass.: Massalongo, p. 94.1893 *Koelreuteria bettiana* Mass.: Meschinelli & Squinabol, p. 364.1921 *Koelreuteria bettiana* Mass.: Principi, p. 92.1926 *Koelreuteria* (?) *bettiana* Mass.: Principi, p. 76, pl. VI, f. 22.Remarks: The generic reference of these leaves is uncertain, and Principi considers that they might belong to *Rhus*.

Occurrence: Oligocene; Italy (Chiavon).

Koelreuteria borealis Heer.1876 *Koelreuteria borealis* Heer, p. 89, pl. XXV, f. 5.1888 *Koelreuteria borealis* Heer: Schenk, p. 549.

Remarks: Leaf of doubtful affinity.

Occurrence: Tertiary; Spitsbergen.

[*Koelreuteria corcorifolia* Massalongo.]1859 *Koelreuteria corcorifolia* Massalongo, p. 94.

Remarks: Nomen nudum.

[*Koelreuteria gigas* Massalongo.]1859 *Koelreuteria gigas* Massalongo, p. 94.

Remarks: Nomen nudum.

Koelreuteria macroptera (Kovats) Edwards.

- 1856b *Ptelea macroptera* Kovats, p. 41, pl. I, f. 2.
 1870 *Ptelea macroptera* Kov.: Unger, p. 14, pl. V, f. 1.
 1874 *Ptelea macroptera* Kov.: Schimper p. 287.
 1888 *Ptelea macroptera* Kov.: Schenk, p. 531, f. 308^e.
 1927 *Koelreuteria macroptera* (Kovats) Edwards, p. 112.
 Remarks: Fruit impressions. Schenk points out that this cannot be a *Ptelea*.
 Occurrence: Miocene; Hungary (Tallya and Szanto).

Koelreuteria maffejana Massalongo.

- 1852 *Koelreuteria maffejana* Massalongo, p. 19, pl. IV, f. 14.
 1859 *Koelreuteria maffejana* Mass.: Massalongo, p. 94.
 1893 *Koelreuteria maffejana* Mass.: Meschinelli and Squinabol, p. 364.
 Remarks: A pinnate leaf, not identifiable from Massalongo's figure.
 Occurrence: Eocene; Italy (Monte Bolca).

Koelreuteria oeningensis Heer.

- 1859 *Koelreuteria oeningensis* Heer, p. 63, pl. CXXI, f. 18-20.
 1861 *Koelreuteria oeningensis* Heer: Ettingshausen, p. 243.
 1870 *Koelreuteria* cf. *oeningensis* Heer: Württenberger, p. 575.
 1873 *Koelreuteria oeningensis* Heer: Engelhardt, p. 31, pl. XII, f. 12.
 1874 *Koelreuteria oeningensis* Heer: Schimper, p. 170, pl. C, f. 33, 34.
 1880 *Koelreuteria* "olviagensis Heer": Laube, p. 278.
 1888 *Koelreuteria oeningensis* Heer: Schenk, p. 549, 553, f. 314³.
 1888 *Koelreuteria oeningensis* Heer: Lugeon, p. 174.
 1911 *Koelreuteria* "olviagensis Heer": Kafka, p. 63.
 1916 *Koelreuteria* cf. *oeningensis* Heer: Sangiorgi, p. 293 pl. XV, f. 19.
 1927 *Koelreuteria oeningensis* Heer: Edwards, p. 111.
 Remarks: Heer's leaves may quite possibly be rightly referred to *Koelreuteria*, but the other records cannot be accepted without careful examination.
 Friedrich (1883, p. 253) criticizes Engelhardt's reference of a leaf from Göhren to this species.
 Laube's record (with the name mis-spelt) from Sulloditz, Bohemia, is unaccompanied by figures and is valueless. Sangiorgi's specimen from the Pliocene of Imola is very doubtful. Lugeon records "une belle feuille" from Langhian (Middle Miocene) beds of the valley of the Borde, but does not figure it.
 Occurrence: Miocene; Oeningen, Baden.

Koelreuteria prisca Massalongo.

- 1852 *Koelreuteria prisca* Massalongo, p. 17, pl. III, f. 10-12.
 1859 *Koelreuteria prisca* Mass.: Massalongo, p. 94.
 1893 *Koelreuteria prisca* Mass.: Meschinelli & Squinabol, p. 365.
 1921 *Koelreuteria prisca* Mass.: Principi, p. 92.
 1926 *Koelreuteria prisca* Mass.: Principi, p. 76, pl. VIII, f. 16.
 Remarks: Heer (1859, p. 182), after seeing the originals of Massalongo's figs. 11 and 12, abandoned an earlier reference of these leaves to *Planera ungeri*. In 1866 however, Ettingshausen again referred them to *Planera*, and Nagalhard (Foss. Cat.,

pars 10) includes them in the synonymy of *Zelkova ungeri*. In view of Heer's statement that the specimens could scarcely be reconciled with the figures, it would seem best to regard these leaves as unidentifiable. Massalongo's fig. 10 is supposed to be a fruit, but is not recognizable.

Principi (1926) figures an imperfect leaf under this name, but admits that the attribution is uncertain, and also compares it with *Rhus pyrrhae*.

Occurrence: Oligocene; Italy (Chiavon, Salcedo).

Koelreuteria (?) reticulata (Ettingshausen) Edwards.

1854 *Dalbergia reticulata* Ettingshausen, p. 813, pl. IV f. 5.

1859 *Salvinia reticulata* (Ett.) Heer, p. 156, pl. CXLV, f. 16.

1869 *Salvinia reticulata* (Ett.): Schimper, p. 731.

1894 *Tmesipteris reticulata* (Ett.) Hollick, p. 256.

1904 *Salvinia reticulata* (Ett.): Brabenec, p. 1, pl. f. 1.

1919 *Phyllites reticulatus* (Ett.) Florin, p. 255 (Non Heer).

1923 *Salvinia reticulata* (Ett.): Hollick, p. 207, pl. X, f. 4, 5.

1927 *Koelreuteria? reticulata* (Ett.) Edwards, p. 111.

Remarks: Quite probably a fruit of *Koelreuteria*.

Occurrence: Miocene; Hungary (Tokay), Baden (Oeningen). Oligocene; Bohemia.

[Koelreuteria ? serrata Heer.]

1878 *Koelreuteria? serrata* Heer, p. 52, pl. XIV, f. 10.

Remarks: Even Heer admits that this is "sehr zweifelhaft". It is an incomplete fragment, quite unidentifiable.

Occurrence: Miocene; Sakhalin.

[Koelreuteria ulmifolia Massalongo.]

1857 *Koelreuteria ulmifolia* Massalongo, p. 30.

Remarks: Later re-named *Cissus ulmifolia* by Massalongo (1858a, p. 80; Massalongo & Scarabelli 1858, p. 304, pl. I. f. 17, pl. XXVI. f. 8).

Koelreuteria vetusta Heer.

1859 *Koelreuteria vetusta* Heer, p. 63, pl. CXXVII, f. 39a.

1861 *Koelreuteria vetusta* Heer: Ettingshausen, p. 243.

1870 *Koelreuteria vetusta* Heer: Württenberger, p. 575.

1874 *Koelreuteria vetusta* Heer: Schimper, p. 170.

1883 *Koelreuteria vetusta* Heer: Probst, p. 223.

1888 *Koelreuteria vetusta* Heer: Schenk, p. 549.

1927 *Koelreuteria vetusta* Heer: Edwards, p. 111.

Remarks: The venation differs from that of the living *K. paniculata* according to Schenk. The generic attribution is very doubtful. Württenberger's and Probst's records are valueless.

Occurrence: Miocene; Oeningen.

Koelreuteria ?

1920 *Phyllites* cf. *Koelreuteria bipinnata* Franchet: Colani, p. 227, pl. IX, f. 4, 8.

Occurrence: Tertiary (?Mio-Pliocene); Yunnan (Totang).

Lychnodiscus Radlkofer.**Lychnodiscus grandifolius Radlkofer.**

1920 *Lychnodiscus grandifolius* Radlk.: Menzel, p. 28.
Occurrence: ?Pleistocene; Kamerouns.

Lychnodiscus pedicellaris Radlkofer.

1920 *Lychnodiscus pedicellaris* Radlk.: Menzel, p. 28.
Occurrence: ?Pleistocene; Kamerouns.

Nephelites Deane, 1902, p. 60.**Nephelites berwickense Deane.**

1920b *Nephelites berwickense* Deane, p. 23, pl. VI, f. 9.
Occurrence: Tertiary; Victoria (Berwick).

Nephelites denticulata Deane.

1902 *Nephelites denticulata* Deane, p. 65, pl. XVI, f. 1.
Occurrence: Tertiary; New South Wales (Bungonia).

Nephelites equidentata Deane.

1902 *Nephelites equidentata* Deane, p. 61, pl. XV, f. 3.
Remarks: Deane compares this species, and also Ettingshausen's *Quercus dampieri*, with the living *Nephelium leiocarpum* F. v. M.
Occurrence: Tertiary; New South Wales (Wingello).

Nephelites ovata Deane.

1902 *Nephelites ovata* Deane, p. 61, pl. XVII, f. 3.
Occurrence: Tertiary; New South Wales (Wingello).

Nephelites quercifolia Deane.

1902b *Nephelites quercifolia* Deane, p. 22, pl. V, f. 11.
Occurrence: Tertiary; Victoria (Berwick).

Nephelites ulrichi Deane.

1902a *Nephelites ulrichi* Deane, p. 16, pl. I, f. 3.
1921 *Nephelites ulrichi* Deane: Chapman, p. 118, pl. VIII, f. 4.
Remarks: A worthless fragment.
Occurrence: Tertiary; Victoria (Pitfield).

Nephelites sp.?

1902b *Nephelites* sp.? Deane, p. 22, pl. VI, f. 10.
Occurrence: Tertiary; Victoria (Berwick).

Nephelium Linnaeus.**Nephelium jovis Unger.**

1867 *Nephelium jovis* Unger, p. 74, pl. XII, f. 24—27.
1874 *Nephelium jovis* Unger: Schimper, p. 169.

- [1874 *Nephelium jovis* Unger: Capellini, p. 581, pl. V, f. 20.]
 1888 *Nephelium jovis* Unger: Schenk, pp. 549, 553, f. 314⁴, 5.
 1893 *Euphoria* (*Nephelium*) *jovis* (Unger): Meschinelli & Squinabol, p. 364.

Remarks: Fruit and leaves, strongly suggesting the recent *Nephelium* and *Litchi*.

The Italian Miocene leaf figured under this name by Capellini should be excluded. Capellini himself suggested that it was very likely a *Celastrus*.

Occurrence: Miocene (Aquitanian); Kumi, Euboea.

***Nephelium verbeekianum* Geyler.**

- 1877 *Nephelium verbeekianum* Geyler, p. 83, pl. I, f. 6.
 1884 *Phyllites geyleri* Ettingshausen, p. 382.

Remarks: Geyler compared his leaf with *Sapindus anceps*, but admitted that the preservation was not good. Kräusel (1925, p. 335) states that it is indeterminate.

Occurrence: Tertiary; Borneo.

Pancovia Willdenow.

***Pancovia pedicellaris* Radlkofer.**

- 1920 *Pancovia pedicellaris* Radlkofer: Menzel, p. 28.
 Occurrence: ? Pleistocene; Kamerons.

***Pancovia subcuneata* Radlkofer.**

- 1920 *Pancovia subcuneata* Radlkofer: Menzel, p. 28.
 Occurrence: ? Pleistocene; Kamerons.

***Paullinia* Linnaeus.**

***Paullinia ambigua* Massalongo.**

- 1852 *Paullinia ambigua* Massalongo, p. 23, pl. VI, f. 26.
 1859 *Paullinia ambigua* Mass.: Massalongo, p. 95.
 1893 *Paullinia ambigua* Mass.: Meschinelli & Squinabol, p. 358.
 1921 *Paullinia ambigua* Mass.: Principi, p. 91.
 1926 *Paullinia ambigua* Mass.: Principi, p. 70, pl. VIII, f. 15.

Remarks: In 1856 Heer referred this species and *P. chiavonica* to *Planera ungeri*, but after examining the original specimens, and finding that they did not agree with the figures, he abandoned this reference (Heer 1859, p. 182). Nagalhard in the Fossilium Catalogus, pars 10 (1922) includes them both in the synonymy of *Zelcova ungeri*. Principi's figure of a fragmentary leaf is not convincing. These species cannot be regarded as good evidence for the occurrence of *Paullinia* in Italian Tertiary Beds.

Occurrence: Oligocene; Italy (Chiavon).

***Paullinia chiavonica* Massalongo.**

- 1851 *Quercus bilinea* (non Unger) Massalongo, p. 129.
 1852 *Paullinia chiavonica* Massalongo, p. 20, pl. IV, f. 15—18, pl. V, f. 19.
 1852 *Paullinia protogaea* Massalongo, p. 21, pl. V, f. 20—22.
 1859 *Paullinia chiavonica* Mass.: Massalongo, p. 94.
 1893 *Paullinia chiavonica* Mass.: Meschinelli & Squinabol, p. 359.

1921 *Paullinia chiavonica* Mass.: Principi, p. 91.

1926 *Paullinia chiavonica* Mass.: Principi, p. 71, pl. VIII, f. 7—10, 18.

Remarks: See *P. ambigua*. Compared by Principi with "*Koelreuteria prisca* Heer" (presumably, from the reference given, he means *K. oeningensis*). The resemblance to *Planera ungeri* is also noted.

Occurrence: Oligocene; Italy (Chiavon).

Paullinia dispersa Saporta.

1865a *Paullinia dispersa* Saporta, p. 183, pl. VIII, f. 7.

1874 *Paullinia dispersa* Sap.: Schimper, p. 162, pl. C f. 26.

1888 *Paullinia dispersa* Sap.: Schenk, p. 549.

Remarks: Somewhat resembles *Rhus pyrrhae* and other fossil species of *Rhus*, according to Saporta, who compares it with living species of *Serjania*, *Paullinia* and *Schmidelia*, particularly with *Schmidelia (Allophyllus) fulvinervis*.

Occurrence: Oligocene; S. France (Armissan).

Paullinia furcinervis Velenovsky.

1881 *Paulinia* [sic] *furcinervis* Velenovsky, p. 39, pl. VIII, f. 20.

Occurrence: Miocene; Bohemia (Laun).

Paullinia germanica Unger.

1866 *Paullinia germanica* Unger, p. 52, pl. XVI, f. 8.

1874 *Paullinia germanica* Unger: Schimper, p. 162.

1888 *Paullinia germanica* Unger: Schenk, p. 549.

Remarks: "Gehört schwerlich einer Sapindacee an und ist überhaupt kein fiederblatt". (Schenk).

Occurrence: Oligocene; Wetterau (Salzhausen).

[**Paullinia italica** Massalongo.]

1859 *Paullinia italica* Massalongo, p. 95.

Remarks: Nomen nudum.

[**Paullinia maraschiniana** Massalongo.]

1852 *Paullinia maraschiniana* Massalongo, p. 22, pl. VI, f. 25.

1859 *Paullinia maraschiniana* Mass.: Massalongo, p. 95.

1867 *Paullinia maraschiniana* Mass.: Molon, p. 84.

1893 *Paullinia maraschiniana* Mass.: Meschinelli & Squinabol, p. 359.

Remarks: Referred to *Rhus pyrrhae* Unger by Principi (1926, p. 68).

Occurrence: Oligocene; Italy (Vicetino).

Paullinia pinnata Linnaeus.

1920 *Paullinia pinnata* Linnaeus: Menzel, p. 28.

Occurrence: ? Pleistocene; Kamerouns.

[**Paullinia protogaea** Massalongo.]

Synonym of *Paullinia chiavonica*, a. v.

[Paullinia rubifolia Massalongo.]1859 *Paullinia rubifolia* Massalongo, p. 95.

Remarks: Nomen nudum.

