

CHECKLISTS OF CULTIVARS OF EUROPEAN ASH (*FRAXINUS*) SPECIES

by Alice Jacot McArdle and Frank S. Santamour, Jr.

Abstract. Cultivars of 4 species of *Fraxinus* native to Europe are described and discussed: *F. angustifolia* (incl. *F. oxycarpa*), *F. excelsior*, *F. holotricha*, and *F. ornus*.

According to Rehder (2), there are 8 species of *Fraxinus* native to Europe. This number has been reduced to 4 or 5 by Scheller (4). Scheller sunk *F. numidica* Vahl and *F. oxycarpa* Willdenow in the synonymy of *F. angustifolia* Vahl, and listed *F. rotundifolia* Miller as a doubtful species that is probably not worthy of consideration. Actually the specific name *rotundifolia* had been used by other authors to describe variants in the synonymy of both *F. angustifolia* and *F. ornus* L. Scheller considered *F. pallisae* Willmott, from the eastern Balkan Peninsula, as valid, but no cultivars are known in this species. There is some doubt whether *F. pallisae* and *F. holotricha* Koehne are the same species, since *F. holotricha* was described from cultivated specimens in the arboretum of L. Spath Nurs. in Berlin in 1906 and still is not known in the wild.

It is likely that all plants currently known as *F. holotricha* are descendents of these arboretum trees and their progeny sold by Spath nursery. We have followed Scheller (4) in retaining the name *F. holotricha*, but largely because a widely distributed cultivar ('Moraine') selected in the United States has been cultivated under this name.

Fraxinus excelsior L. is known as the European ash and it is found throughout most of Europe from Great Britain to the Baltic region of the Soviet Union, except for the northern, southern, and eastern margins. European botanists and horticulturists have selected and named more than 100 variants of this species but few are currently widely cultivated in the United States. The lack of familiarity with this species by American horticulturists in the past has led to some problems of specific identification. The *F. excelsior* cultivars

'Rancho' and 'Kimberly' were both selected in the United States but first ascribed to other species. The 'Kimberly' situation is more fully discussed in our earlier paper (3).

The other European species are more southerly in their native distribution. *Fraxinus ornus*, the flowering or manna ash, is found in the Mediterranean region and South Central Europe. At one time (ca. 1838), northern European botanists considered that this species had both European and North American components (*Ornus americana* Pursh), but this concept was shown to be incorrect.

The taxa known as *F. angustifolia* and *F. oxycarpa* occupy similar ranges in southern Europe and, although they both may be considered as subspecies of *F. angustifolia*, Scheller (4) pointed out that the variable leaf pubescence of *F. oxycarpa* was not sufficient to justify either the specific or subspecific status.

As mentioned earlier, *F. holotricha* was described from cultivated specimens. Rehder (2) gave its range as the eastern Balkan Peninsula, which is similar to that of *F. pallisae*, and the two species may be synonymous.

Whitish floral corollas are present in the flowering ash (*F. ornus*) — hence its common name — and the flowers are fragrant. In this species, as well as the others, flowering is polygamous, with unisexual and bisexual flowers on the same plant. In practice, however, it has apparently been possible to select some cultivars of *F. excelsior* as "male" or "female" based on the predominant flower type.

Cultivar checklists are published to establish and maintain stability in the nomenclature of cultivated plants according to the International Code of nomenclature for Cultivated Plants (1). On January 1, 1981, the U.S. National Arboretum was named the International Registration Authority for unassigned woody genera. We have ac-

cepted, as part of this authority, the responsibility to provide suitable checklists of important landscape tree species and genera. We urge all nurserymen and scientists who intend to introduce a new ash (or a plant of the many other unassigned genera) to contact Dr. T.R. Dudley at the U.S. National Arboretum, Washington, D.C. 20002 for registration forms and other information.

This is the second (and last) cultivar checklist in our current series on *Fraxinus*. The cultivars are discussed under their respective species which are listed in alphabetical order. There are many Asiatic ash species, but very few cultivars have been selected and we will not deal with these in the near future. As in previous checklists, **VALID CULTIVAR** names are given in boldface capitals and **INVALID CULTIVAR** names in lightface capitals.