Paullinia schimperi Principi.1921 *Paullinia schimperi* Principi, p. 91 (nomen).1926 *Paullinia schimperi* Principi, p. 71, pl. VIII, f. 21.Remarks: Compared by Principi with *Koelreuteria maffejana* Mass., and with the living *P. cururu* and *P. pinnata*

Occurrence: Oligocene; Italy (Chiavon).

[Paullinia vivianica Massalongo.]1852 *Paullinia vivianica* Massalongo, p. 21, pl. VI, f. 23, 24.1859 *Paullinia vivianica* Mass.: Massalongo, p. 94.1893 *Paullinia vivianica* Mass.: Meschinelli & Squinabol, p. 359.Remarks: Referred to *Rhus pyrrhae* Unger by Principi (1926, p. 68).

Occurrence: Oligocene; Italy (Chiavon).

[? Paullinia.]1895 *Phyllites gouareoides* Engelhardt, p. 22, pl. III, f. 2.Remarks: Engelhardt suggests a relationship to *Paullinia* (*P. affinis* St. Hil.).

Occurrence: Tertiary; Ecuador.

[Pentacoila F. v. Mueller, 1877a, p. 179.]Remarks: Von Mueller states that "this genus ought probably to be placed near *Penteune*". Later he thought that its nearest affinity was with his *Tricoilocaryon*, and both these genera were tentatively referred to the *Sapindaceae*.**[Pentacoila gulgongensis Mueller.]**1877a *Pentacoila gulgongensis* Mueller, p. 179.1878 (Sept.) *Pentacoila gulgongensis* Mueller, p. 40, pl. XV, f. 19, 20.1883 *Pentacoila gulgongensis* Mueller, p. 12, pl. XV, f. 19, 20.

Occurrence: Pliocene; New South Wales.

[Penteune Mueller, 1873, p. 41.]Remarks: Regarded by von Mueller as probably *Sapindaceae*. Deane, however (1925, p. 490) compares it with *Owenia* (*Meliaceae*).**[Penteune allporti Mueller.]**1880 *Penteune allporti* Mueller: Johnston, p. 85.1882 *Penteune allporti* Mueller in Johnston, expl. of f. 40, 41.1888 *Penteune allporti* Mueller: Johnston, pp. 227, 278, 285.Remarks: The only description we have traced is the following from Johnston (1882) "A species of *Penteune* (calcareous), probably *P. allporti* F. v. M., n. s. for [? from] Geilston Travertine. Fig. 41 has been shown with six valves, by mistake, should be five nearly equal divisions."

Occurrence: Tertiary; Tasmania.

[Penteune brachyclinis Mueller.]

- 1873 *Penteune brachyclinis* Mueller, p. 41, pl. VIII, f. 1—9.
 1874a *Penteune brachyclinis* Mueller, p. 21, pl. VIII, f. 1—9.
 Occurrence: Pliocene; Victoria.

[Penteune clarkei Mueller.]

- 1873 *Penteune clarkei* Mueller, p. 41, pl. VII, f. 1—10.
 1874a *Penteune clarkei* Mueller, p. 21, pl. VII.
 1880 *Penteune clarkei* Mueller: Johnston, p. 85.
 1925 *Penteune clarkei* Mueller: Deane, p. 490, pl. LX, f. 1—3.
 Remarks: Compared by Deane with *Owenia venosa* (Me-
 liaceae).
 Occurrence: Pliocene; Victoria and New South Wales.

[Penteune trachyclinis Mueller.]

- 1873 *Penteune trachyclinis* Mueller, p. 41, pl. VIII, f. 10—17.
 1874a *Penteune trachyclinis* Mueller, p. 22, pl. VIII, f. 10—17.
 Occurrence: Pliocene; Victoria.

Phialodiscus Radlkofer.**Phialodiscus myrmecophilus Gilg.**

- 1920 cf. *Phialodiscus myrmecophilus* Gilg: Menzel, p. 28.
 Occurrence: ?Pleistocene; Kameroons.

Phyllites sp.

- 1883 *Phyllites* sp.: Nathorst, p. 212, pl. XIX, f. 7.
 1884 *Phyllites* sp.: Ettingshausen, p. 862.
 Remarks: Ettingshausen considers this to be *Sapindus*—
 probably *Sapindus undulatus*.
 Occurrence: Tertiary; Japan.

[Phymatocaryon Mueller, 1871, p. 47.]

- Remarks: Von Mueller considered that these fruits were
 probably Sapindaceous. Deane, however, in 1925 (p. 491) com-
 pared *P. mackayi* with *Elaeocarpus*. According to Berry the botani-
 cal position of *Phymatocaryon* is entirely problematical.

[Phymatocaryon angulare Mueller.]

- 1874a *Phymatocaryon angulare* Mueller, p. 23, pl. X, f. 1—4.
 Occurrence: Pliocene; Victoria.

[Phymatocaryon bivalve Mueller.]¹

- 1877a *Phymatocaryon bivalve* Mueller, p. 180.
 1879 *Phymatocaryon bivalve* Mueller: Mueller, p. 170, pl. III, f. 3.
 1883 *Phymatocaryon bivalve* Mueller: Mueller, p. 9, pl. XV, f.
 6—9.
 1925 *Phymatocaryon bivalve* Mueller: Deane, p. 491, pl. LX, f.
 4—6.
 1926 *Phymatocaryon bivalve* Mueller: Berry, p. 183, figs. 1—3.
 Occurrence: Pliocene; New South Wales, Victoria, New
 Zealand.

[Phymatocaryon mackayi Mueller.]

- 1871 *Phymatocaryon mackayi* Mueller, p. 47, pl. II, f. 1—15.
 1874a *Phymatocaryon mackayi* Mueller: Mueller, p. 10, pl. II.
 1883 *Phymatocaryon mackayi* Mueller: Mueller, p. 14.
 1925 *Phymatocaryon mackayi* Mueller: Deane, p. 491, pl. LX, f. 13—16.

Remarks: Compared by Deane with *Elaeocarpus* spp.
 Occurrence: Pliocene; Victoria, New South Wales, Tasmania.

Sapindaceae genus?

- 1915 Sapindaceae — Genus? C. & E. M. Reid, p. 112, pl. XI, f. 17.

Remarks: An incomplete fruit probably belonging to the *Paullinieae*.

Occurrence: Pliocene; Holland (Reuver).

Sapindoides Perkins, 1904, p. 206.

Established for sapindaceous fruits of uncertain affinity.

Sapindoides americanus (Lesquereux).

- 1853 [Fruit]: Hitchcock, f. 7, 8, p. 99.
 1861 *Sapindus americanus* Lesquereux, p. 359.
 1861a *Sapindus americanus* Lesq.: Lesquereux, p. 715, f. 142—145.
 1904 *Sapindoides americanus* (Lesq.) Perkins, p. 207, pl. LXXX, f. 119, 140.
 1905 *Sapindoides americanus* (Lesq.): Perkins, p. 508, pl. LXXXVI, f. 3.
 1906 *Sapindoides americanus* (Lesq.): Perkins, p. 221, pl. LII, f. 3, pl. LVII, f. 14, 15. (The last two figures are labelled *S. varius* on the plate.)

Occurrence: Eocene; Vermont (Brandon).

Sapindoides cylindricus Perkins.

- 1904 *Sapindoides cylindricus* Perkins, p. 208, pl. LXXX, f. 131, 139.

Occurrence: Eocene; Vermont (Brandon).

Sapindoides medius Perkins.

- 1904 *Sapindoides medius* Perkins, p. 207, pl. LXXX, f. 130.
 1905 *Sapindoides medius* Perkins: Perkins, p. 507, pl. LXXXVI, f. 1.
 1906 *Sapindoides medius* Perkins: Perkins, pl. LII, f. 1.

Occurrence: Eocene; Vermont (Brandon).

Sapindoides minimus Perkins.

- 1904 *Sapindoides minimus* Perkins, p. 208, pl. LXXX, f. 127.

Occurrence: Eocene; Vermont (Brandon).

Sapindoides parva Perkins.

- 1904 *Sapindoides parva* Perkins, p. 207, pl. LXXX, f. 126.

Occurrence: Eocene; Vermont (Brandon).

Sapindoides peruvianus Berry.

- 1927 *Sapindoides peruvianus* Berry, p. 126, pl. XIX, f. 9, 9a.
Occurrence: Oligocene; Peru (Paita).

Sapindoides urceolatus Perkins.

- 1906 *Sapindoides urceolatus* Perkins, p. 220, pl. LVII, f. 11, 12.
Occurrence: Eocene; Vermont (Brandon).

Sapindoides varius Perkins.

- 1904 *Sapindoides varius* Perkins, p. 206, pl. LXXX, f. 116, 117, 122.
1905 *Sapindoides varius* Perkins: Perkins, p. 508, pl. LXXXVI, f. 2.
1906 *Sapindoides varius* Perkins: Perkins, pl. LII, f. 2.
Remarks: Figures 14 and 15 on plate LVII, Perkins 1906 are labelled *S. varius*, but are described on p. 221 as *S. americanus*.
Occurrence: Eocene; Vermont (Brandon).

Sapindoides vermontanus Perkins.

- 1904 *Sapindoides vermontanus* Perkins, p. 207, pl. LXXX, f. 132, 135.
Occurrence: Eocene; Vermont (Brandon).

Sapindophyllum Ettingshausen.**Sapindophyllum acuminatum** Ettingshausen.

- 1869 *Sapindophyllum acuminatum* Ettingshausen, p. 27.
1911 *Sapindophyllum acuminatum* Ett.: Kafka, p. 29.
Remarks: Schimper (1874, p. 168) says that this and other species from Bilin described by Ettingshausen are very problematical. Schenk (1888, p. 551) also remarks that they are partly founded on incomplete and poorly preserved leaves.
Occurrence: Oligocene; Bohemia (Kutschlin).

Sapindophyllum apiculatum (Velenovsky).

- 1884 *Sapindus apiculatus* Velenovsky, p. 6, pl. VII, f. 1—8.
1888 *Sapindus apiculatus* Vel.: Schenk, p. 550.
1889 *Sapindophyllum apiculatum* (Vel.) Velenovsky, pp. 51, 54, 57.
1896 *Sapindus apiculatus* Vel.: Krasser, p. 131, pl. XII, f. 4.
1898a *Sapindus apiculatus* Vel.: Hollick, p. 133, pl. XIII, f. 1, 2.
1901 *Sapindus apiculatus* Vel.: Fritsch & Bayer, p. 137.
1903 *Sapindus apiculatus* Vel.: Berry, p. 84.
1906 *Sapindus apiculatus* Vel.: Berry, p. 139.
1906 *Sapindus apiculatus* Vel.: Hollick, p. 91, pl. XXXIII, f. 21.
Occurrence: Cretaceous (Cenomanian); Bohemia. Cretaceous (Magothy); New York, New Jersey.

Sapindophyllum brevior Saporta.

- 1894 *Sapindophyllum brevior* Saporta, p. 205, pl. XXXVII, f. 11.
(*S. brevius* in explanation of plate).
Occurrence: Cenomanian; Portugal (Nazareth).

Sapindophyllum coriaceum Ettingshausen.

1887 *Sapindophyllum coriaceum* Ettingshausen, p. 187, pl. IX, f. 22, 23.

1890 *Sapindophyllum coriaceum* Ett.: Ettingshausen, p. 306, pl. XXXII, f. 22, 23.

Occurrence: Upper Cretaceous; New Zealand (Wangapeka, Nelson).

Sapindophyllum denticulatum Menzel.

1914 *Sapindophyllum denticulatum* Menzel, p. 61, pl. II, f. 16.

Occurrence: Miocene; Switzerland (Gnippon).

Sapindophyllum dubium Ettingshausen.

1869 *Sapindophyllum dubium* Ettingshausen, p. 27, pl. XLVI, f. 21.

Remarks: See *S. acuminatum*.

Occurrence: Miocene; Bohemia (Schichow).

[Sapindophyllum dubium Nathorst, non Ett.]

1888 *Sapindophyllum dubium* Nathorst, p. 212, pl. XXII, f. 5.

Remarks: Nathorst says that the relationship with *Sapindus* is uncertain and also compares the leaf with *Aesculus*, *Sterculia* and *Rhus*. The specific name is preoccupied by Ettingshausen, and the spelling *Sapindophyllum* is merely a variant of the earlier *Sapindophyllum*. It is not worth while to make a new name for this dubious fragment.

Occurrence: Miocene; Japan (Todohara).

Sapindophyllum falcatum Ettingshausen.

1869 *Sapindophyllum falcatum* Ettingshausen, p. 27, pl. XLVI, f. 23.

1885 *Sapindophyllum falcatum* Ett.: Engelhardt, p. 352, pl. XXI, f. 22.

1911 *Sapindophyllum falcatum* Ett.: Kafka, p. 29.

Remarks: See *S. acuminatum*.

Occurrence: Oligocene; Bohemia (Kutschlin).

Sapindophyllum paradoxum Ettingshausen.

1885 *Sapindophyllum paradoxum* Ettingshausen, p. 21, pl. XXXI, f. 4, 4a.

1888 *Sapindophyllum paradoxum* Ett.: Schenk, p. 551.

Remarks: Schenk considers it doubtful whether this is a pinnate leaf. Ettingshausen compares it with *Cupania*, *Sapindus* and *Paullinia*.

Occurrence: Oligocene; Carniola (Sagor).

Sapindophyllum pelagicum (Unger) Velenovsky.

1850 *Phyllites pelagicus* Unger, p. 503.

1867a *Phyllites pelagicus* Unger: Unger, p. 653, pl. II, f. 13.

1884 *Sapindophyllum pelagicum* (Unger) Velenovsky, p. 7, pl. VII, f. 9, pl. VIII, f. 6-9.

1888 *Sapindophyllum pelagicum* (Unger): Schenk, p. 550.

1889 *Sapindophyllum pelagicum* (Unger): Velenovsky, pp. 51, 54.

1901 *Sapindophyllum pelagicum* (Unger): Fritsch & Bayer, p. 138.

Remarks: Bayer (1920, p. 61) considers that one of Velenovsky's specimens (1884, pl. VII, f. 9), from Vyserovic, belongs to the Bombacaceae and he renames it *Pachira pelagica*. He does not think that Velenovsky's other specimens, which came from Kaunitz, belong to the same species, and he agrees with Velenovsky that the Kaunitz specimens closely resemble Unger's *Phyllites pelagicus*.

Velenovsky also compares these forms with Heer's *Daphnophyllum crassinervium* from Moletain.

Occurrence: Cretaceous (Cenomanian); Bohemia.

Sapindophyllum spinuloso-dentatum

Ettingshausen.

1869 *Sapindophyllum spinuloso-dentatum* Ettingshausen, p. 26, pl. XLVI, f. 27.

1891a *Sapindophyllum spinuloso-dentatum* Ett.: Engelhardt, p. 37.

1911 *Sapindophyllum spinuloso-dentatum* Ett.: Kafka, p. 29.

Remarks: See *S. acuminatum*.

Occurrence: Oligocene and Aquitanian; Bohemia (Kutschlin, Holoakluk).

Sapindophyllum subapiculatum Saporta.

1894 *Sapindophyllum subapiculatum* Saporta, p. 205, pl. XXXVI, f. 10, 11, pl. XXXVII, f. 4, 5, 10a, 17.

Occurrence: Cenomanian; Portugal (Nazareth).

Sapindophyllum sp.

1890 *Sapindophyllum* sp.: Marion, p. 1054.

Occurrence: Turonian; Martigues (Bouches-du-Rhone).

Sapindophyllum sp.

1906 *Sapindophyllum* sp.: Krasser, p. 42.

Occurrence: Senonian; Lower Austria (Grünbach).

Sapindopsis Fontaine, 1889, p. 296.

Remarks: Berry (1910) compares this genus with the living *Matayba* Aublet, of tropical America.

Sapindopsis belviderensis Berry.

1922b *Sapindopsis belviderensis* Berry, p. 216, pls. XLIX—LIV.