Fraxinus angustifolia

- ALGERIENSIS** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 55) — as *F. oxycarpa* var. *algeriensis*. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- AMARA** (K. Koch, *Dendrologie* 2, 1872, p. 244) — listed under *F. excelsior* but Koch had not seen the flowers or fruit and stated it might belong to *F. oxycarpa*; leaves somewhat narrow with brownish wool along the midrib beneath.
- AMARISSIMA** (K. Koch, *Dendrologie* 2, 1872, p. 246) — as *Fr. amarissima*; brought into the trade by Loddiges (Nurs.), Hackney, England; buds almost black-brown, upper surface of leaves dark green.
- ANGUSTIFOLIA** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 55) — as *F. oxycarpa* var. *angustifolia* (Vahl.) = *F. angustifolia*.
- ARGENTEA** (K. Koch, *Dendrologie* 2, 1872, p. 247) — as *Fr. argentea*, a name used by the Flottbecker Nursery. May = *F. angustifolia*.
- ASPLENIIFOLIA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, 1903, p. 411) — as *Fraxinus oxycarpa aspleniifolia* hort., without description.
- AUREA** (Sheridan Nurs. Ltd., Etobicoke, Ontario, Canada, Cat. 1970, p. 35) — as *Fraxinus oxycarpa* 'Aurea'; small tree with golden twigs in spring, foliage with golden fall color. Name invalid because published in Latin form after January 1, 1959.
- AUREA PENDULA** (L. Spath Nurs., Berlin, Cat. Fall 1937-Spring 1938, p. 74, and perhaps earlier catalogs) — as *F. parvifolia aurea pendula*, branches pendent, yellow-barked.
- AUSTRALIS** (Th. Wenzig, Bot. Jahrb., Vol. 4, 1883, p. 179) — according to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- BORNMULLERI** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 54) — leaflets beneath towards the base crisped-grey-villous.
- CALABRICA** (K. Koch, *Dendrologie* 2, 1872, p. 247) — as *Fr. calabrica*, a name used in the garden for *Fr. angustifolia*.
- CHINENSIS** (K. Koch, *Dendrologie* 2, 1872, p. 247) — as *Fr. chinensis*, a name used in the garden for *Fr. angustifolia*. Also in L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 91; a name found in one nursery for a small-leaved selection similar to 'Microphylla.'
- CLARET** (W.R. Hildreth, California Horticultural Journal 34(1): 37-38, 1973) — common name used in Australia for **RAYWOOD**.
- CUSPIDATA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 90) — as *Fraxinus oxycarpa cuspidata*. Leaf tips sharp-pointed.
- DOCTOR PIRONE** (E.H. Scanlon & Assoc., Olmsted Falls, Ohio, Wholesale List No. 13, Fall 1961-Spring 1962, p. 25) — named after Dr. Pat Pirone (New York Botanical Garden), tree to about 35 feet, glossy bright green foliage, upsweeping branches.
- EDENTATA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 90) — as *Fr. oxyc. edentata*; delicate twigs, remains low.
- EDENTATA FOLIIS VARIEGATIS** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 90) — as *Fr. edentata foliis variegatis*; white-variegated leaflets, somewhat sensitive to winter cold. = **EDENTATA VARIEGATA** to correct orthography.
- EDENTATA VARIEGATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, 1903, p. 411) — as *Fraxinus oxycarpa edentata variegata* hort., without description. See **EDENTATA FOLIIS VARIEGATIS**.
- ELEGANTISSIMA** (H. Jager and L. Beissner, Die Ziergeholze, Weimar, 1889, p. 161) — as belonging to *F. excelsior*. H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977 pointed out that this actually belongs to *F. angustifolia*; black-brown buds often in whorls of 3, underside of leaf glabrous, margin serrate, inflorescence a raceme.
- ELONZA** (K. Koch, *Dendrologie* 2, 1872, p. 247) — as *Fr. Elonza*. May = *F. angustifolia*.
- EPIPTERA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 90) — as *Fr. oxyc. epiptera*; with up to 13 or 15 pinules.

- FLAME** (E.H. Scanlon & Assoc., Olmsted Falls, Ohio, Advert., Trees Mag. 25(6): 23, 1965) — as *Fraxinus oxycarpa* 'Flame': symmetrical round head; narrow bladed leaves turn from a dark glossy green to burgundy, then to a flame color. Plant Patent No. 2566, November 2, 1965; discovered in a public park planting of *Fraxinus oxycarpa* in Melbourne, Australia.
- GOLDEN DESERT** (E.H. Scanlon & Assoc., Olmsted Falls, Ohio, Wholesale List No. 15, Fall 1963-Spring 1964, p. 45, Trademarked) — as *Fraxinus oxycarpa aurea* -Golden Desert Ash; golden bark and green foliage turning to gold about July. The Latin epithet was later changed to *Fraxinus oxycarpa aureaefolia*, also with the note "Patent Pending," in Trees Mag. 24(5): 5, 1964. Apparently never actually patented. Since the "variety" names *aurea* and *aureaefolia* are in Latin form and published after January 1, 1959, we have taken 'Golden Desert' as the valid cultivar name.
- HARTWIGII** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 55) — branchlets pendulous, pulverulent (appearing as covered with minute grains of dust).
- LENTISCIFOLIA** (B.K. Boom, Nederlandse Dendrologie, Wageningen, 1972, p. 386) — listed as a cultivar with authorities (Desfontaines) Henry. However, Henry in H.J. Elwes and A. Henry, The Trees of Great Britain and Ireland, Edinburgh, 1909, p. 880, stated that he could not distinguish this from other cultivated or wild specimens.
- MACROCARPA** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 55) — as *Fr. oxycarpa* var. *macrocarpa*. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- MARSHALS** (Pepinieres Minier, Angers, France, Cat. Autumn 1974, p. 107, and perhaps earlier catalogs) — as *Fraxinus oxycarpa* 'Marshals'. May = *F. pennsylvanica* 'Marshall Seedless'.
- MICROPHYLLA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 91) — leaves 8-12 cm. long, rachis and light green leaflets with scattered, short hairs. A similar small-leaved form cultivated and distributed by one nursery under the names *Fr. taurica* and *Fr. chinensis*.
- MINOR** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 94) — as *Fraxinus parvifolia minor*; with fine sometimes ascending, sometimes almost horizontal spreading or somewhat inclined branches, dark brown-red twigs, 4 to 7-lobed leaves and small, oval, finely serrate leaflets.
- MONOPHYLLA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 86-87) — as *F. tamariscifolia monophylla*; of seedling origin, leaves oval to broadly lanceolate, often with one or two lobes, or three fold; irregularly and coarsely serrate. Leaves very similar to *F. excelsior* 'Diversifolia' (H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977).
- MORAINE** (Pepinieres Minier, Angers, France, Cat. Autumn 1974, p. 107, and perhaps earlier catalogs) — as *Fraxinus oxycarpa* 'Moraine'. May = *F. holotricha* 'Moraine'.
- NANA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 87) — as *Fraxinus tamariscifolia nana*; dwarf, from the nursery of Simon-Louis (Metz, France), leaves 12-15 cm. long, with a brown-red petiole, leaflets oval, serrate.
- OBLIQUA** (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — as *Fraxinus excelsior* subsp. *oxycarpa* var. *obliqua* with *F. obliqua* Tausch as a synonym. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- OLIGOPHYLLA** (Th. Wenzig, Bot. Jahrb., Vol. 4, 1883, p. 175) — as *F. oxycarpa oligophylla*. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. syriaca* Boiss.
- OXYPHYLLA** (A. Lingelsheim, in A. Engler, Das Pflanzenreich, IV. 243 I, 1920, p. 54) — as *Fr. oxycarpa* var. *oxyphylla* (Marsch. Bieb.) Lingelsh. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- PALLIDA** (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 159) — as var. *F. pallida*, with *F. australis* Gay as synonymous. May = *F. angustifolia*.
- PANICULATA** (K. Koch, Dendrologie 2, 1872, p. 245) — as *Fr. paniculata*, a name found in the garden for *Fr. rostrata*. = **ROSTRATA**.
- PARVIFOLIA** (Th. Wenzig, Bot. Jahrb., Vol. 4, 1883, p. 175) — as *Fr. oxycarpa parvifolia*. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, = *F. angustifolia*.
- PENDULA** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 86) — as *F. tamariscifolia pendula*; of seedling origin, branches and twigs hanging down in short, tight, arches.
- PYRAMIDALIS** (L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 91) — compact growth and larger pinnules than the species; since it originated in North Africa, it is very sensitive to winter cold.
- RAYWOOD** (R.C. Notcutt Nurs. Ltd., Woodbridge, Suffolk, England, Nursery Stock Cat., Fall 1933-Spring 1934, p. 32, and perhaps earlier catalogs) — as *Fraxinus oxycarpa*, Raywood variety; of strong, vigorous, upright growth, foliage similar to the Manna or Flowering Ash but leaves have a claret coloured hue in autumn. The use of "variety" in a cultivar name is invalid according to the Code (1). Selected in Adelaide, Australia in the late 1920's by Professor Gardiner of Cambridge University, England, who gave scion wood to R.C. Notcutt of Notcutts Nurseries, Ltd. In 1931 this ash was presented an award of merit by the British Royal Horticultural Society. The Saratoga Horticultural Foundation, Saratoga, California, introduced 'Raywood' to the United States in 1964; a similar award of merit was granted by the California Horticultural Society (W.R. Hildreth, California Horticultural Journal 34(1): 37-38, 1973).

RAYWOODII — According to W.J. Bean, *Trees and Shrubs Hardy in the British Isles*, Ed. 8, Vol. II, 1973, p. 217, the cultivar 'Raywood' was put into commerce by Notcutt Nurs. under the name *F. excelsior raywoodii*, but we have found no evidence of this designation. = **RAYWOOD**.

RAYWOOD VARIETY = RAYWOOD

ROSTRATA (K. Koch, *Dendrologie* 2, 1872, p. 245) — as *Fr. rostrata* Gussone (pl. rar. 374, tab. 63); leaves elliptical and dark, fruit acuminate at both ends.

SOGDIANA (Th. Wenzig, *Bot. Jahrb.*, Vol. 4, 1883, p. 176) — as *F. oxycarpa sogdiana*. According to H. Scheller, *Mitt. Deutsch. Dendr. Ges.* 69: 49-162, 1977, = *F. syriaca* Boiss.

STIPULATA (L. Dippel, *Handbuch der Laubholzkunde* 1, 1889, p. 89) — as *Fraxinus oxycarpa stipulata* with *Fr. oxyc. oxycanthaefolia* and *lyrata* hort. as synonyms; a peculiar, darkly foliated ash, the upper leaflets usually with one or two subulate to lanceolate stipules, the lower leaflets often with a lateral lobe.

STRIATA (K. Koch, *Dendrologie* 2, 1872, p. 274) — as *Fr. striata* (Bosc.) May = *F. angustifolia*.

SUBINTEGRA (Th. Wenzig, *Bot. Jahrb.*, Vol. 4, 1883, p. 175) — as *Fr. oxycarpa subintegra*, with *Fr. oxyphylla subintegra* Boiss. as a synonym; leaflet sharply acuminate towards the apex, base serrate, glabrous, veins prominent on lower surface; low-growing shrub.

TAMARISCIFOLIA (A. Lingelsheim, in A. Engler, *Das Pflanzenreich*, IV. 243 I, 1920, p. 55) — as *F. oxycarpa* var. *tamariscifolia*. According to H. Scheller, *Mitt. Deutsch. Dendr. Ges.* 69: 49-162, 1977, = *F. angustifolia*.

TAURICA (L. Dippel, *Handbuch der Laubholzkunde* 1, 1889, p. 90) — as *Fr. oxyc. taurica*; leaves almost invariably in whorls of 3, and the lanceolate to oval leaflets drawn out to a long point.

WOLLASTONII — According to W.J. Bean, *Trees and Shrubs Hardy in the British Isles*, Ed. 8, Vol. II, 1973, p. 217, a tree of 'Raywood' was presented to the Royal Botanic Gardens, Kew, by Notcutt Nurs. in 1928 under the name *F. excelsior wollastonii*, even though the plant obviously belonged to *F. oxycarpa*. It is interesting that although several authors have referred to plants of 'Raywood' (and 'Wollastonii') being sold as cultivars of *F. excelsior*, we could find no indication of this improper nomenclature in the catalogs of Notcutt Nurseries. Other authors and nurseries have used the name 'Wollastonii', probably to refer to plants propagated from the Kew tree bearing this name, but we (and others) consider that 'Wollastonii' = **RAYWOOD**.