Occurrence: Upper Cretaceous (Cheyenne Sandstone); Kansas.

Sapindopsis brevifolia Fontaine.

1889 *Sapindopsis brevifolia* Fontaine, p. 300, pl. CLIII, f. 4, pl. CLV, f. 1, 7, pl. CLXIII, f. 3.

1905 *Sapindopsis brevifolia* Font.: Fontaine in Ward, pp. 481, 482, 528.

1910 *Sapindopsis brevifolia* Font.: Berry, p. 644.

1911 *Sapindopsis brevifolia* Font.: Berry, p. 473, pl. LXXXVII, f. 2—5.

1922b *Sapindopsis brevifolia* Font.: Berry, p. 216, pl. LV, f. 1, pl. LIX, f. 1.

Remarks: Probably represents a variant of *S. variabilis* (Berry 1922b).

Occurrence: Cretaceous (Patapsco); Virginia, Maryland. Upper Cretaceous (Cheyenne Sandstone); Kansas.

[Sapindopsis cordata Fontaine.]

1889 *Sapindopsis cordata* Fontaine, p. 296, pl. CXLVII, f. 1.

Remarks: Included by Berry (1911, p. 505), in *Ficophyllum oblongifolium* (Font.), which is regarded by Knowlton (1919, p. 269) as a synonym of *Ficophyllum crassinerve* Font.

[Sapindopsis elliptica Fontaine.]

1889 *Sapindopsis elliptica* Fontaine, p. 297, pl. CXLVII, f. 3.

Remarks: Synonym of *Rogersia longifolia* Fontaine (teste Berry, 1910).

Sapindopsis magnifolia Fontaine.

1889 *Sapindopsis magnifolia* Fontaine, p. 297, pl. CLI, f. 2, 3; pl. CLII, f. 2, 3; pl. CLIII, f. 2; pl. CLIV, f. 1, 5; pl. CLV, f. 6.

1889 *Sapindopsis obtusifolia* Fontaine, p. 301, pl. CLVI, f. 13; pl. CLIX, f. 3—6. (teste Berry, 1910).

1889 *Ficophyllum eucalyptoides* Fontaine, p. 294, pl. CLXIV, f. 1, 2. (teste Berry, 1910).

1889 ?*Aralia dubia* Fontaine, p. 314, pl. CLVII, f. 1, 7, (non Schimper, 1874), (teste Berry, 1910).

1889 *Sapindopsis tenuinervis* Fontaine, p. 301, pl. CLIII, f. 1. (teste Berry, 1910).

1892 *Rhus uddeni* Lesquereux, p. 154, pl. LVII, f. 2 (teste Berry, 1922b).

1895 *Rhus uddeni* Lesq.: Knowlton, p. 212.

1898 ?*Aralia fontainei* Knowlton, p. 37 (teste Berry, 1911).

1905 *Sapindopsis tenuinervis* Font.: Fontaine in Ward, pp. 489, 528.

1905 *Sapindopsis magnifolia* Font.: Fontaine in Ward, pp. 481, 482, 489, 528.

1905 *Ficophyllum eucalyptoides* Font.: Fontaine in Ward, p. 489.

1910 *Sapindopsis magnifolia* Font.: Berry, p. 642.

1911 *Sapindopsis magnifolia* Font.: Berry, p. 471, pl. LXXXVI: pl. LXXXVII, f. 1; pl. LXXXVIII.

1922b *Sapindopsis magnifolia* Font.: Berry, p. 214, pl. LV, f. 5: pl. LVI; pl. LVII, f. 2; pl. LIX, f. 3.

Remarks: In addition to the names included in the synonymy, Berry (1922b, p. 215) mentions the following species recorded by Lesquereux (1892) which "although I do not feel justified in transferring them to *Sapindopsis*, are more or less open to suspicion": *Aralia masoni* Lesq., *Laurus angusta* Heer, *Leguminosites hymenophyllus* Lesq., *Sapindus diversifolius* Lesq., and *Rhus powelliana* Lesq.

Occurrence: Cretaceous (Patapsco, Fuson, Cheyenne Sandstone); Virginia, Maryland, Wyoming, Kansas.

[Sapindopsis obtusifolia Fontaine.]

Synonym of *Sapindopsis magnifolia* Fontaine, q. v.

[Sapindopsis oregonensis Fontaine.]

1905 *Sapindopsis oregonensis* Fontaine, in Ward, p. 268, pl. LXIX, f. 15—17.

Remarks: Renamed *Nilssonia oregonensis* (Font.) by Berry (1910, p. 637).

[Sapindopsis parvifolia Fontaine.]

Synonym of *Sapindopsis variabilis*, q. v.

[Sapindopsis tenuinervis Fontaine.]

Synonym of *Sapindopsis magnifolia*, q. v.

Sapindopsis variabilis Fontaine.

1889 *Sapindopsis variabilis* Fontaine, p. 298, pl. CLI, f. 1; pl. CLII, f. 1, 4; pl. CLIII, f. 3; pl. CLIV, f. 2—4; pl. CLV, f. 2—5.

1889 *Sapindopsis parvifolia* Fontaine, p. 300, pl. CLIV, f. 6. (teste Berry, 1910).

1899 *Sapindopsis variabilis* Font.: Fontaine, p. 690, pl. CLXIX, f. 9.

1905 *Rogersia angustifolia* Fontaine, in Ward, pp. 491, 510 [not p. 521] (teste Berry, 1911).

1905 *Ficus myricoides* Hollick: Ward, p. 531, pl. CXII, f. 12. (teste Berry, 1911).

1905 *Eucalyptus roseriana* Ward, p. 530, pl. CXIII, f. 9, 10. (teste Berry, 1911).

1905 *Sapindopsis variabilis* Font.: Fontaine in Ward, pp. 481, 482, 489, 532, pl. CXIV, f. 2.

1911 *Sapindopsis variabilis* Font.: Berry, p. 469, pl. LXXXIII—LXXXV.

1916 *Sapindopsis variabilis* Font.: Cockerell, p. 110.

1922b *Sapindopsis variabilis* Font.: Berry, p. 213, pl. LV, f. 2—4.

Remarks: Berry has examined Cockerell's material from Colorado, and states that it is very inconclusive.

Occurrence: Cretaceous (Patapsco, Fuson, Cheyenne Sandstone); Maryland, Virginia, Wyoming, Kansas, ?Colorado.

Sapindoxylon Kräusel.**Sapindoxylon Janssonii Kräusel.**

1922 *Sapindoxylon janssonii* Kräusel, p. 256, pl. I, f. 9; pl. II f. 3; pl. III, f. 6; pl. V, f. 5; pl. VI, f. 2.

1922 ?*Sapindoxylon janssonii* Kräusel, p. 258, pl. I, f. 8.

Remarks: Wood.

Occurrence: Lower Miocene; Sumatra (Barissan Mts., Benkulen). ?Upper Miocene; Sumatra (Palembang).

Sapindus Tournefort ex Linnaeus.**[Sapindus acuminatoides Engelhardt.]**

1904a *Sapindus acuminatoides* Engelhardt, p. 323.

Remarks: Doubtless a misprint for *Celastrus acuminatoides* described on p. 353.

[**Sapindus acuminatus** Engelhardt (non Rafinesque,
non Wallich).]

Synonym of *Sapindus engelhardti*, q. v.

Sapindus aemulus Heer.

1881a *Sapindus aemulus* Heer, p. 21, pl. II, f. 5a.

1925 *Sapindus aemulus* Heer: Kräusel, pp. 337, 338.

Remarks: According to Kräusel, this is at any rate sapindaceous.

Occurrence: Tertiary; Sumatra.

Sapindus affinis Newberry.

1868 *Sapindus affinis* Newberry, p. 51.

1870 *Sapindus affinis* Newb.: Newberry, p. 52.

1874 *Sapindus affinis* Newb.: Schimper, p. 168.

1878b *Sapindus affinis* Newb.: Lesquereux, pl. XXIV, f. 1; pl. XXV f. 2. [Not seen].

1883 *Sapindus affinis* Newb.: Dawson, p. 32.

1885 *Sapindus affinis* Newb.: Ward, p. 554, pl. L, f. 2. 3.

1887 *Sapindus affinis* Newb.: Ward, p. 67, pl. XXX, f. 1. 2.

1887 *Sapindus affinis* Newb.: Dawson, p. 29.

1898 *Sapindus affinis* Newb.: Newberry, p. 116, pl. XXX, f. 1; pl. XL, f. 2.

1899 *Sapindus affinis* Newb.: Knowlton, p. 736, pl. CII f. 1—3.

1908 *Sapindus affinis* Newb.: Leonard, p. 49.

1909 *Sapindus affinis* Newb.: Knowlton, pp. 185, 189, 191, 201, 202, 211, 214.

1909 *Sapindus affinis* Newb.: Dowling, p. 31.

1910 *Sapindus affinis* Newb.: Dowling, p. 13.

1912 *Sapindus affinis* Newb.: Knowlton, p. 198.

1918 *Sapindus affinis* Newb.: Knowlton, p. 331, pl. XCIX, f. 3.

1924 *Sapindus affinis* Newb.: Berry, p. 72, pl. XII, f. 8.

Occurrence: Eocene (Raton, Fort Union, Lance, Lisbon); Montana, Colorado, N. Dakota, Wyoming, Mississippi, Saskatchewan.

?Upper Cretaceous (Laramie); N. W. Territories of Canada.

[**Sapindus alatus** Ward, non Salisbury.]

Synonym of *Sapindus glendivensis*, q. v.

[**Sapindus americanus** Lesquereux.]

Synonym of *Sapindoides americanus*, q. v.

Sapindus anceps Heer.

1874a *Sapindus macrophyllus* Heer, p. 16, pl. III, f. 3 [Non Saporta].

1881a *Sapindus anceps* Heer, p. 20.

1925 *Sapindus anceps* Heer: Kräusel, p. 337.

Occurrence: Tertiary; Sumatra.

[**Sapindus anconitanus** Paolucci.]

Synonym of *Sapindus hazslinszkyi*, q. v.



Sapindus angustifolius Lesquereux.

- 1874a *Sapindus angustifolius* Lesquereux, p. 415.
 1878a *Sapindus angustifolius* Lesq.: Lesquereux, p. 265, pl. XLIX, f. 3-7. [non f. 2].
 [1880 *Sapindus angustifolius* Lesq.: Ettingshausen, p. 235.]
 1883 *Sapindus angustifolius* Lesq.: Lesquereux, p. 181, pl. XXXVII, f. 1, 2, 6, 8 [non 3, 5, 7]; pl. XXXIX f. 12.
 1885 *Sapindus angustifolius* Lesq.: Ward, p. 554, pl. LI, f. 1-3.
 1887 *Sapindus angustifolius* Lesq.: Ward, p. 68, pl. XXXI, f. 5-7.
 1888 *Sapindus angustifolius* Lesq.: Lesquereux, p. 15, 35.
 [1901 *Sapindus angustifolius* Lesq.: Squinabol, p. 53.]
 1902 *Sapindus angustifolius* Lesq.: Knowlton, p. 79.
 [1908 *Sapindus angustifolius* Lesq.: Lauby, p. 156.]
 [1910 *Sapindus angustifolius* Lesq.: Lauby, pp. 122, 372.]
 1919 *Sapindus angustifolius* Lesq.: Knowlton, p. 577.
 [1921 *Sapindus angustifolius* Lesq.: Principi, p. 92.]
 [1926 *Sapindus angustifolius* Lesq.: Principi, p. 75, pl. III, f. 5.]

Remarks: Knowlton says (1919, p. 577), "This is a homonym of *S. angustifolius* Blume. The leaves that have long been known as *Sapindus angustifolius* Lesquereux are obviously in confusion. Some have been removed under the names *S. coloradense* Cockerell and *S. leonis* Cockerell; the remainder are unassigned. Pending critical studies the species is permitted to stand".

In addition to Cockerell's two species (q. v.), some specimens formerly ascribed to *S. angustifolius* are now named *S. mississippiensis* (q. v.), and others *S. formosus* (q. v.).

In view of this confusion it is obvious that Squinabol's record of this species from the Eocene of Novale, Italy (1901) cannot stand. Squinabol does not figure his specimens, and, moreover, he compares it particularly with one of Lesquereux's figures which is now included in *S. coloradensis*. It would, however, be unwise to regard Squinabol's fragmentary specimen as a European record of *S. coloradensis*.

Ettingshausen's and Lauby's unfigured references to *S. angustifolius* are also valueless. Principi (1926) figures a pinnate leaf from Chiavon under this name, but again the ascription is not, in our opinion, admissible. This leaf resembles one figured by Principi (1916, pl. LXXXV, f. 11) as *S. dubius*, but the latter figure is not mentioned in the text, and moreover it appears to be much smaller and narrower than the typical *S. dubius*.

The question of the possible specific identity of European with North American Tertiary dicotyledons is one which will require careful study; most of the occasional identifications so far made among the Sapindaceae have been particularly unfortunate. (Cf. also the remarks on *S. dimidiatus*, *S. dubius*, *S. undulatus* etc.).

Occurrence: Eocene; Oregon and Montana. Miocene; Colorado. (See also remarks).

[Sapindus apiculatus Velenovsky.]

Synonym of *Sapindophyllum apiculatum*, q. v.

Sapindus argentinus Berry.

1925 *Sapindus argentinus* Berry, p. 208, pl. II, f. 4.

Occurrence: Miocene; Patagonia.



Sapindus asperifolius Ettingshausen.

1885 *Sapindus asperifolius* Ettingshausen, p. 20, pl. XXXI, f. 7, 7a.

Remarks: Very near *S. falcifolius*. The supposed papillate surface may not be original.

Occurrence: Oligocene; Carniola (Sagor).

Sapindus basilicus (Unger) Unger.

1850 *Juglans basilica* Unger, p. 470.

1866 *Sapindus basilicus* (Unger) Unger, p. 50, pl. XVI, f. 2-4.

1869 *Sapindus basilicus* (Unger): Ettingshausen, p. 25, pl. XLVII, f. 13.

1874 *Sapindus basilicus* (Unger): Schimper, p. 166.

1879 *Sapindus basilicus* (Unger): Engelhardt, p. 296.

1888 *Sapindus basilicus* (Unger): Schenk, p. 550.

1911 *Sapindus basilicus* (Unger): Kafka, pp. 29, 42.

1922 *Sapindus basilicus* (Unger): Engelhardt, p. 93, pl. XXXI, f. 3.

Remarks: Schenk considers that the flowers referred to this species by Unger (1866) are possibly sapindaceous, but the preservation is not good enough for this to be certain. There was no evidence of connexion with the leaf on which the species was founded. Ettingshausen and Engelhardt figure leaves only.

Occurrence: Upper Eocene; Germany (Hessen). Oligocene; Bohemia (Bilin basin). Miocene; Croatia (Radoboj).

Sapindus bentonensis Berry.

1916 *Sapindus bentonensis* Berry, p. 273, pl. LXVII, f. 4.

Occurrence: Eocene (Wilcox); Arkansas and Texas.

Sapindus bilanicus Ettingshausen.

1869 *Sapindus bilanicus* Ettingshausen, p. 24, pl. XLVII, f. 4-7.

1874 *Sapindus bilanicus* Ett.: Schimper, p. 167.

1881a *Sapindus bilanicus* Ett.: Wentzel, p. 262.

1888 *Sapindus bilanicus* Ett.: Schenk, p. 550.

1891c *Sapindus bilanicus* Ett.: Engelhardt, p. 183, pl. XV, f. 1, 3-10; pl. XVI, f. 1.

1891a *Sapindus bilanicus* Ett.: Engelhardt, p. 37.

1898 *Sapindus bilanicus* Ett.: Engelhardt, p. 105.

1908 *Sapindus bilanicus* Ett.: Reininger, p. 510.

1911 *Sapindus bilanicus* Ett.: Kafka, p. 29.

1921 *Sapindus bilanicus* Ett.: Principi, p. 91.

1922 *Sapindus bilanicus* Ett.: Depape, p. 192, pl. XV, f. 10-12.

1926 *Sapindus bilanicus* Ett.: Principi, p. 72, pl. VIII, f. 13.

Remarks: Schenk (1888) mentions doubtful flowers of this species, but we have not found any earlier reference to them in the literature. Engelhardt (1891c) figures fruits under this name, as well as leaves.

Occurrence: Oligocene; Italy (Chiavon), Bohemia (Bilin basin, Berand). Pliocene; France (Théziers).

[Sapindus bolcensis Massalongo.]

Synonym of *Sapindus pristinus*, q. v.

Sapindus brandzai Marion & Laurent.

- 1898 *Sapindus brandzai* Marion & Laurent, p. 209, pl. II, f. 10.
 Remarks: Resembles *S. falcifolius*.
 Occurrence: Miocene; Rumania (Săcele).

Sapindus cassioides Ettingshausen.

- 1869 *Sapindus cassioides* Ettingshausen, p. 26, pl. XLVI, f. 1—7.
 1874 *Sapindus cassioides* Ett.: Schimper, p. 167.
 1880 *Sapindus cassioides* Ett.: Sieber, p. 87, pl. II, f. 12.
 1885 *Sapindus cassioides* Ett.: Engelhardt, p. 351, pl. XIX, f. 6, 7, 10; pl. XXI, f. 13, 16.
 1888 *Sapindus cassioides* Ett.: Ettingshausen, p. 27.
 1898 *Sapindus cassioides* Ett.: Engelhardt, p. 105.
 1898 *Sapindus cassioides* Ett.: Menzel, p. 16.
 1903 *Sapindus cassioides* Ett.: Menzel, p. 17.
 1911 *Sapindus cassioides* Ett.: Kafka, pp. 29, 42, 63.
 1914 *Sapindus cassioides* Ett.: Principi, p. 184.
 1916 *Sapindus cassioides* Ett.: Principi, p. 136, pl. LXIII, f. 4, 6—8, pl. LXXXV, f. 11.

Remarks: According to Schimper and Principi, the generic attribution is doubtful. The leaves resemble those of *Carya heerii* (Ett.).

Occurrence: Oligocene; Bohemia (Kundratitz, Kutschlin etc.), Italy (S. Giustina). Miocene; Bohemia (Kostenblatt), Styria (Leoben).

Sapindus caudatus Lesquereux.

- 1873 *Sapindus caudatus* Lesquereux, p. 380, 397.
 1871 *Sapindus caudatus* Lesq.: Schimper, p. 610.
 1878a *Sapindus caudatus* Lesq.: Lesquereux, p. 264, pl. XLVIII, f. 6.
 1888 *Sapindus caudatus* Lesq.: Lesquereux, p. 24.
 1909 *Sapindus caudatus* Lesq.: Stanton, p. 272.
 1918 *Sapindus caudatus* Lesq.: Knowlton, p. 330, pl. C, f. 2.

Remarks: In Knowlton 1917 (p. 330), *Nyssa lanceolata* Lesquereux (1878a, pl. XXXV, f. 5) is included as a synonym of *S. caudatus*, but in Knowlton 1919 (p. 413) it is again listed as *Nyssa lanceolata*.

Occurrence: Eocene (Denver, Wilcox, Raton); Colorado, Louisiana and New Mexico.

Sapindus coloradensis Cockerell.

- 1878a *Sapindus angustifolius* Lesquereux (pars) pl. XLIX, f. 2
 1883 *Sapindus angustifolius* Lesquereux (pars) pl. XXXVII, f. 3—5.
 1908 *Sapindus coloradensis* Cockerell, p. 101, pl. IV, f. 31.

Remarks: See *S. angustifolius*.

Occurrence: Miocene; Colorado (Florissant).

[Sapindus coriaceus Lesquereux.]

- 1874 *Sapindus coriaceus* Lesquereux, p. 415.
 1878a *Sapindus coriaceus* Lesq.: Lesquereux, p. 265, pl. XLIX, f. 12—14.
 1883 *Sapotacites copeanus* Ettingshausen, p. 136.
 1883a *Sapotacites copeanus* Ett.: Ettingshausen, p. 57.

1888 *Sapindus coriaceus* Lesq.: Lesquereux, p. 24.

1919 *Sapotacites coriaceus* (Lesq.) Knowlton, p. 582.

Remarks: Ettingshausen founded his species *Sapotacites copeanus* on Lesquereux's figure 13, and stated that figure 14 might remain as *Sapindus coriaceus*. He does not mention figure 12. Knowlton in his catalogue included both of these in *Sapotacites* without further comment. Lesquereux's figure 14 is of an exceedingly poor fragment, and figure 12, if a *Sapindus*, might well belong to some other species. It is probably best to follow Knowlton and transfer *Sapindus coriaceus* to *Sapotacites*.

Occurrence: Eocene; Louisiana. Miocene; Nevada.

***Sapindus couchatta* Berry.**

1899 *Juglans rugosa* Lesquereux: Hollick, p. 280, pl. XXXV, f. 1. [non f. 2].

1916 *Sapindus couchatta* Berry, p. 273, pl. LXV, f. 5.

Occurrence: Eocene (Wilcox); Louisiana.

[*Sapindus crassinervis* Ettingshausen.]

1880 *Sapindus crassinervis* Ettingshausen, p. 235.

Remarks: Nomen nudum.

***Sapindus cupanioides* Ettingshausen.**

1869 *Sapindus cupanioides* Ettingshausen, p. 25, pl. XLVII, f. 3.

1874 *Sapindus cupanioides* Ett.: Schimper, p. 167.

1885 *Sapindus cupanioides* Ett.: Engelhardt, p. 351.

1896 *Sapindus cupanioides* Ett.: Engelhardt, p. 170.

1901 *Sapindus cupanioides* Ett.: Squinabol, p. 55.

1911 "*Dodonaea cupanioides* Ett.": Kafka, p. 63.

1914 *Sapindus cupanioides* Ett.: Principi, p. 184.

1916 *Sapindus cupanioides* Ett.: Principi, p. 136, pl. LXIII, f. 12.

1921 *Sapindus cupanioides* Ett.: Principi, p. 91.

1922 *Sapindus cupanioides* Ett.: Engelhardt, p. 93, pl. XXXII, f. 10.

1926 *Sapindus cupanioides* Ett.: Principi, p. 72, pl. III, f. 6.

Occurrence: Eocene; Italy (Novale), Hessen (Messel). Oligocene; Italy (S. Giustina, Chiavon). Oligocene and Miocene; Bohemia (Bilin basin).

***Sapindus dalmaticus* Visiani.**

1858 *Sapindus dalmaticus* Visiani, p. 438, pl. XV, f. 1, 2.

1861 *Sapindus dalmaticus* Vis.: Ettingshausen, p. 245.

Occurrence: Oligocene; Dalmatia.

***Sapindus defunctus* Heer.**

1878 *Sapindus defunctus* Heer, p. 50, pl. XIV, f. 11.

Remarks: Should probably be united with *S. falcifolius*. Represented by a single incomplete leaf.

Occurrence: Miocene (Heer); Sakhalin.

***Sapindus densifolius* Heer.**

1859 *Sapindus densifolius* Heer, p. 62, pl. CXX, f. 1.

1861 *Sapindus densifolius* Heer: Ettingshausen, p. 245.

1864 *Sapindus densifolius* Heer: Gaudin & Strozzi, p. 21.

- 1869a *Sapindus densifolius* Heer: Heer, p. 94, pl. XXIX, f. 13, 13b.
 1874 *Sapindus densifolius* Heer: Schimper, p. 164.
 1876 *Sapindus densifolius* Heer: Peruzzi, p. 75.
 1888 *Sapindus densifolius* Heer: Schenk, p. 551.
 1893 *Sapindus densifolius* Heer: Meschinelli & Squinabol, p. 360.
 1895 *Sapindus densifolius* Heer: Keller, p. 325, pl. VI, f. 4.
 1898 *Sapindus densifolius* Heer: Almera, p. 686.
 1911 *Sapindus densifolius* Heer: Engelhardt, p. 379, pl. XLI, f. 63.

Remarks: Very close to *S. falcifolius*, and should perhaps be united with it.

Occurrence: Oligocene: Prussia (Rixhöft), Hessen (Flörsheim). Miocene: Baden and Switzerland. Pliocene: Italy (Tuscany), Spain (Barcelona).

***Sapindus dentoni* Lesquereux.**

- 1876 *Sapindus dentoni* Lesquereux, p. 315.
 1876a *Sapindus dentoni* Lesq.: Lesquereux, p. 388.
 1878a *Sapindus dentoni* Lesq.: Lesquereux, p. 265, pl. LXIV, f. 2-4.
 1923 *Sapindus dentoni* Lesq.: Knowlton, p. 166.
 1923 *Sapindus dentoni* Lesq.: Trowbridge, p. 97.
 1924 *Sapindus dentoni* Lesq.: Berry, pp. 73, 177, pl. XII, f. 9.

Occurrence: Eocene (Green River, Claiborne, Jackson); Utah, Mississippi, Texas, Wyoming.

***Sapindus dimidiatus* (Visiani & Massalongo) comb. nov.**

- 1854 *Cassia dimidiata* Visiani & Massalongo, p. 124.
 1858 *Cassia dimidiata* Visiani & Massalongo, p. 240, pl. XIII, f. 1.
 1858 *Cassia dimidiata* Vis. & Mass.: Massalongo & Scarabelli, p. 433, pl. XXXV, f. 28; pl. XXXIX, f. 11.
 1893 *Cassia dimidiata* Vis. & Mass.: Meschinelli & Squinabol, p. 465.
 1901 *Sapindus obtusifolius* Lesq.: Squinabol, p. 54.
 1921 *Sapindus obtusifolius* Lesq.: Principi, p. 92.
 1926 *Sapindus obtusifolius* Lesq.: Principi, p. 75, pl. VIII, f. 14.

Remarks: In the opinion of Squinabol (1901) the leaf described by Visiani and Massalongo as *Cassia dimidiata* is a *Sapindus*, and he refers it to *Sapindus obtusifolius* Lesq. It seems unwise, without careful comparison of the actual specimens, to combine the Italian and American leaves, and the former should therefore be called *Sapindus dimidiatus*. Even if the two should prove to be identical, this name would still stand, as it is earlier than Lesquereux's.

Occurrence: Eocene; Italy (Novale). Oligocene; Italy (Chiavon). Miocene; Italy (Sinigaglia).

***Sapindus diversifolius* Lesquereux.**

- 1892 *Sapindus diversifolius* Lesquereux, p. 158, pl. LXIV, f. 18.
 Remarks: Perhaps a *Sapindopsis*; see remarks on *Sapindopsis magnifolia*.

Occurrence: Cretaceous (Dakota); Ellsworth Co., Kansas.

***Sapindus drepanophyllus* Saporta.**

- 1873 *Sapindus drepanophyllus* Saporta, p. 93, pl. XIII, f. 4, 5.
 1874 *Sapindus drepanophyllus* Saporta: Schimper, p. 701.

Remarks: "Très-voisin du *S. falcifolius* et semblable au *S. acuminatus* Wall. des Indes. et surtout au *S. monatensis* Shuttl. de la Florida." (Schimper).

Occurrence: Oligocene; S. France (Aix).

Sapindus dubius Unger.

- 1854 *Sapindus dubius* Unger, p. 180, pl. V, f. 11.
 1857 *Juglans acuminata* [non A. Braun] Massalongo, p. 24.
 1858 *Sapindus dubius* Unger: Massalongo & Scarabelli, p. 358, pl. XXIX, f. 24.
 1859 *Sapindus dubius* Unger: Heer, p. 63, CXX, f. 9—11.
 1864 *Sapindus dubius* Unger: Gaudin & Strozzi, p. 21.
 1867 *Sapindus dubius* Unger: Stur, p. 179.
 1870 *Sapindus dubius* Unger: Ettingshausen, p. 82.
 1874 *Sapindus dubius* Unger: Schimper, p. 164.
 1877 *Sapindus dubius* Unger: Ettingshausen, p. 190.
 1880 *Sapindus dubius* Unger: Engelhardt, p. 144, pl. VIII, f. 16.
 1887 *Sapindus dubius* Unger: Boulay, p. 270.
 1887 *Sapindus dubius* Unger: Cavara, p. 149, pl. VI, f. 5.
 1888 *Sapindus dubius* Unger: Ettingshausen, p. 26.
 1892 *Sapindus dubius* Unger: Keller, p. 108, pl. IV, f. 4.
 1893 *Sapindus dubius* Unger: Meschinelli & Squinabol, p. 360.
 1897 *Sapindus dubius* Unger: Almera, p. 160.
 1901 *Sapindus dubius* Unger: Squinabol, p. 54.
 1910 *Sapindus dubius* Unger: Lauby, p. 372.
 1911 *Sapindus dubius* Unger: Kafka, p. 62.
 1914 *Sapindus dubius* Unger: Engelhardt, p. 303, pl. XII, f. 5.
 1914 *Sapindus dubius* Unger: Principi, p. 184.
 1916 *Sapindus dubius* Unger: Principi, p. 135, pl. LXIII, f. 10.
 1921 *Sapindus dubius* Unger: Principi, p. 92.
 1922 *Sapindus dubius* Unger: Engelhardt, p. 93, pl. XXXI, f. 7.
 1926 *Sapindus dubius* Unger: Principi, p. 74, pl. VIII, f. 12; pl. IX, f. 5.

Remarks: Ettingshausen (1861, p. 245; 1869, p. 25) and Engelhardt (1876, p. 390) included this species in the synonymy of *S. hazslinszkyi*, but later both authors seem to have abandoned this reference, without making any comment on the matter. Boulay (1887) thinks the two species are the same, but Principi (1926) gives reasons for keeping them separate.

A specimen from Kentucky referred to *S. dubius* by Lesquereux (1888, p. 12) is, according to Berry (1916, p. 186), a leaf of *Engelhardtia ettingshauseni*; other specimens belong to *Picus wilcoxensis* Berry (1916, p. 202).

See also the remarks on *S. angustifolius*.

Occurrence: Eocene: Italy (Novale); Hessen (Messel). Oligocene: Italy (S. Giustina, Chiavon), Carniola (Sagor). Miocene: Baden (Oeningen), Switzerland, Italy, Styria, Transylvania, Bohemia. Pliocene: Italy (Mongardino), Spain (Espluga), France (Ardèche).

Sapindus sp., cf. *dubius* Unger.

- 1885 *Sapindus* sp., cf. *dubius* Unger: Medlicott, p. 98.
 Occurrence: Middle Tertiary; India (Kasaoli Range).

Sapindus engelhardti nom. nov.

- 1890 *Sapindus acuminatus* Engelhardt, p. 4.
 1891 *Sapindus acuminatus* Engelhardt, p. 670, pl. IX, f. 10.

1922 *Sapindus acuminatus* Engelh.: Berry, pp. 82, 84, 127.

Remarks: Berry states (1922, p. 96) that this leaf appears to be correctly identified as a *Sapindus*. In order to avoid confusion with the living *Sapindus acuminatus* Rafinesque of America (= *S. marginatus*), it seems advisable to create a new name.

Occurrence: Lower Miocene; Chile.

[***Sapindus eocenicus*** Ettingshausen.]

1879 *Sapindus eocenicus* Ettingshausen, p. 395.

1880 *Sapindus eocenicus* Ettingshausen, p. 235.

Remarks: Nomen nudum.

Sapindus eoligniticus Berry.

1916 *Sapindus eoligniticus* Berry, p. 276, pl. LXVII, f. 1—3; pl. CIX, f. 3.

Occurrence: Eocene (Lagrange); Tennessee, Kentucky.

Sapindus ephialtae (Ettingshausen) Visiani.

1854 *Artocarpidium ephialtae* Ettingshausen, p. 30, pl. VII, f. 10.

1858 *Sapindus ephialtae* (Ett.) Visiani, p. 439, pl. XVI, f. 3.