Fraxinus excelsior

ACUMINATA (K. Koch, *Dendrologie* 2, 1872, p. 243) — as *Fr. acuminata*, a form found in the garden with numerous

firm, hairless, lanceolate leaves, usually with the "false" name *Fr. acuminata*. However, 'Acuminata' later was used in the sense of a cultivar name in L. Beissner, E. Schelle, and H. Zabel, *Handbuch der Laubholz-Benennung*, Berlin, 1903, p. 409; without description.

ADSCENDENS (K. Koch, *Dendrologie* 2, 1872, p. 242) — as *Fr. adscendens* Hort., with ascending branches.

ALBIFOLIA (H. Jager and L. Beissner, *Die Ziergeholze*, Ed. 3, Weimar, 1889, p. 161) — ascribed to Spath (Nurs.), leaves almost complete white.

ALBO-VARIEGATA (F.G. Hayne, *Dendrologische Flora der Umgegend und der Garten Berlins*, 1822, p. 226). = **ARGENTEA**.

ALTENA = ALTHENA.

ALTHENA (G. Krussmann, *Handbuch der Laubgeholze*, Berlin, 1977, vol. 2, p. 89) — crown moderately broad, conical; selected about 1943 by the Netherlands State Forest Administration in a street planting between Sleenwijk and Nieuwendijk. Also in Boomkwekerij Udenhout (Nurs.) *Cat.* October, 1977, p. 34 with synonym of 'Monarch', no. 17'.

AMARA (K. Koch, *Dendrologie* 2, 1872, p. 244) — leaves somewhat narrow with brownish wool along the midrib beneath as with *F. oxycarpa*; Koch had not seen the flowers or fruit and stated it might belong to *F. oxycarpa* rather than *F. excelsior*.

AMARISSIMA (J.C. Loudon, *Arboretum et Fruiticetum Britannicum*, London, 1838, p. 1246, 1247) — as *F. amarissima* belonging to *F. excelsior parvifolia*. Also in the Royal Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 81, as *F. excelsior* var. *amarissima*; both without description.

ANGUSTIFOLIA (L. Beissner, E. Schelle, and H. Zabel, *Handbuch der Laubholz-Benennung*, Berlin, 1903, p. 409) — without description. Described by G. Krussmann, *Handbuch der Laubgeholze*, Berlin, vol. 2, 1977, p. 89 — winter buds black, otherwise very similar to *F. angustifolia*; leaflet narrow ovoid, terminal leaflet long petioled.

ARGENTEA (G.L.M. Dumont-Courset, *Le Botaniste Cultivateur*, I, Paris, 1802, p. 711) — as *F. argentea*, a variety of *F. excelsior*; foliage variegated white, leaves so variegated they are often entirely white. A. Lingelsheim, in A. Engler, *Das Pflanzenreich* IV. 243 I, 1920, p. 51, erroneously considered both the white-spotted and the white-margined 'Argenteo-Variegata' selections under this name.

ARGENTEO-VARIEGATA (R. Weston, *The Universal Botanist and Nurseryman*, London, 1770, p. 109) — as "argenteo-var.", Silver-striped Ash-tree, leaves variegated white. Additional description in A. Rehder, *Manual of Cultivated Trees and Shrubs*, Ed. 2, Macmillan, 1940, p. 773; leaflets variegated or margined white.

- ASPLENIIFOLIA** (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 500) — light green foliage of very narrow, linear, pendent leaflets.
- ATLAS** (G. Krussman, Handbuch der Laubgehölze, Berlin, 1977, vol. 2, p. 89) — apparently introduced by J.C. and P.C. van't Westeinde, 's-Heer-Arendskerke, Zeeland, The Netherlands; crown slender, conical, branches ascending at acute angles, leaves deep green, male.
- ATRA** (K. Koch, Dendrologie 2, 1872, p. 241) — a name used in the garden for **ATROVIRENS** or **CRISPA**.
- ATROVIRENS** (C.H. Persoon, Synopsis Plantarum 2, 1807, p. 605) as *F. nana* * *atrovirens*. = **CRISPA**.
- ATROVIRENS CORIACEA** (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — in a list of cultivars under the general description of branches erect, leaves green, but with no further description; ascribed to Desfontaines.
- ATROVIRENS NANA** (Royal Botanic Gardens, Kew Hand-list of Trees and Shrubs, Ed. 2, 1902, p. 537) — as var. *atrovirens nana*. May = **CRISPA**.
- AUREA** (C.H. Persoon, Synopsis Plantarum 2, 1807, p. 604) — bark yellow.
- AUREA PENDULA** (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1217) — bark yellow, branches as pendulous and of as vigorous growth as those of 'Pendula.'
- AUREA PUNCTATIS** (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — in a list of cultivars under the general description of leaves colored, but no further description. May = **PUNCTATA**.
- AUREO-PUNCTATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description. May = **PUNCTATA**.
- AUREO-STRIATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description.
- AUREO-VARIEGATA** (R. Weston, The Universal Botanist and Nurseryman, London, 1770, p. 109) — as "aureovarieg.", Gold-striped Ash-tree, leaves variegated yellow.
- AUSTRALIS** (J.C.M. Grenier and D.A. Godron, Flore de France, 1850, vol. 2, p. 471) — according to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977 = *F. angustifolia* Vahl.
- BERLIN** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) as *foliis aureis*, without description. Described in Simon-Louis Freres, Metz, France, Fall 1908-Spring 1909 Cat., p. 39, and perhaps in earlier catalogs; leaves golden, with grand effect in spring. Proper orthography would require change from *foliis aureis* to 'Aurea,' but that name had already been used for a plant with yellow bark, thus we have applied a new name to this cultivar, and validated it here for the first time.
- BILOBA** (J.C.M. Grenier and D.A. Godron, Flore de France, 1850, vol. 2, p. 472) — as *F. biloba*. As *F. excelsior* var. *biloba* in A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892; very similar to the species but with a groove at the apex of the samara, strongly pronounced in some cases.
- CAUCISICA** (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — in a list of cultivars under the general description of branches erect, leaves green, but with no further description.
- COARCTATA** (C. de Vos, Handboek tot de Boomen, Heesters en Conifeeren, Ed. 2, Amsterdam, 1887, p. 76) — leaves cupped as in 'Crispa,' introduced to the nursery trade by C. de Vos; but with weak growth.
- COMMUNIS** (W. Aiton, Hortus Kewensis, London, 1789, vol. III, p. 445) — Common Ash, name used to distinguish the species from other "varieties."
- CONCAVIFOLIA** (Royal Botanic Gardens, Kew Hand-list of Trees and Shrubs, Ed. 2, 1902, p. 537) — as var. *concavifolia*, without description. Leaflets small, boat-shaped according to W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. II, 1973, p. 216.
- CONCAVIFOLIA VARIEGATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description. First listed by K. Koch, Dendrologie 2, 1872, p. 244 as *concavaefolia fol. var.* and described as a variegated leaf form of *F. excelsior* 'Atrovirens.' Later described as *concavaefolia fol. varieg.* in H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 161; with spoon-shaped, beautifully variegated leaves (however only on the summer growth) and variegated, striated twigs.
- CORIACEA** (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. coriacea*, a name used in the garden for **ATROVIRENS** or **CRISPA**.
- CORIARIAEFOLIA** — In K. Koch, Dendrologie 2, 1872, p. 243, name (*Fr. coriariaefolia*) applied by Scheele (Linnaea XVII, 350). According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, this is not a cultivar.
- CRISPA** (K.L. Willdenow, Species Plantarum, 1806, vol. IV, Part II, P. 1099) — leaflets dark green, crisped, pleated.
- CRISPA FOEMINA** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 163) — as *F. crispa foemina* Hort., a synonym for "var. *atrovirens*." = **CRISPA**.
- CRISPA MASCULA** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 163) — as *F. crispa macula* Hort., a synonym for "var. *atrovirens*." = **CRISPA**.
- CRISPA VARIEGATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description.
- CROATICA** — name found in records of Plant Sciences Data Center of the American Horticultural Society. Two plants at the Morton Arboretum, Lisle, Illinois; source given as Botanic Garden of the Univ. of Copenhagen, Denmark.

- CUCULLATA** (K. Koch, Dendrologie 2, 1872, p. 244-245) — raised from seed "a few years ago" by the brothers Baltet (Nurs.) in Troyes, France; the trunk branches little, the branches remain short, so that the tree resembles the dwarf forms, especially "Atrovirens," with compact, short stalked leaves, whose dark leaflets curl upward all around the margin. Put into commerce in Britain by Lee of Hammersmith in 1867, according to W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. II, 1973, p. 216.
- CURLYLEAF** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) — intended as a name to replace **ATROVIRENS**, **CRISPA** and **CUCULLATA**.
- CUTLEAF** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) = **ASPLENIIFOLIA**.
- DEN BOSCH** (Joh. Bruns, Nurs., Bad Zwischenahn, Germany, Cat. Fall 1977-Spring 1978, p. 51) — as "Diversifolia Den Bosch," without description, and invalid because undescribed.
- DIVERSIFOLIA** (W. Aiton, Hortus Kewensis, London, 1789, vol. III, p. 445) — leaves entire, 3-lobed, in threes; Various-leav'd Ash. Described in more detail by H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, illus. p. 139, 1977; tree with narrow-oval crown, leaves 14-18 cm. long, mostly consisting of an enlarged terminal leaflet only, but often with a small pair (of leaflets) beneath or with only one. Since open-pollinated seedlings of this selection will possess various leaf types similar to the parent, many trees now called 'Diversifolia' are probably not the original cultivar, but rather segregates from open pollination of the original.
- DIVERSIFOLIA LANCINIATA** (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. II, 1973, p. 216) — a cut-leaved variant of 'Diversifolia.' May = **SIMPLICIFOLIA LACINIATA**.
- DIVERSIFOLIA PENDULA** (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. II, 1973, p. 216) — pendulous. Probably = **HETEROPHYLLA PENDULA**.
- DOORENBOS** (B.K. Boom, Nederl. Dendrol. Ver. 20: 37-120, 1954-1955) — a number of ashes on the estate Overvoorde near Den Haag were cut down in 1942 for ski manufacture. All 22 wood specimens were kept separate and given numbers. The wood quality was determined and no. 5 was found to be of the best quality in combination with the best growth as a young plant (propagated presumably from sprouts of the felled tree). This tree was known for years as 'Doorenbos no. 5' but shortened to 'Doorenbos' since only one tree from this series is in cultivation. Named for S.G.A. Doorenbos, a horticulturist of Den Haag, The Netherlands. Probably the only cultivar selected for its wood quality rather than growth form or leaf characteristics.
- DWARF** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) — intended as a name to replace **GLOBOSA**, **NANA**, and **POLEMONIIFOLIA**.
- EDENTATA FOL. VAR.** (K. Koch, Dendrologie 2, 1872, p. 244) — a weak growing form with small, almost entire, but white bordered leaves; if it belongs here (with *F. excelsior*) and not with a more southern type, Koch was not able to distinguish it. Probably first described in E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 499, as *F. edentata foliis variegatis* Hort.
- ELEGANTISSIMA** (H. Jager and L. Beissner, Die Ziergeholze, Weimar, 1889, p. 161). Does not belong to *Fraxinus excelsior* but rather *F. angustifolia* Vahl., according to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977.
- EROSA** (K.L. Willdenow, Species Plantarum, 1806, vol. IV, Part II, p. 1099) — leaflets most narrow, bases strongly attenuate, irregularly toothed-dentate.
- EUREKA** (Nederlandse Staatscourant No. 90, May 10, 1950, p. 5) — thus entered in the Central Register of Plant Varieties, without description — although a description could be obtained (upon payment) from the Board for Breeders Rights. According to B.K. Boom, Nederl. Dendrol. Ver. 20: 37-120, 1954-1955, this selection was found in 1947 by Van der Have (Nurs.); basically female, upright trunk and a regular crown.
- EXONIENSIS** (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 500) — as *F. exoniensis* Hort. = **ASPLENIIFOLIA**.
- EXPANSA** (K. Koch, Dendrologie 2, 1872, p. 243) = **COR-IARIAEFOLIA**; not a cultivar.
- FASTIGIATA** (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 161) = **SPECTABILIS**.
- FLAVO-VARIEGATA** (F.G. Hayne, Dendrologische Flora der Umgegend und der Garten Berlins, 1822, p. 226) — with yellow-variegated leaves.
- FOLIIS ALBO VARIEGATIS** (Barbier Brothers & Son, Orleans, France, Nursery Trade List Fall 1896-Spring 1897, p. 91, and perhaps in earlier catalogs) = **ARGENTEA**.
- FOLIIS ARGENTEIS** (Royal Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 83) — as var. *foliis argenteis*. Also in W. Mesman & Sons, Boskoop, The Netherlands, Wholesale Cat. 1955-56, p. 33. = **ARGENTEO-VARIEGATA**.
- FOLIIS ARGENTEO-VARIEGATIS** (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 161) = **ARGENTEA**.
- FOLIIS LUTEIS** (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 161) — leaves almost yellow, the young leaves and shoots often violet. May = **LUTEA**.
- FOLIIS MARGINATIS ARGENTEIS** (Barbier Brothers & Son, Orleans, France, Nursery Trade List Fall 1896-Spring 1897, p. 91 and perhaps in earlier catalog) = **ARGENTEO-VARIEGATA**.
- FUNGOSA** (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1218) — "fungous-barked" ash, ascribed to Loddiges (Nurs.) Cat. 1836.