1861 *Sapindus ephialtae* (Ett.): Ettingshausen, p. 245.

1872 *Artocarpidium ephialtae* Ett.: Schimper, p. 755.

1914 *Sapindus ephialtae* (Ett.): Principi, p. 184.

1916 *Sapindus ephialtae* (Ett.): Principi, p. 135, pl. LXIII, f. 1, 2.

1921 *Sapindus ephialtae* (Ett.): Principi, p. 92.

1926 *Sapindus ephialtae* (Ett.): Principi, p. 73.

Occurrence: Oligocene; Dalmatia (Monte Promina), Italy (S. Giustina, Chiavon).

[***Sapindus erdobenyensis*** Kovats.]

Synonym of *Sapindus falcifolius*, q. v.

Sapindus falcifolius (A. Br.)

1836 *Juglans falcifolia* Al. Braun in Buckland, p. 513.

1845 *Juglans falcifolia* A. Br.: Al. Braun, p. 170.

1848 *Juglans falcifolia* A. Br.: Unger, p. 509.

1850 *Juglans falcifolia* A. Br.: Unger, p. 469.

1850 *Juglans falcifolia* A. Br.: Al. Braun in Bruckmann, p. 234.

1850 *Zanthoxylon salignum* Al. Braun in Bruckmann, p. 233.

1851 *Sapindus falcifolius* (A. Br.) Al. Braun in Stizenberger, p. 87.

1853 *Sapindus falcifolius* (A. Br.): Heer, p. 146.

1853 *Sapindus longifolius* Heer, p. 146 (nomen).

1854 *Sapindus falcifolius* (A. Br.): Ettingshausen, p. 809, pl. IV, f. 1.

1856a *Sapindus falcifolius* (A. Br.): Heer, p. 95.

1856 *Sapindus erdöbényensis* Kovats, p. 32, pl. VII, f. 4, 5.

1856a *Sapindus falcifolius* (A. Br.): Kovats, p. 41.

1858 *Sapindus falcifolius* (A. Br.): Massalongo & Scarabelli, p. 359, pl. XXXIII, f. 8; pl. XXXIV, f. 2.

1858 *Sapindus falcifolius?* (A. Br.): Gaudin & Strozzi, p. 37, pl. XII, f. 9, 10.

1859 *Sapindus falcifolius* (A. Br.): Heer, p. 61, pl. CXIX; pl. CXX, f. 2—8; pl. CXXI, f. 1, 2; p. 299 note.

1859 *Sapindus falcifolius* (A. Br.): Massalongo, p. 93.

- 1859 *Sapindus falcifolius* (A. Br.): Sismonda, p. 531.
 1861 *Sapindus falcifolius* (A. Br.): Ettingshausen, p. 244.
 1862 *Sapindus falcifolius* (A. Br.): Jokely, p. 379.
 1862 cf *Sapindus falcifolius* (A. Br.): De la Harpe & Salter, p. 117.
 1864 *Sapindus falcifolius* (A. Br.): Gaudin & Strozzi, p. 21, pl. II, f. 16.
 1865 *Sapindus falcifolius* (A. Br.): Sismonda, p. 448, pl. XXIX, f. 1, 2.
 1867 *Sapindus falcifolius* (A. Br.): Molon, p. 83.
 1867 *Sapindus falcifolius* (A. Br.): Stur, p. 179.
 1867 *Sapindus erdöbényensis* Kovats: Stur, p. 179.
 1869 *Sapindus falcifolius* (A. Br.): Ettingshausen, p. 24.
 1869a *Sapindus falcifolius* (A. Br.): Heer, p. 94, pl. XVIII, f. 2c; pl. XXVIII, f. 12b.
 1870 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 26, pl. VII, f. 4.
 1870 *Sapindus falciformis* [sic] (A. Br.): Ettingshausen, p. 82.
 1870 *Sapindus falcifolius* (A. Br.): Hofmann, p. 527.
 1870 *Sapindus erdöbényensis* Kovats: Unger, p. 12, pl. IV, f. 13, 14.
 1870 *Sapindus falcifolius?* (A. Br.): Wurtenberger, p. 575.
 1870a *Hymenaea fenzi* Ettingshausen, p. 896, pl. II, f. 5, 6 (teste Schenk).
 1874 *Sapindus falcifolius* (A. Br.): Geyley, p. 104.
 1874 *Sapindus falcifolius* (A. Br.): Schimper, p. 163, pl. C, f. 35—37.
 1874 *Sapindus falcifolius* (A. Br.): Capellini, p. 580, pl. VI, f. 13—15.
 1876 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 389, pl. VII (XXII), f. 11, 12.
 1877 *Sapindus falcifolius* (A. Br.): Ettingshausen, p. 189.
 1878 *Sapindus falcifolius* (A. Br.): Zwanziger, p. 72, pl. XXVI, f. 4.
 1879 *Sapindus falcifolius* (A. Br.): Sandberger, p. 180.
 1879 *Sapindus falcifolius* (A. Br.): Sieber, p. 242.
 1880 *Sapindus falcifolius* (A. Br.): Sieber, p. 86, pl. III, f. 10, 11.
 1880 *Sapindus falcifolius* (A. Br.): Laube, p. 278.
 1880 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 144, pl. VIII, f. 13—15.
 1881a *Sapindus falcifolius* (A. Br.): Engelhardt, p. 155.
 1881 *Sapindus falcifolius* (A. Br.): Heer, p. 35, pl. XXVIII, f. 2.
 1881 *Sapindus falcifolius* (A. Br.): Wentzel, p. 91.
 1881a *Sapindus falcifolius* (A. Br.): Wentzel, p. 261.
 1883 *Sapindus falcifolius* (A. Br.): Pilar, p. 99, pl. XII, f. 1, 3.
 1883 *Sapindus falcifolius* (A. Br.): Probst, p. 223.
 1885 *Sapindus falcifolius* (A. Br.): Sacco, p. 277.
 1885 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 351, pl. XVIII, f. 9, 13, 14.
 1886 *Sapindus falcifolius* (A. Br.): Sacco, p. 86.
 1887 *Sapindus falcifolius* (A. Br.): Boulay, p. 270.
 1887 *Sapindus falcifolius* (A. Br.): Cavara, p. 149, pl. V, f. 21.
 1887 *Sapindus falcifolius* (A. Br.): Stefani, p. 225.
 1888 *Sapindus falcifolius* (A. Br.): Schenk, p. 550, f. 313.
 1888 *Sapindus falcifolius* (A. Br.): Ettingshausen, p. 342, pl. VIII, f. 11.
 1889 *Sapindus falcifolius* (A. Br.): Meschinelli, p. 287.
 1891c *Sapindus falcifolius* (A. Br.): Engelhardt, p. 184, pl. XV, f. 11.
 1892 *Sapindus falcifolius* (A. Br.): Keller, p. 107, pl. IX, f. 2.
 1893 *Sapindus falcifolius* (A. Br.): Meschinelli & Squinabol, p. 360.
 1895 *Sapindus falcifolius* (A. Br.): Peola, p. 65 [not seen].

- 1896 *Sapindus falcifolius* (A. Br.): Paolucci, p. 118, pl. XX, f. 143—144.
 1896 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 171.
 1896 *Sapindus falcifolius* (A. Br.): Keller, p. 317, pl. X, f. 6.
 1898 *Sapindus falcifolius* (A. Br.): Peola, p. 82.
 1898 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 105.
 1899 *Sapindus falcifolius* (A. Br.): Laurent, p. 126, pl. XIII, f. 7, 8.
 1899a *Sapindus falcifolius* (A. Br.): Peola, p. 105.
 1900 *Sapindus falcifolius* (A. Br.): Peola, p. 246.
 1902 *Sapindus falcifolius* (A. Br.): Dreger, p. 97.
 1902 *Sapindus falcifolius* (A. Br.): Kerner, p. 344.
 1902 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 286, pl. IV, f. 24.
 1903 *Sapindus falcifolius* (A. Br.): Menzel, p. 17.
 1904 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 352, f. 3.
 1904a *Sapindus falcifolius* (A. Br.): Engelhardt, p. 403, pl. XCVII, f. 23.
 1905 *Sapindus falcifolius* (A. Br.): Laurent, p. 203.
 1907 *Sapindus falcifolius* (A. Br.): Kerner, p. 139.
 1908 *Sapindus falcifolius* (A. Br.): Andrews, p. 220.
 1909 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 496, pl. XXVIII, f. 9, 11.
 1910 *Sapindus falcifolius* (A. Br.): Lauby, p. 372.
 1910a *Sapindus falcifolius* (A. Br.): Engelhardt, p. 152, pl. II, f. 2.
 1911 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 378, pl. XLI, f. 56.
 1911 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 418, pl. XLIV, f. 15.
 1911 *Sapindus falcifolius* (A. Br.): Kafka, pp. 29, 42, 53, 62.
 1912 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 617, pl. XXXIII, f. 11.
 1913 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 389, pl. II, f. 7, 11.
 1914 *Sapindus falcifolius* (A. Br.): Engelhardt, pl. XV, f. 2, 3, 5.
 1914 *Sapindus falcifolius* (A. Br.): Principi, p. 184.
 1916 *Sapindus falcifolius* (A. Br.): Principi, p. 133, pl. LXIII, f. 3, 5, 14—16.
 1921 *Sapindus falcifolius* (A. Br.): Principi, p. 91.
 1922 *Sapindus falcifolius* (A. Br.): Engelhardt, p. 92, pl. XXX, f. 1.
 1926 *Sapindus falcifolius* (A. Br.): Principi, p. 122.

Remarks: The commonest and most widely-spread Tertiary representative of the *Sapindaceae* in Europe. In addition to some almost complete leaves from Oeningen, Heer figures fruits, which Schenk (1888) considers doubtful, since similar fruits are found in other genera and families. Sieber also (1880) figures a somewhat obscure fruit.

The inclusion of *S. erdöbényensis* is universally accepted. There are several other species which are certainly very near *S. falcifolius*, and some of them should probably be united with it. Among these are: *S. asperifolius*, *S. brandzai*, *S. defunctus*, *S. densifolius*, *S. drepanophyllus*, *S. primaevus*, *S. pristinus* and *S. radobojanus*.

According to Schenk (1889, p. 694) Ettingshausen's *Hymenaea fenzlii* from Radoboj is "kaum etwas anders als der bekannte *Sapindus falcifolius*".

Engelhardt (1876 and 1902) includes *S. ungeri* in the synonymy of *S. falcifolius*. Pilar (1883) copies this, (for he copies Engelhardt's mistake in the date of Unger's paper), but evidently does not really accept it, since he treats *S. ungeri* separately on a later

page. Heer (1869a) thinks that both *S. ungeri* and *S. heliconius* belong to *S. falcifolius*.

A specimen from Kentucky referred to *S. falcifolius* by Lesquereux (1888, p. 12, pl. IV, f. 4) is included in *Ficus wilcoxensis* by Berry (1916, p. 202).

S. falcifolius has been compared with the living *S. marginatus* of the southern United States (Braun, Schenk), with *S. surinamensis* and *S. frutescens* of tropical America (Heer and other authors), and with *S. mukurosi* of Japan (Laurent).

Heer refers to this species the specimen figured by Knorr, Sammlung von Merkwürdigkeiten, I, 1755, pl. IXa, fig. 4.

Occurrence: Eocene: Hessen (Darmstadt), ?England (Corfe Castle). Oligocene: Italy (Liguria, Vicentino), France (Célas), Germany (Flörsheim, Rixhöft), Bohemia, Transylvania, Carniola (Sagor). Miocene: Switzerland, Italy, Dalmatia, Bosnia, Herzegovina, Croatia, Styria, Hungary, Bohemia, Germany, France, Portugal. Pliocene: Italy, France (Cantal, La Mougudo).

Sapindus firmifolius Engelhardt.

1922 *Sapindus firmifolius* Engelhardt, p. 94, pl. XXXI, f. 9.

Occurrence: Eocene; Hessen (Messel near Darmstadt).

Sapindus formosus Berry.

1888 *Sapindus angustifolius* Lesquereux, p. 24.

1916 *Sapindus formosus* Berry, p. 276, pl. LXVI, f. 3—7.

1917 *Sapindus formosus* Berry: Berry, p. 62.

Occurrence: Eocene; Mississippi, Louisiana, Tennessee, Kentucky.

Sapindus fragmentarius Saporta.

1863 *Sapindus fragmentaria* Saporta, p. 87.

1874 *Sapindus fragmentarius* Sap.: Schimper, p. 164.

Occurrence: Oligocene; France (St. Zacharie).

[**Sapindus fraxinifolius** Ettingshausen (non DC., non Blume).]

Synonym of. *S. pythii*, q. v.

Sapindus georgianus Berry.

1914 *Sapindus georgiana* Berry, p. 143, pl. XXVII, f. 11, 12.

1924 *Sapindus georgianus* Berry, pp. 71, 177.

Remarks: Nearly related to *S. saponaria* L.

Occurrence: Eocene (Jackson, Lisbon, Yegua); Georgia, Mississippi, Texas.

Sapindus glendivensis Knowlton.

1885 *Sapindus alatus* Ward, p. 554, pl. L, f. 9, 10 (non Salisbury).

1887 *Sapindus alatus* Ward: Ward, p. 68, pl. XXXI, f. 3, 4.

1899 *Sapindus alatus* Ward: Knowlton, p. 737.

1919 *Sapindus glendivensis* Knowlton, p. 579.

Occurrence: Eocene (Fort Union); Montana, Yellowstone National Park.

[Sapindus goppertianus Massalongo.]1859 *Sapindus goppertianus* Massalongo, p. 92.

Remarks: Nomen nudum.

Sapindus gossei Ettingshausen.1886 *Sapindus gossei* Ettingshausen, p. 126, pl. XIV, f. 15—17.1888a *Sapindus gossei* Ett.: Ettingshausen, p. 161, pl. XIV, f. 15—17.

Occurrence: Tertiary; Australia.

Sapindus graecus Unger.1862 *Sapindus ungeri* Ettingshausen: Unger, p. 176, f. 42.1867 *Sapindus graecus* Unger, p. 73, pl. XII, f. 1—23.1867 *Rhus helladotherii* Unger, p. 78, pl. XIV, f. 14 (not f. 15) [teste Fritel].1867 *Persoonia euboea* Unger, p. 57, pl. VIII, f. 13 [teste Fritel].1868 *Sapindus ungeri* Ett.: Saporta, p. 321.1874 *Sapindus graecus* Unger: Schimper, p. 167.1921 *Sapindus graecus* Unger: Fritel, p. 472.1922 *Sapindus graecus* Unger: Fritel, p. 127.Remarks: This species was at first placed in *S. ungeri* by Unger. Schimper remarks that it is near *S. ungeri*, if indeed it is a *Sapindus*. The species has recently been revised by Fritel.

Occurrence: Aquitanian; Greece, Kumi (Euboea) and Oropo (Attica).

Sapindus grandifolioloides Knowlton.1899 *Sapindus grandifolioloides* Knowlton, p. 738, pl. C, f. 2.

Occurrence: Miocene; Yellowstone National Park.

Sapindus grandifoliolus Ward.1885 *Sapindus grandifoliolus* Ward, p. 554, pl. L, f. 4—8.1887 *Sapindus grandifoliolus* Ward: Ward, p. 67, pl. XXX, f. 3—5; pl. XXXI, f. 1, 2.1899 *Sapindus grandifoliolus* Ward: Knowlton, p. 737, pl. XCIX, f. 1, 2; pl. CII, f. 4.1909 *Sapindus grandifoliolus* Ward: Knowlton, pp. 189, 190, 195, 198, 203, 210, 211, 213, 214.1911 *Sapindus grandifoliolus* Ward: Knowlton in Leonard, pp. 541—542.1911 *Sapindus grandifoliolus* Ward: Knowlton, p. 369, 370.1912 *Sapindus grandifoliolus* Ward: Knowlton, pp. 426, 481.