- GEESSINK** (Nederlandse Staatscourant No. 32, February 14, 1968) — thus entered in the Central Register of Plant Varieties, without description — although a description could be obtained (upon payment) from the Board for Breeders Rights.
- GLAUCA** (Th. Wenzig, Bot. Jahrb., vol. 4, 1883, p. 178) — leaflets 9-11, oblong, serrate, acuminate.
- GLOBE** (Barbier Brothers & Son, Orleans, France, Nursery Trade List, Fall 1896-Spring 1897, p. 91, and perhaps earlier catalogs) — as *Fraxinus globe*. Probably = **POLEMONIIFOLIA**.
- GLOBOSA** (H. Jager and L. Beissner, Die Ziergeholze, Weimar, 1889, p. 161) — globe ash. This is probably the plant H. Scheller in Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977 denoted as "Nana II" and described as often grafted high and reaching 5-6 m., with leaves 10-15 cm. long which have mostly 11 distantly placed leaflets. (Also see **UMBRACULIFERA**).
- GLOBOSA DE DEEGEN** (Barbier Brothers & Son, Orleans, France, Nursery Trade List, Fall 1896-Spring 1897, p. 91, and perhaps earlier catalogs) — as *Fraxinus globosa de Deegen*. Probably = **GLOBOSA**.
- GLOBOSA DEEGENI** (Simon-Louis Freres (Nurs.), Metz, France, Cat. Fall 1908-Spring 1909, p. 39, and perhaps earlier catalogs) — probably = **GLOBOSA**.
- GLOBOSUM** — probably = **GLOBOSA**.
- GLOMERATA** (E. Petzold and G. Kirchner, Arboretum Musciense, Gotha, 1864, p. 509) — as *F. polemoniifolia* (= *F. excelsior glomerata* Hort.), which they considered = to "nana". K. Koch, Dendrologie 2, 1872, p. 241, stated the name *Fr. glomerata* is found in the garden for 'Atrovirens' or 'Crispa'. The Simon-Louis Freres (Nurs.), Metz, France, Cat. Fall 1908-Spring 1909, p. 39, listing, with description, would suggest it = **CRISPA**.
- GOLD CLOUD** (Spring Hill Nurs., Tipp City, Ohio, Retail Cat. Fall 1961, p. 40) — rapid growing, seedless, golden-yellow, lacy foliage summer and fall, bright golden twigs. Plant Patent No. 2286, September 24, 1963.
- GOLDEN** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) = **AUREA**.
- GOLDEN GLOW** (Duncan & Davies Ltd., New Plymouth, New Zealand, Catalogue and Cultural Guide, 1965, p. 107) — noted for its spectacular display of butter-yellow autumn foliage; hardy street, avenue, or specimen tree.
- GOLDEN WEEPING** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) = **AUREA PENDULA**.
- HESSE** (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 232) = **HESSEI**.
- HESSEI** (H.A. Hesse (Nurs.), Germany, Cat. Fall 1933-Spring 1934, p. 69) — stately single-leaved ash with a large poplar-like leaf and very vigorous growth.
- HETEROPHYLLA** (M. Vahl, Enumeratio Plantarum, I, 1804-1805, p. 53, original not seen) = **DIVERSIFOLIA**.
- HETEROPHYLLA LACINIATA** (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — without description. Probably = **SIMPLICIFOLIA LACINIATA**.
- HETEROPHYLLA PENDULA** (B.K. Boom, Nederl. Dendrol. Ver. 20: 37-120, 1954-1955) — origin unknown but introduced to the nursery trade by Spaeth in 1898 (Cat. No. 102, p. 91); a weeping selection with foliage like 'Diversifolia'.
- HETEROPHYLLA VARIEGATA** (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1229) — a sport discovered by Captain Moore, Eglantine, Down County, Ireland in 1830, on a 15-year-old tree showing one shoot with variegated leaves, propagated by grafting; shrub-like habit.
- HISPIDA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 409) — without description.
- HISSEL** — Name found in records of Plant Sciences Data Center of the American Horticultural Society. Plant received at Saratoga Horticultural Foundation, Saratoga, California in 1975 from Cole Nurseries, Circleville, Ohio, but not listed in their catalogs.
- HORIZONTALIS** (R.L. Desfontaines, Tabl. de L'ecole de Botanique, Paris, 1804, p. 52) — without description. Described by A. Rehder, Manual of Cultivated Trees and Shrubs, Ed. 2, Macmillan, 1940, p. 773, as having horizontally spreading limbs and pendulous branches forming a broad flat head.
- HUMILIS** (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. humilis*, = **POLEMONIIFOLIA**.
- IMBRICATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description.
- INTEGRIFOLIA** (K. Koch, Dendrologie 2, 1872, p. 243) — as *Fr. integrifolia*, name used in the garden for **DIVERSIFOLIA**.
- INTERMEDIA** (A. Lavallee, Arb. Segrezianum, Paris, 1877, p. 164) — without description.
- JASPIDEA** (G.L.M. DuMont-Courset, Le Botaniste Cultivateur, I, Paris, 1802, p. 710-711) — as *F. jaspidea*, stems and branches have yellowish, longitudinal streaking.
- JASPIDEA PENDULA** (Anon., Gard. Chron. No. 43: 1432, 1873) — as *Fraxinus jaspidea pendula*, Shining orange-brown shoots and elegant green foliage, the stalks of the latter are pale yellow.
- KIMBERLY** (Cole Nurs. Co., Painesville, Ohio, Fall 1964 Trade List, p. 25) — as *F. excelsior*? 'Kimberly'; sturdy, rapid growth, with an attractive, compact symmetrical form, hardy and seedless. First sold by Kimberly Nurs., Kimberly, Idaho, as a "blue" ash; see Santamour and McArdle (3).