Occurrence: Eocene (Fort Union, Lance); Montana, Wyoming, N. Dakota.

Sapindus grandifolius Engelhardt.1881 *Sapindus grandifolius* Engelhardt, p. 310, pl. XXI, f. 1.1887 *Sapindus grandifolius* Engelhardt: Cavara, p. 150 pl. VI, f. 9, 16.1893 *Sapindus grandifolius* Engel.: Meschinelli & Squinabol, p. 361.

Occurrence: Miocene; Bohemia (Grasset); Pliocene; Italy (Mongardino).

Sapindus hazslinszkyi Ettingshausen.

- 1854 *Sapindus hazslinszkyi* Ettingshausen, p. 809, pl. IV, f. 2.
 1856a *Sapindus hazslinszkyi* Ett.: Kovats, p. 41.
 1858 *Sapindus hazslinszkyi* Ett.: Massalongo & Scarabelli, p. 360, pl. XXXIII, f. 1.
 1859 *Sapindus hazslinszkyi* Ett.: Sismonda, p. 531.
 1861 *Sapindus hazslinszkyi* Ett.: Ettingshausen, p. 245.
 1865 *Sapindus hazslinszkyi* Ett.: Sismonda, p. 448, pl. XXIX, f. 3.
 1866 *Sapindus hazslinszkyi* Ett.: Stur, p. 139.
 1867 *Sapindus hazslinszkyi* Ett.: Stur, p. 179.
 1869 *Sapindus hazslinszkyi* Ett.: Ettingshausen, p. 25, pl. XLIII, f. 13; pl. XLVII, f. 1, 2.
 1874 *Sapindus hazslinszkyi* Ett.: Schimper, p. 168.
 1876 *Sapindus hazslinszkyi* Ett.: Engelhardt, p. 390, pl. VII (XXII), f. 13.
 1879 *Sapindus hazslinszkyi* Ett.: Engelhardt, p. 296.
 1885 *Sapindus hazslinszkii* Ett.: Sacco, p. 277.
 1886 *Sapindus hazslinszkyi* Ett.: Sacco, p. 86.
 1891a *Sapindus hazslinszkii* Ett.: Engelhardt, p. 34.
 1893 *Sapindus hazslinszkii* Ett.: Meschinelli & Squinabol, p. 362.
 1894 *Sapindus hazslinszkyi* Ett.: Engelhardt, p. 194, pl. IV, f. 4, 5; pl. V, f. 3.
 1895 *Sapindus hazslinszkii* Ett.: Peola, p. 65 [not seen].
 1896 *Sapindus hazslinszkyi* Ett.: Peola, p. 266.
 1896 *Sapindus*(?) *hazslinszkii* Ett.: Paolucci, p. 120, pl. XX, f. 146.
 1896 *Sapindus*(?) *anconitanus* Paolucci, p. 120, pl. XX, f. 147. [teste Principi].
 1898 *Sapindus hazslinszkyi* Ett.: Ettingshausen, p. 82.
 1899 *Sapindus hazslinszkyi* Ett.: Peola, p. 49.
 1900 *Sapindus hazslinszkyi* Ett.: Peola, p. 246.
 1903 *Sapindus hazslinszkyi* Ett.: Menzel, p. 17.
 1911 *Sapindus hazslinszkyi* Ett.: Kafka, pp. 42, 53, 62.
 1914 *Sapindus hazslinszkii* Ett.: Kryštofovich, p. 594, pl. f. 9.
 1924 *Sapindus hazslinszkii* Ett.: Principi, p. 300, pl. I, f. 9.
 1926a *Sapindus hazslinszkii* Ett.: Principi, p. 237, pl. II, f. 25.

Remarks: See *S. dubius*. The correct spelling appears to be *S. hazslinszkyi*.

Occurrence: Oligocene: Italy, Bohemia. Miocene: Hungary, Bohemia, Slavonia, Italy, S. Russia.

Sapindus heliconius Unger.

- 1850 *Sapindus heliconius* Unger, p. 457.
 1852 *Sapindus heliconius* Unger: Massalongo, p. 10.
 1860 *Sapindus heliconius* Unger: Unger, p. 34, pl. XV, f. 1—5.
 1861 *Sapindus heliconius* Unger: Ettingshausen, p. 245.
 1861 *Sapindus heliconius* Unger: Andrae, p. 434, pl. I, f. 5.
 1866 *Sapindus heliconius* Unger: Unger, p. 50, pl. XVI, f. 1.
 1866 *Apocynophyllum sessile* Unger, p. 16, pl. IV, f. 20 [teste Ettingshausen, 1870a].
 1866 ?*Neritinium longifolium* Unger, p. 17, pl. V, f. 4 [teste Ettingshausen, 1870a].
 1870 *Sapindus heliconius* Unger: Vukotinović, p. 204.
 1870a *Sapindus heliconius* Unger: Ettingshausen, pp. 851, 889.
 1874 *Sapindus heliconius* Unger: Schimper, p. 165, pl. C, f. 38.
 1883 *Sapindus heliconius* Unger: Pilar, p. 100, pl. XII, f. 5.
 1904 *Sapindus heliconius* Unger: Engelhardt, p. 353, pl. XCI, f. 12.
 1910a *Sapindus heliconius* Unger: Engelhardt, p. 677, pl. II, f. 13.
 1911 *Sapindus cf. heliconius* Unger: Kafka, p. 42.

- 1911 *Sapindus heliconius* Unger: Engelhardt, p. 402.
 1921 *Sapindus heliconius* Unger: Principi, p. 91.
 1922 *Sapindus heliconius* Unger: Engelhardt, p. 93, pl. XXXII, f. 4.
 1926 *Sapindus*(?) *heliconius* Unger: Principi, p. 71.
 Remarks: Heer (1869a, p. 94) suggests that this species is very near *S. falcifolius*. Schimper agrees with Ettingshausen in including *Neritinium longifolium*.
 Occurrence: Eocene: Hessen (Messel near Darmstadt). Oligocene; Transylvania (Thalheim), Italy (Chiavon), Bohemia. Miocene: Croatia, Bosnia, Greece (Kumi).

***Sapindus hispaniolana* Berry.**

- 1921 *Sapindus hispaniolana* Berry, p. 122, pl. XXI, f. 3.
 Occurrence: Tertiary Dominica.

***Sapindus imperfectus* Hollick.**

- 1904 *Sapindus imperfectus* Hollick, p. 415, pl. LXXVIII, f. 4.
 1906 *Sapindus imperfectus* Hollick: Hollick, p. 90, pl. XXXIII, f. 15.
 Occurrence: Cretaceous (Magothy); Long Island, N. Y.

***Sapindus inconspicuus* Saporta.**

- 1865 *Sapindus inconspicua* Saporta, p. 130.
 1874 *Sapindus inconspicuus* Saporta: Schimper, p. 164.
 Occurrence: Oligocene; France (St. Jean-de-Garguier).

***Sapindus inexpectans* Knowlton.**

- 1905 *Sapindus inexpectans* Knowlton, p. 144, pl. XVII, f. 7.
 Occurrence: Cretaceous (Judith River); Montana.

***Sapindus inflexus* Lesquereux.**

- 1883 *Sapindus inflexus* Lesquereux, p. 182, pl. XXXII, f. 2.
 Occurrence: Miocene; Colorado (Florissant).

[*Sapindus kennedioides* Massalongo.]

- 1859 *Sapindus kennedioides* Massalongo, p. 93.
 Remarks: Nomen nudum.

***Sapindus knowltoni* Berry.**

- 1916 *Sapindus knowltoni* Berry, p. 274, pl. LXIII, f. 6.
 Occurrence: Eocene (Wilcox); Arkansas, Tennessee.

***Sapindus lacerus* Saporta.**

- 1889 *Sapindus lacerus* Saporta, p. 90, pl. III, f. 10.
 Occurrence: Oligocene; Provence (Avignon).

***Sapindus lanceolatus* Engelhardt.**

- 1922 *Sapindus lanceolatus* Engelhardt, p. 94, pl. XXXI, f. 2: pl. XXXII, f. 3.
 Occurrence: Eocene: Hessen (Messel near Darmstadt).

Sapindus lancifolius Lesquereux.

1883 *Sapindus lancifolius* Lesquereux, p. 182, pl. XXXII, f. 3—6; pl. XXXVII, f. 9.

1916 *Sapindus lancifolius* Lesquereux: Knowlton, p. 283.

Remarks: Lesquereux considered the reference of his fig. 9, pl. XXXVII to this species as uncertain, and Laurent (1912, p. 204) says "cette feuille n'est certainement pas un *Sapindus*".

Occurrence: Miocene; Colorado (Florissant).

[Sapindus leguminophyllum Massalongo.]

1859 *Sapindus leguminophyllum* Massalongo, p. 93.

Remarks: Nomen nudum.

Sapindus leonis Cockerell.

1883 *Sapindus angustifolius* Lesquereux (pars) pl. XXXVII, f. 7.

1908 *Sapindus leonis* Cockerell, p. 102.

Remarks: See *S. angustifolius*.

Occurrence: Miocene; Colorado (Florissant).

Sapindus lignitum Unger.

1860 *Sapindus lignitum* Unger, p. 33, pl. XIV, f. 3—5.

1860 *Trapa globosa* Ludwig, p. 141, pl. LVIII, f. 23—27; pl. LX, f. 2, 4, 7. [teste Schimper].

1861 *Sapindus lignitum* Unger: Ettingshausen, p. 244.

1868 *Sapindus lignitum* Unger: Ettingshausen, p. 877, pl. V, f. 4, 5, 12, 13.

1874 *Sapindus lignitum* Unger: Schimper, p. 165.

1888 *Sapindus lignitum* Unger: Schenk, p. 550, f. 313³.

1903 *Sapindus lignitum* Unger: Menzel, p. 17.

1911 *Sapindus lignitum* Unger: Kafka, p. 42.

Remarks: Founded on fruits, but Ettingshausen referred leaf impressions to the same species. Menzel (1903) mentions leaves from the Bilin basin, in a list only.

Occurrence: Oligocene; Wetterau (Salzhausen), Bohemia (Preschen).

Sapindus linearifolius Berry.

1888 *Salix angusta* Lesquereux, p. 13 (non A. Braun, non Heer).

1916 *Sapindus linearifolius* Berry, p. 275, pl. LXIII, f. 2—5; pl. CIX, f. 4.

1922c *Sapindus linearifolius* Berry: Berry, p. 3.

1923 *Sapindus linearifolius* Berry: Trowbridge, p. 91.

Remarks: See also *Sapindus*? (Colani, 1920).

Occurrence: Eocene (Wilcox); Mississippi, Arkansas, Louisiana, Tennessee, Kentucky, Texas.

[Sapindus longifolius Heer.]

Synonym of *Sapindus falcifolius*, q. v.

Sapindus macrophyllum Saporta.

1865a *Sapindus macrophylla* Saporta, p. 184.

1874 *Sapindus macrophyllum* Sap.: Schimper, p. 164.

Remarks: Close to *S. heliconius*.

Occurrence: Oligocene; S. France (Armissan).

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[**Sapindus macrophyllus** Heer.]Synonym of *Sapindus anceps*, q. v.**Sapindus marylandicus** Hollick.

1906a *Sapindus marylandicus* Hollick, p. 234, pl. LXXII, f. 11—14.
 Occurrence: Pleistocene (Sunderland); Calvert County, Maryland.

Sapindus membranaceus Newberry.

1868 *Sapindus membranaceus* Newberry, p. 52.
 1874 *Sapindus membranaceus* Newberry: Schimper, p. 168.
 1878b *Sapindus?* *membranaceus* Newb.: Lesquereux, pl. XXIV, f. 2, 3. [not seen].
 1898 *Sapindus?* *membranaceus* Newb.: Newberry, p. 117, pl. XXX, f. 2, 3.
 Occurrence: Eocene (Fort Union); N. Dakota.

Sapindus merriami Knowlton.

1902 *Sapindus merriami* Knowlton, p. 78, pl. IX, f. 5.
 Occurrence: Upper Eocene; Oregon.

Sapindus mississippiensis Berry.

1888 *Sapindus angustifolius* Lesquereux, p. 12.
 1899 *Sapindus angustifolius* Lesq.: Hollick, p. 286, pl. XXXV, f. 5.
 1906 *Sapindus angustifolius* Lesq.: Veatch, pl. XVII, f. 6.
 1916 *Sapindus mississippiensis* Berry, p. 274, pl. LXIII, f. 1; pl. LXIV, f. 10; pl. LXVI, f. 1, 2; pl. CIX, f. 1.
 1917 *Sapindus mississippiensis* Berry: Berry, p. 62.
 1922c *Sapindus mississippiensis* Berry: Berry, p. 2.
 1924 *Sapindus mississippiensis* Berry: Berry, p. 72.
 Remarks: Berry (1916, p. 275) compares with this species the Tertiary leaves from Ecuador described by Engelhardt (1895, p. 17) as *Myrciaria tenuifolia*.
 Occurrence: Eocene; Mississippi, Louisiana, Arkansas, Kentucky, Tennessee, Alabama.

Sapindus morrisoni Lesquereux.

1882 *Sapindus morisoni* Lesquereux MS.: Heer, p. 96, pl. XL, f. 1; pl. XLI, f. 3; pl. XLIII, f. 1a, b; pl. XLIV, f. 7, 8.
 1883 *Sapindus morrisoni* Lesquereux, p. 83, pl. XVI, f. 1, 2.
 1883 *Sapindus morisoni* Lesq.: Heer, p. 39, pl. LXV, f. 5.
 1888 *Sapindus morisoni* Lesq.: Schenk, p. 550.
 1892 *Sapindus morrisoni* Lesq.: Lesquereux, p. 158, pl. XXXV, f. 1, 2.
 1892 *Sapindus morrisoni* Lesq.: Hollick, pl. III, f. 5.
 1893 *Sapindus morrisoni* Lesq.: Hollick, p. 235, pl. VI, f. 3.
 1894a *Sapindus morrisoni* Lesq.: Hollick, p. 57, pl. CLXXIX, f. 8.
 1895 *Sapindus morrisoni* Lesq.: Lesquereux, p. 19, pl. A, f. 11, 12.
 1898 *Sapindus morrisoni* Lesq.: Hollick, p. 422, pl. XXXVI, f. 4.
 1901 *Sapindus morrisoni* Lesq.: Knowlton, p. 317.
 1903 *Sapindus morrisoni* Lesq.: Berry, p. 83, pl. XLVII, f. 2, 3.
 1904 *Sapindus morrisoni* Lesq.: Berry, p. 78.
 1906 *Sapindus morrisoni* Lesq.: Hollick, p. 90, pl. XXXIII f. 16—20.

- 1906 *Sapindus morrisoni* Lesq.: Berry, pp. 138, 139.
 1912 *Sapindus morrisoni* Lesq.: Berry, p. 396.
 1914 *Sapindus morrisoni* Lesq.: Berry, p. 49, pl. IX, f. 6.
 1917a *Sapindus morrisoni* Lesq.: Berry, p. 186.
 1919 *Sapindus morrisoni* Lesq.: Berry, p. 112.
 1920 *Sapindus morrisoni* Lesq.: Knowlton, p. 191.
 1922a *Sapindus morrisoni* Lesq.: Berry, p. 168.
 Occurrence: Upper Cretaceous; Greenland, United States.

***Sapindus moskenbergensis* Ettingshausen.**

- 1870 *Sapindus moskenbergensis* Ettingshausen, p. 82, pl. V, f. 10.
 1888 *Sapindus moskenbergensis* Ett.: Ettingshausen, p. 342, pl. VIII, f. 12, 13.
 Occurrence: Miocene; Styria (Moskenberg).

[*Sapindus multinervis* Heer.]

- 1869 *Sapindus*(?) *multinervis* Heer, p. 19, pl. III, f. 11.
 Remarks: Friedrich (1883, p. 152) lists this as unidentifiable.
 Occurrence: Oligocene; Saxony.

***Sapindus munzenbergensis* Ettingshausen.**

- 1860 *Magnolia plurinervia* Ludwig, p. 123, pl. XLVII, f. 3 [teste Ettingshausen 1868].
 1868 *Sapindus munzenbergensis* Ettingshausen, p. 877.
 1847 *Sapindus munzenbergensis* Ett.: Schimper, p. 166.
 Remarks: Ettingshausen states that this species is closely related to *S. pythii*.
 Occurrence: Oligocene; Wetterau (Munzenberg).

[*Sapindus novalensis* Massalongo.]

- 1859 *Sapindus novalensis* Massalongo, p. 93.
 Remarks: Nomen nudum.

[*Sapindus novalensis* Squinabol.]

Synonym of *Sapindus undulatus*, q. v.

***Sapindus obesus* Hollick.**

- 1924 *Sapindus obesus* Hollick, p. 307, pl. X, f. 1, 2.
 Occurrence: Tertiary; Porto Rico.

***Sapindus obtusifolius* Lesquereux.**

- 1874 *Sapindus obtusifolius* Lesquereux, p. 419.
 1878a *Sapindus obtusifolius* Lesq.: Lesquereux, p. 266, pl. XLIX, f. 8—11.
 1883 *Sapindus obtusifolius* Lesq.: Lesquereux, p. 181.
 1901a *Sapindus obtusifolius* Lesq.: Knowlton, p. 309.
 1902 *Sapindus obtusifolius* Lesq.: Knowlton, p. 79.
 [1903 *Sapindus obtusifolius* Lesq.: Menzel, p. 17.]
 [1911 *Sapindus obtusifolius* Lesq.: Kafka, p. 42.]
 1916 *Sapindus obtusifolius* Lesq.: Duror, p. 580, f. 8c.
 1923 *Sapindus obtusifolius* Lesq.: Knowlton, p. 166.
 1924 *Sapindus obtusifolius* Lesq.: Knowlton, p. 90, pl. VIII, f. 4.

Remarks: For certain European leaves united with this species, see *S. dimidiatus*. Menzel's and Kafka's references are in lists only and are valueless. See also *Sapindus* sp. (Dawson 1888, p. 35).

Occurrence: Eocene; S. Dakota, Oregon, Colorado.

Sapindus oklahomensis Berry.

1918 *Sapindus oklahomensis* Berry, p. 632, pl. XCV, f. 1, 2.
Occurrence: Upper Miocene; Oklahoma.

Sapindus oligocenicus Principi.

1914 *Sapindus oligocenicus* Principi, p. 184 (nomen).
1916 *Sapindus oligocenicus* Principi, p. 137, pl. LXIII, f. 11.
Remarks: Referred with some doubt to the genus *Sapindus*. Compared with *S. dalmaticus* and the living *S. saponaria*.
Occurrence: Oligocene; Liguria (S. Giustina).

Sapindus oregonianus Knowlton.

1902 *Sapindus oregonianus* Knowlton, p. 79, pl. XV, f. 3.
1922 *Sapindus oregonianus* Knowlton: Chaney, pp. 216, 219.
Occurrence: Miocene (Mascall and Payette); Oregon.

Sapindus oxfordensis Berry.

1916 *Sapindus oxfordensis* Berry, p. 273, pl. LXVII, f. 5.
Occurrence: Eocene; Mississippi.

[**Sapindus oxleyensis** Shirley.]

1898 *Sapindus oxleyensis* Shirley, p. 9, pl. XVI, f. 3.
Remarks: A worthless fragment!
Occurrence: Tertiary; Queensland (near Brisbane).

[**Sapindus pencatianus** Massalongo.]

1851 *Sapindus pencatianus* Massalongo, p. 190.
1852 *Sapindus pencatianus* Mass.: Massalongo, p. 10, pl. I, f. 1, 2.
1859 *Sapindus pencatianus* Mass.: Massalongo, p. 93.
1893 *Sapindus pencatianus* Mass.: Meschinelli & Squinabol, p. 362.
Remarks: According to Massalongo this may be a leaf of his *Aralia elysiorum*, to which it is referred by Principi (1926, p. 89).
Occurrence: Oligocene; Italy (Chiavon and Salcedo).

Sapindus presaponaria Hollick & Berry.

1924 *Sapindus presaponaria* Hollick & Berry, p. 82, pl. VIII, f. 6, 7.
Occurrence: Late Tertiary; Brazil (Bahia).

Sapindus primaevus Squinabol.

1901 *Sapindus primaevus* Squinabol, p. 52, pl. III, f. 8.
Remarks: Near *S. falcifolius* and *S. drepanophyllus*.
Occurrence: Eocene; Italy (Novale).

Sapindus pristinus (Unger) Massalongo.

- 1849 *Juglans pristina* Unger, p. 350, pl. V, f. 7.
 1850 *Juglans pristina* Unger: Unger, p. 470.
 1851 *Juglans pristina* Unger: Massalongo, p. 202.
 1852 *Sapindus bolcensis* Massalongo, p. 12, pl. I, f. 3. (Teste Massalongo 1858b).
 1858b *Sapindus pristina* (Unger) Massalongo, p. 770.
 1859 *Sapindus pristinus* (Unger): Massalongo, p. 92.
 1859 *Sapindus pristinus* (Unger): Heer, p. 277.
 1862 cf. *Sapindus pristinus* (Unger): De la Harpe & Salter, p. 117.
 1893 *Sapindus pristinus* (Unger): Meschinelli & Squinabol, p. 362.

Remarks: Heer (1859, p. 277 note) points out that Unger's original specimen was from Mt. Bolca and not from Oeningen.

The *Juglans pristina* of Braun (in Bruckmann 1850, p. 234, Stizenberger 1851, p. 86, Heer, 1853, p. 147) is not Unger's species, and was renamed *Juglans vetusta* by Heer (1859, p. 90). *S. pristinus* is very close to *S. falcifolius*.

Occurrence: Eocene; Italy (Monte Bolca), ?England (Alum Bay).

Sapindus prodromus Heer.

- 1872 *Sapindus prodromus* Heer, p. 164 (nomen).
 1874 *Sapindus prodromus* Heer, p. 117, pl. XXXIV, f. 5.
 1882 *Sapindus prodromus* Heer: Heer, p. 96, pl. XXV, f. 5b; pl. XXVI, f. 5a.
 1888 *Sapindus prodromus* Heer: Schenk, p. 550.

Occurrence: Upper Cretaceous; Greenland.

Sapindus pseudaffinis Berry.

- 1916 *Sapindus pseudaffinis* Berry, p. 272, pl. LXVII, f. 6.
 Occurrence: Eocene (Lagrange); Tennessee.

Sapindus pythii Unger.

- 1848 *Sapindus pythii* Unger, p. 509.
 1850 *Sapindus pythii* Unger: Unger, p. 457.
 1852 *Sapindus pythii* Unger: Massalongo, p. 10.
 1855 *Quercus ettingshauseni* Wessel, in Wessel & Weber, p. 132, pl. XXII, f. 10, 11. [teste Unger].
 1855 *Quercus tenuinervis* Wessel & Weber, p. 133, pl. XXII, f. 9. [teste Unger].
 ?[1855 *Quercus ungeri* Weber: Wessel & Weber, p. 132, pl. XXI f. 11].
 1860 *Sapindus pythii* Unger: Unger, p. 33, pl. XIV, f. 6—17.
 1860 *Rhus elaeodendroides* Unger, p. 45, pl. XXI, f. 1—11 [teste Ettingshausen 1870].
 1860 *Salix media* Ludwig, p. 93, pl. XXVIII, f. 1 [teste Ettingshausen 1868].
 1861 *Sapindus pythii* Unger: Ettingshausen, p. 245.
 1866 *Sapindus pythii* Unger: Unger, p. 51, pl. XVI, f. 6, 7.
 1868 *Sapindus pythii* Unger: Ettingshausen, p. 878.
 1869 *Sapindus pythii* Unger: Unger, p. 147, pl. II, f. 20.
 1869 *Sapindus fraxinifolius* Ettingshausen, p. 26, pl. XLVI, f. 24—26; pl. XLVII, f. 12.
 1870 *Sapindus pythii* Unger: Ettingshausen, p. 82.
 1873a *Sapindus pythii* Unger: Stur, p. 201.
 1874 *Sapindus pythii* Unger: Schimper, p. 165, pl. C, f. 39.
 1874 *Sapindus fraxinifolius* Ett.: Schimper, p. 167.

- 1876 *Sapindus pythii* Unger: Engelhardt, p. 388, pl. VII (XXII), f. 7—10.
 1877 *Sapindus pythii* Unger: Ettingshausen, p. 190, pl. XV, f. 12.
 1883 *Sapindus pythii* Unger: Pilar, p. 101, pl. XII, f. 9.
 1885 *Sapindus pythii* Unger: Engelhardt, p. 351, pl. XXI, f. 27; pl. XXVIII, f. 3.
 1888 *Sapindus pythii* Unger: Ettingshausen, p. 342.
 1889 *Sapindus pythii* Unger: Meschinelli, p. 288.
 1893 *Sapindus pythii* Unger: Meschinelli & Squinabol, p. 362.
 1893 *Sapindus pythii* Unger: Ettingshausen, p. 332.
 1896 *Sapindus pythii* Unger: Ettingshausen, p. 493, pl. IV, f. 1.
 1898 *Sapindus pythii* Unger: Engelhardt, p. 105.
 1901 *Sapindus pythii* Unger: Squinabol, p. 55.
 1911 *Sapindus pythii* Unger: Kafka, pp. 53, 62.
 1914 *Sapindus pythii* Unger: Engelhardt, p. 303, pl. XIV, f. 7.
 1914 *Sapindus pythii* Unger: Principi, p. 184.
 1916 *Sapindus pythii* Unger: Principi, p. 136, pl. LXIII, f. 9.
 1922 *Sapindus pythii* Unger: Engelhardt, p. 92, pl. XXXI, f. 8.

Remarks: We have provisionally included *S. fraxinifolius* Ett. in this species. The differences given by Ettingshausen are slight, and Schimper remarks: "voisin du *S. pythii*, attribution incertaine". In any case the name *S. fraxinifolius* had been previously used by De Candolle and by Blume.

Quercus ungeri Weber is included in the synonymy on the authority of Schimper, who gives an inaccurate reference, which is copied by later authors. Unger only includes *Q. ettingshauseni* and *Q. tenuinervis*, but the former is described as *Q. ungeri* on Wessel & Weber's plate.

Unger refers the specimen he figures from Radoboj in 1869 doubtfully to *S. pythii*.

Ettingshausen includes one of the specimens figured by Ludwig as *Salix media*, and also Unger's *Rhus elaeodendroides*.

Occurrence: Eocene; Hessen (Darmstadt), Italy (Novale). Oligocene; Italy, Carniola (Sagor). Miocene; Styria (Parschlug, Moskenberg), Croatia (Radoboj, Sused), Bohemia (Bilin etc.), Hessen (Vogelsberg).

***Sapindus radobojanus* Unger.**

- 1866 *Sapindus radobojanus* Unger, p. 51, pl. XVII, f. 12, 13.
 1874 *Sapindus radobojanus* Unger: Schimper, p. 167.
 1877 *Sapindus radobojanus* Unger: Heer, p. 172, pl. LXX, f. 16.
 1879 *Sapindus radobojanus* Unger: Sieber, p. 242.
 1881a *Sapindus radobojanus* Unger: Engelhardt, p. 155.
 1883 *Sapindus radobojanus* Unger: Pilar, p. 101.
 1911 *Sapindus radobojanus* Unger: Kafka, pp. 29, 42.

Remarks: Very near to *S. falcifolius*, (Schimper), and might be united with it (Pilar).

Occurrence: Miocene; Croatia, Bohemia (Bilin basin).

***Sapindus rocklandensis* Knowlton.**

- 1918 *Sapindus rocklandensis* Knowlton, p. 331, pl. XCVIII, f. 4.
 Occurrence: Eocene (Raton); Colorado.

***Sapindus rotarii* Massalongo.**

- 1858a *Sapindus rotarii* Massalongo, p. 102 [Not seen].
 1858 *Sapindus rotarii* Mass.: Massalongo & Scarabelli, p. 359, pl. XIV, f. 4; pl. XLIV, f. 8.

- 1874 *Sapindus rotarii* Mass.: Schimper, p. 168.
 1885 *Sapindus rotarii* Mass.: Sacco, p. 277.
 1893 *Sapindus rotarii* Mass.: Meschinelli & Squinabol, p. 363.
 1895 *Sapindus*(?) *rotarii* Mass.: Peola, p. 66 [not seen].
 1896 *Sapindus*(?) *rotarii* Mass.: Paolucci, p. 119, pl. XX, f. 145.
 1921 *Sapindus rotarii* Mass.: Principi, p. 92.
 1926 *Sapindus rotarii* Mass.: Principi, p. 74.
 1926a *Sapindus*(?) *rotarii* Mass.: Principi, p. 238, pl. IV, f. 22.
 Occurrence: Oligocene to Pliocene; Italy.

[***Sapindus salicifolius***.]

- 1908 "*Sapindus salicifolius* Heer": Lauby, p. 156.
 Remarks: Probably a misprint for *S. falcifolius*.

[***Sapindus salicopsis*** Massalongo.]

- 1859 *Sapindus salicopsis* Massalongo, p. 93.
 Remarks: Nomen nudum.

[***Sapindus saponaria*** Linnaeus.]

Hollick (1924, p. 280) gives translated extracts from an extraordinary paper by P. Galtes on some fossil woods of Cuba. Galtes' method was unique: by a study of the relative specific gravity of recent and silicified woods, he identified 57 trees, all referred to living species. Among these was *Sapindus saponaria*, but the matter is only mentioned here as one of the curiosities of palaeobotanical literature.

Sapindus cf. saponaria Linn.

- 1926 *Sapindus cf. saponaria* Linn.: Hofmann, pp. 156—7, fig. 9a, b.
 Remarks: This is the only instance, so far as we know, in which the cuticular structure of a fossil sapindaceous leaf has been described. The authoress states that a leaf figured by her recalls that of the living *S. saponaria*, and that the histological structure of the two is identical. Her figures of the epidermis certainly show a close resemblance, but are rather too diagrammatic, and not very detailed. She does not compare her leaf with any Miocene species, although she states (p. 160) that 48 specimens of *Sapindus* were found. The outline drawing (fig. 9a) of an incomplete leaf, without venation, can scarcely be identified, and might be compared with several of the described fossil species.

Occurrence: Lower Miocene; Styria (St. Kathrein).

Sapindus saxonicus Engelhardt.

- 1891b *Sapindus saxonicus* Engelhardt, p. 101, pl. II, f. 14.
 1896 *Sapindus cf. saxonicus* Engelhardt: Krasser, p. 132, pl. XIV, f. 5.

Occurrence: Upper Cretaceous; Saxony (Niederschöna), Moravia (Kunstadt).

[***Sapindus scytinophyllus*** Massalongo.]

- 1859 *Sapindus scytinophyllus* Massalongo, p. 92.
 Remarks: Nomen nudum.

Sapindus stellariaefolius Lesquereux.

- 1878a *Sapindus stellariaefolius* Lesquereux, p. 264, pl. XLIX, f. 1.
 1908 *Sapindus stellariaefolius* Lesq.: Cockerell, p. 101.
 1908a *Sapindus stellariaefolius* Lesq.: Cockerell, p. 121, text-fig. unnumb.
 Occurrence: Miocene; Colorado (Florissant).

Sapindus subfalcifolius Ettingshausen.

- 1887 *Sapindus subfalcifolius* Ettingshausen, p. 171, pl. V, f. 3; pl. VI, f. 2.
 1890 *Sapindus subfalcifolius* Ett.: Ettingshausen, p. 281, pl. XXVIII, f. 3; pl. XXIX, f. 2.
 Occurrence: Tertiary (Eocene?); New Zealand.

Sapindus tasmanicus Ettingshausen.