- KIMBERLY BLUE** (J.C. McDaniel, Amer. Nurseryman 115(1): 97, 99, 1962 = **KIMBERLY**.)
- KINCAIRNIAE** (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1217) — "Has the spray alternately pendulous, and rigidly upright", original tree on the estate of Mungo Murray, Esq., in Kincairney, in Perthshire, Scotland; first brought into notice by Mr. Gorrie in 1833, and put into commerce by Messrs. Dickson and Turnbull of Perth.
- LEUCOCARPA** (L. Beissner, Mitt. Deutsch. Dendr. Ges. 16: 96-101, 1907) — young fruit variegated with white or mostly all white, tree discovered by L.A. Springer, Haarlem, The Netherlands, in a private park near Arnheim; although the foliage is mostly green without variegation, a few isolated variegated leaves were present.
- LINEARIS** (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 501) — very similar to 'Aspleniifolia', but the leaf stalks and leaflets are not pendent but remain spread apart.
- LINEARIS VARIEGATA** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 164) — without description.
- LONGIBOTRYS** (Royal Botanic Gardens, Kew Hand-list of Trees and Shrubs, Ed. 2, 1902, p. 539) — as var. *longibotrys*, without description.
- LONGIFOLIA** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 164) — without description, but ascribed to Bosc.
- LUCIDA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 409) — without description.
- LUTEA** (R. Weston, The Universal Botanist and Nurseryman, London, 1770, p. 109) — yellow-coloured Ash-tree. Described in J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. II, p. 1217; leaflets edged with yellow.
- LUTEA STRICTA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 40) — without description.
- LYRATA** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 164) — without description.
- M 17 (Pierre Lombarts Nurs., Zundert, The Netherlands, Cat. 1964-1965, p. 58, and perhaps in earlier catalogs) — name invalid because not in proper format according to the Code (1). May = **ALTHENA**.
- MIXTA** (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 161) — delicate twigs, with narrow, long, leaves, very distant from one another, whereby the foliage becomes more open.
- MONARCH** (G. Krussmann, Handbuch der Laubgehölze, Berlin, 1977, vol. 2, p. 89) — as 'Monarch', 'Nr. 17'; synonymous with **ALTHENA**.
- MONOPHYLLA** (G.L.M. Du Mont-Courset, Le Botaniste Cultivateur, I, Paris, 1802, p. 711) — as *F. monophylla Diversifolia*. = **DIVERSIFOLIA**.
- MONOPHYLLA ALBO-MARGINATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin 1903, p. 409) — without description.
- MONOPHYLLA CORDATA** (L. Beissner, Mitt. Deutsch. Dendr. Ges. 20: 246-250, 1911) — a seedling of 'Leucocarpa', very young at the time it was described, but with single, luxuriant deeply heart-shaped, sharply serrate leaves.
- MONOPHYLLA INTERMEDIA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 409) — without description.
- MONOPHYLLA LACINIATA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 409) = **SIMPLICIFOLIA LACINIATA**.
- MONOPHYLLA PENDULA** (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 409) — without description. Probably = **HETEROPHYLLA PENDULA**.
- MONSTROSA** (K. Koch, Dendrologie 2, 1872, p. 241) — most branches fasciated.
- MYRTIFOLIA** — a name used in various sources mistakenly for various cultivars; may = **GLOBOSA**, **POLEMONIIFOLIA**, or **EROSA**.
- NANA** (C.H. Persoon, Synopsis Plantarum 2, 1807, p. 605) — as *F. nana (appendiculata)*. According to H. Scheller in Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, there are two different plants both given the name "Nana" after having been named previously. This "Nana" = **POLEMONIIFOLIA**; see also **GLOBOSA**.
- NANA I** (H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977) — we consider this equivalent to **POLEMONIIFOLIA**.
- NANA II** (H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977) — we consider this equivalent to **GLOBOSA**.
- NERVOSA** (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1247) — without description.
- Nr. 17 (G. Krussmann, Handbuch der Laubgehölze, Berlin, 1977, vol. 2, p. 89) = **ALTHENA**.
- NOBILIS** (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 164) = **VIRIDIS** = **ASPLENIIFOLIA**.
- NORTHLAND** — Name found in records of the Plant Sciences Data Center of the American Horticultural Society. Two plants at Morton Arboretum, Lisle, Illinois, obtained from J.C. McDaniel, Univ. of Illinois, in 1970. Perhaps never introduced to nursery trade.
- OBLIQUA** (Royal Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 83) — as