- 1883 *Sapindus tasmanicus* Ettingshausen, p. 139, pl. VI, f. 8.
 1883a *Sapindus tasmanicus* Ett.: Ettingshausen, p. 155.
 1888a *Sapindus tasmanicus* Ett.: Ettingshausen, p. 62, pl. VI, f. 8.
 1888 *Sapindus tasmanicus* Ett.: Johnston, pp. 248, 285, pl. XLV, f. 8.
 Occurrence: Tertiary; Tasmania.

[Sapindus tenuinervis Krasser.]

- 1903 *Sapindus tenuinervis* Krasser, p. 857.
 Remarks: MS. name of Ettingshausen. Nomen nudum.
 Occurrence: Tertiary; Brazil.

Sapindus undulatus (Al. Braun).

- 1850 *Juglans undulatus* Al. Braun in Bruckmann, p. 234.
 1851 *Sapindus?* *undulatus* Al. Braun in Stizenberger, p. 87.
 1859 *Sapindus undulatus* (A. Br.): Heer, p. 62, pl. CXXI, f. 3—7.
 1861 *Sapindus undulatus* (A. Br.): Ettingshausen, p. 245.
 1874 *Sapindus undulatus* (A. Br.): Schimper, p. 164.
 1877 *Sapindus undulatus* (A. Br.): Ettingshausen, p. 189, pl. XV, f. 13.
 1881 *Sapindus undulatus* (A. Br.): Engelhardt, p. 310, pl. XVI, f. 21.
 1883a *Sapindus undulatus* (A. Br.): Heer, p. 127, pl. LXXXIV, f. 1—3.
 1883 *Sapindus undulatus* (A. Br.): Steger, p. 24.
 1888 *Sapindus undulatus* (A. Br.): Schenk, p. 550, 551.
 1889 *Sapindus undulatus* (A. Br.): Meschinelli, p. 287.
 1892 *Sapindus undulatus* (A. Br.): Keller, p. 107, pl. XIII, f. 4.
 1893 *Sapindus undulatus* (A. Br.): Meschinelli & Squinabol p. 363.
 1901 *Sapindus novalensis* Squinabol, p. 51, pl. III, f. 6.
 1903 *Sapindus undulatus* (A. Br.): Menzel, p. 17.
 1911 *Sapindus undulatus* (A. Br.): Kafka, pp. 42, 62.
 1913 *Sapindus undulatus* (A. Br.): Engelhardt, p. 393, pl. I, f. 16.
 1914 *Sapindus undulatus* (A. Br.): Principi, p. 184.
 1916 *Sapindus undulatus* (A. Br.): Principi, p. 134, pl. LXIII, f. 13.
 1921 *Sapindus undulatus* (A. Br.): Principi, p. 91.
 1922 *Sapindus undulatus* (A. Br.): Engelhardt, p. 94, pl. XXIX, f. 2.

1926 *Sapindus undulatus* (A. Br.): Principi, p. 72, pl. VI, f. 24; pl. VIII, f. 11.

Remarks: We have included *S. novalensis* Squinabol here, as it is indistinguishable from *S. undulatus*. Squinabol himself notes the close resemblance, and moreover the name *S. novalensis* had been previously used by Massalongo.

The specimen from the Eocene of Mississippi identified by Lesquereux (1869, p. 420) as *S. undulatus* has been named *Eugenia hilgardiana* by Berry (1916, p. 318).

See also *Phyllites* sp.

Occurrence: Eocene; Italy (Novale), Hessen (Darmstadt). Oligocene; Italy (Mt. Piano, Chiavon), Bohemia (Preschen), Carniola (Sagor). Miocene; Baden & Switzerland (Oeningen, St. Gallen), Bosnia, Bohemia (Grasseth), Silesia.

***Sapindus ungeri* Ettingshausen.**

1851 *Cassia phaseolites* Unger, p. 188, pl. LXVI, f. 1—7.

1860 *Sapindus ungeri* Ettingshausen MS.: Unger, p. 34, pl. XX, f. 1—6.

1861 *Sapindus ungeri* Ett.: Ettingshausen, p. 245.

1864 *Cassia phaseolites* Unger: Unger, p. 29, pl. X, f. 1—3.

1870 *Sapindus ungeri* Ett.: Unger, p. 12, pl. IV, f. 11, 12, 12*.

1870a *Sapindus ungeri* Ett.: Ettingshausen, p. 889, pl. II, f. 9.

1874 *Sapindus ungeri* Ett.: Schimper, p. 166.

1883 *Sapindus ungeri* Ett.: Halavats, p. 173.

1883 *Sapindus ungeri* Ett.: Pilar, p. 102.

1884 *Sapindus ungeri* Ett.: Schafarzik, p. 128.

1885 *Sapindus ungeri* Ett.: Sacco, p. 277.

1888 *Sapindus ungeri* Ett.: Ettingshausen, p. 342.

1896 *Sapindus ungeri* (Ett.): Ettingshausen, p. 493, pl. III, f. 5.

1901 *Sapindus ungeri* Ett.: Squinabol, p. 55.

1903 *Sapindus ungeri* Ett.: Squinabol, p. 55.

1904 *Sapindus ungeri* Ett.: Engelhardt, p. 352, pl. LXXXVII, f. 19.

1921 *Sapindus ungeri* Ett.: Principi, p. 91.

1926 *Sapindus ungeri* Ett.: Principi, p. 73, pl. II, f. 7.

Remarks: Ettingshausen unites with this species the specimens of *Cassia phaseolites* figured by Unger from Radoboj, which he considers to be quite distinct from *C. phaseolites* from Sotzka.

Engelhardt includes *S. ungeri* in the synonymy of *S. falcifolius* (see the remarks on that species). Unger at first referred *S. graecus* to *S. ungeri*. Pilar includes part of *S. erdöbényensis* as figured by Unger (1870, pl. IV, f. 14). Principi considers that *S. ungeri* is near *S. cupanioides*.

Occurrence: Eocene; Italy (Novale). Oligocene; Italy (Chiavon), Hungary. Miocene; Hungary, Bosnia, Croatia (Radoboj). Pliocene; Italy (Astiano).

[*Sapindus urophyllus* Massalongo.]

1859 *Sapindus urophyllus* Massalongo, p. 93.

Remarks: Nomen nudum.

***Sapindus variabilis* Berry.**

1919 *Sapindus variabilis* Berry, p. 111, pl. XXVII, f. 1—3.

Occurrence: Cretaceous (Tuscaloosa); Alabama.

Sapindus vellavensis Saporta.

1878 *Sapindus vellavensis* Saporta, p. 50, pl. VI, f. 5, 6.

1910 *Sapindus vellavensis* Sap.: Lauby, p. 372.

Remarks: Near *S. graecus*, according to Saporta.

Occurrence: Eocene (Bartonian); France, Haute-Loire (Brives).

Sapindus wardii Knowlton.

1899 *Sapindus wardii* Knowlton, p. 738, pl. XCVIII, f. 1, 2; pl. XCIX, f. 5.

Occurrence: Eocene (Fort Union); Yellowstone National Park.

Sapindus winchesteri Knowlton.

1923 *Sapindus winchesteri* Knowlton, p. 167, pl. XXXVIII, f. 1.

Occurrence: Eocene; Colorado (Rio Blanco County).

Sapindus yeguanus Berry.

1924 *Sapindus yeguanus* Berry, p. 73, pl. XII, f. 6; pl. XLIII, f. 1, 2.

Occurrence: Eocene (Yegua, Lisbon); Texas, Mississippi.

Sapindus zovencedi Massalongo.

1858 *Sapindus zovencedi* Massalongo, p. 16.

1859 *Sapindus zovencedi* Mass.: Massalongo, p. 93.

1893 *Sapindus zovencedi* Mass.: Meschinelli & Squinabol, p. 363.

Occurrence: Oligocene; Italy (Vicentino).

Sapindus sp.

1757 *Sapindus* sp.: Parsons, p. 168, pl. VI, f. 25, 33.

Occurrence: Lower Eocene; England (Sheppey).

Sapindus sp.

1879 *Sapindus* sp.: Dawson, p. 187B.

Occurrence: Oligocene; S. British Columbia.

Sapindus sp.

1888 *Sapindus* sp. cf. *S. obtusifolia* Lesq.: Dawson, p. 35.

Occurrence: No locality nor horizon given. In a collection "from the Belly River Series, and the Lower and Upper Laramie", Canada.

Sapindus sp.

1897 *Sapindus* sp.: Stanton & Knowlton, p. 142.

1919 *Sapindus* sp.: Knowlton, p. 582.

Occurrence: Eocene; Wyoming.

Sapindus sp.

1906 *Sapindus* sp.: Krasser, p. 42.

Occurrence: Senonian; L. Austria (Grünbach).

Sapindus sp.

- 1908 *Sapindus* sp.: Taeger, p. 205, pl. III, f. 10.
Occurrence: Lower Eocene; Hungary (Tatabanya).

Sapindus sp.

- 1908a *Sapindus* sp.: Knowlton, p. 25.
Occurrence: Upper Cretaceous (Mesaverde); Colorado.

Sapindus sp.

- 1912 *Sapindus* sp.: Knowlton, p. 481.
Occurrence: Eocene (Fort Union); Wyoming.

Sapindus sp.

- 1921 *Sapindus* sp.: Chaney, p. 91.
Remarks: We do not know whether this "new species" has been named and described. Some of Chaney's papers, though published in 1920 and 1924, have not yet reached England (October 1927).
Occurrence: Miocene (Monterey Group); S. California.

? Sapindus sp.

- 1908 ?*Sapindus* sp.: Knowlton, p. 34.
Occurrence: Tertiary; Alaska.

Sapindus ? sp.

- 1924a *Sapindus?* sp.: Berry, pp. 87, 90.
Occurrence: Eocene; Central Texas.

Sapindus ?

- 1858c *Sapindus?*: Massalongo, p. 186, pl. V, f. 4.
Remarks: Too fragmentary for determination.
Occurrence: Upper Eocene; Italy (Monte Pastello).

Sapindus ?

- 1897 *Sapindus?*: Almera, p. 160.
Occurrence: Pliocene; Spain (Tarragona, Espluga).

Sapindus ?

- 1920 *Phyllites* cf. *Sapindus linearifolius* Berry (?): Colani, p. 470, f. 55.
Occurrence: Pliocene; Indochina (Muong-peun).

Sapindus ?

- 1922 Undetermined Leaflet, Berry, p. 186, pl. VIII, f. 2.
Remarks: Compared by Berry with *Sapindus* and *Cedrela*.
Occurrence: Pliocene; Bolivia (Pislypampa).

Sapindus ?

- 1923 *Phyllites coloradensis* Knowlton, p. 176, pl. XXXVIII, f. 3.

Remarks: A possible relationship with *Sapindus* is suggested.

Occurrence: Eocene; Rio Blanco County, Colorado.

Schmidelia Linnaeus.

Schmidelia bejucensis Berry.

1918a *Schmidelia bejucensis* Berry, p. 37, pl. XVII, f. 4.

Occurrence: Oligocene? (Culebra and Caimito formations): Panama canal zone.

Schmidelia eduliforma Berry.

1925 *Schmidelia eduliforma* Berry, p. 210, pl. III, f. 7.

Remarks: Fruiting spike.

Occurrence: Miocene; Patagonia.

Schmidelia graciliforma Berry.

1925 *Schmidelia graciliforma* Berry, p. 209, pl. VI, f. 2, 3.

Occurrence: Miocene; Patagonia.

Schmidelia proedulis Berry.

1925 *Schmidelia proedulis* Berry, p. 211, pl. I, f. 3.

Remarks: "This species is, unfortunately, based upon the single incomplete specimen figured, which is altogether insufficient for a proper diagnosis". (Berry).

Occurrence: Miocene; Patagonia (Chubut).

Schmideliopsis Felix.

Schmideliopsis zirkeli Felix.

1882 *Schmideliopsis zirkeli* Felix, p. 72.

1883 *Schmideliopsis zirkeli* Felix: Felix, p. 16, pl. II, f. 6, 8.

Remarks: Wood. Structure agrees, according to Felix, with that of *Schmidelia haemorrhoea*.

Occurrence: Miocene; Antigua.

Stocksia Bentham.

[Stocksia ?]

1915 *Stocksia*? : C. & E. M. Reid, p. 112, pl. XI, f. 17.

Remarks: A seed, compared with the living *Stocksia* and *Koelreuteria*. This view was abandoned later.

Occurrence: Pliocene; Holland (Tegelen, Reuver); Belgium (Raevels).

Thouinia Poiteau.

Thouinia occidentalis Engelhardt.

1922 *Thouinia occidentalis* Engelhardt, p. 95, pl. XXXI, f. 1.

Occurrence: Upper Eocene; Hessen (Messel near Darmstadt).

[Thouinia philippii Engelhardt.]

Synonym of *Cupania grosse-serrata*, q. v.

Trematocaryon Mueller, 1871 (June), p. 48.[**Trematocaryon mclellani** Mueller.]1871 (June) *Trematocaryon mclellani* Mueller, p. 48, pl. III, f. 1—17.1874a *Trematocaryon mclellani* Mueller, p. 12, pl. III.Remarks: Stated to be possibly *Sapindaceae*, but also compared with *Verbenaceae*.

Occurrence: Pliocene; Victoria.

Tricoilocaryon Mueller, 1878, p. 35.Remarks: In 1878 von Mueller stated that "possibly this genus may prove referable to *Sapindaceae*", but in 1883 he omitted this remark.[**Tricoilocaryon barnardi** Mueller.]1878 (March) *Tricoilocaryon barnardi* Mueller, p. 35, pl. XIV, f. 1—4.1883 *Tricoilocaryon barnardi* Mueller: Mueller, p. 7, pl. XIV, f. 1—5.

Occurrence: Pliocene; New South Wales.

Wilkinsonia Mueller, 1877 (Sept.), p. 37.Remarks: "May perhaps have belonged to the order of *Sapindaceae*".[**Wilkinsonia bilaminata** Mueller.]1877 (Sept.) *Wilkinsonia bilaminata* Mueller, p. 37, pl. XIII, f. 1—6.1879 *Wilkinsonia bilaminata* Mueller: Mueller, p. 170, pl. III, f. 4.1883 *Wilkinsonia bilaminata* Mueller: Mueller, p. 7, pl. XIII.

Occurrence: Pliocene; New South Wales.

Xanthoceras Bunge.**Xanthoceras antiqua** Friedrich.1883 *Xanthoceras antiqua* Friedrich, p. 196, pl. XX, f. 10b; pl. XXVI, f. 6.

Occurrence: Oligocene; Saxony.



Summary of Genera.

The first figure includes the more or less authentic species; the number in brackets gives the synonyms, nomina nuda etc.

Aphania Blume	1
Aporrhiza Radlkofer	1
Carpolithus Linnaeus	4+[3]
Chytranthus Hooker f.	1
Conchotheca Mueller	[1]
Cupania Linnaeus	4+[20]
Cupanites Schimper	14
Cupanoides Bowerbank	10+[3]
Deinbollia Schumacher	3
Djambioxylon Kräusel	1
Dodonaea Linnaeus	21+[7]
Dodonaeites Saporta	1
Enourea Aublet	1
Eriocoelum Hooker f.	2
Euphoria Comm. ex Jussieu	[2]
Euphoriaecarpum Menzel	1
Euphoriopsis Massalongo	3+[1]
Fraasia Unger	1
Glossolepis Gilg	1
Koelreuteria Laxmann	9+[5]
Lychnodiscus Radlkofer	2
Nephelites Deane	6+[1]
Nephelium Linnaeus	2
Pancovia Willdenow	2
Paullinia Linnaeus	7+[6]
Pentacoila Mueller	[1]
Penteune Mueller	[4]
Phialodiscus Radlkofer	1
Phyllites Brongniart	[1]
Phymatocaryon Mueller	[3]
Sapindoides Perkins	9
Sapindophyllum Ettingshausen	11+[3]
Sapindopsis Fontaine	4+[6]
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