var *obliqua* and with *F. obliqua* Tausch as a synonym. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, *F. obliqua* Tausch = *F. angustifolia* Vahl.

OXYACANTHIFOLIA (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. oxyacanthifolia*, name used in the garden for **CRISPA**.

OXYACANTHOIDES (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — may = **OXYACANTHIFOLIA** = **CRISPA**.

PANICULATA (K. Koch, Dendrologie 2, 1872, p. 244) = **PUNCTATA**.

PARVIFOLIA (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1229-1230) — as *F. (E). parvifolia* Willd.; trees with roundish-leaflets in Messrs. Lodiges nursery rows and elsewhere designated as *F. parvifolia* Willd., thought to belong to *F. excelsior* as a leaf form variation. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, *F. parvifolia* Lam. (or Willd.) probably = *F. angustifolia* Vahl. L. Dippel, Handbuch der Laubholzkunde 1, 1889, p. 83-84, also noted that plants known as *F. parvifolia* Willd. were not necessarily the same plant that Willdenow described (in Berlinische Baumzucht, 1796, p. 124), and belonged instead to *F. excelsior*. Therefore, **PARVIFOLIA** has been taken as a valid cultivar name for the plant described by L. Dippel, l.c.; leaves with 4-7 paired leaflets, sessile or with very short stalks, oval, oval-lanceolate to elliptical, 4-7 cm. long and 1.5-3 cm. wide.

PENDULA (W. Aiton, Hortus Kewensis, London, 1789, vol. III, p. 445) — leaves pinnate, branches pendulous. Tree was discovered, about the middle of the 18th Century, in a field belonging to the vicar of Gamlingay, near Wimpole, in Cambridgeshire, according to J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1214-1215.

PENDULA AUREA (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — probably = **AUREA PENDULA**.

PENDULA VARIEGATA (C. de Vos, Handboek tot de Boomen, Heesters, en Conifeeren, Ed. 2, Amsterdam, 1887, p. 77) — as *pendula fol. var.*; variegated leaves, growth short.

PENDULA WENDWORTHII (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) = **WENTWORTH**.

PENDULA WENTWORTHII (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. II, 1973, p. 217) = **WENTWORTH**.

PENDULIFOLIA PURPUREA — According to G. Krussmann, Handbuch der Laubgehölze, Berlin, 1977, vol. 2, p. 91, this cultivar originated in France in 1864; similar to 'Pendula', but young growth brown. B.K. Boom, Nederlandse Dendrologie, Wageningen, 1972, p. 384, gives 1864 as date of cultivation and Kirchner as reference, but not found in E. Petzold and G. Kirchner, Arboretum Muscavinense, Gotha, 1864.

PETIOLULATA (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — without description, referenced to Boiss. Fl. or., IV, p. 4. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977 = *F. ornus* L.

PLATYCARPA (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. platycarpa* (not Mchx.), name used by nurseries. Koch was unable to distinguish from **VERRUCOSA** and **FUNGOSA**.

POLEMONIIFOLIA (J. Poiret in N. Duhamel, Nouv. Duh. IV, 1775, p. 66, original not seen) — as *F. polemoniifolia*. According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, this is the plant he denoted as "Nana I", and described as a small shrub from 2-3 m. tall with leaves 3-8 cm. long, which have 11-15 very crowded leaflets. We have made **POLEMONIIFOLIA** the valid epithet since it has priority over various later re-namings to "Nana".

POLEMONIIFOLIA VARIEGATA (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 411) — without description.

POSTELEMENSIS (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 410) — without description, ascribed to R. Lauche.

PUMILA (K. Koch, Dendrologie 2, 1872, p. 241) — as *F. pumila*, = **POLEMONIIFOLIA**.

PUNCTATA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 501) — as *foliis punctatis*; leaflets long-lanceolate, serrate, dark green with numerous yellow dots.

PURPURASCENS (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1217) — the purple-barked ash, found in a bed of seedlings by M. Descemet, and grown in the collection under his care at Odessa.

PYRAMIDALIS (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 163) — without description. E.H. Scanlon & Assoc., Olmsted Falls, Ohio, Descriptive and Use List of Tailored Trees, No. 10, Fall 1958-Spring 1959, p. 26, listed "*Fraxinus excelsior pyramidalis* (vink)"; developed by Henry Vink, Rotterdam, The Netherlands, and grown on the streets in that city. This tree was listed by E.H. Scanlon & Assoc. the following year and again in the Descriptive and Use List of Tailored Trees, Wholesale List No. 12, Fall 1960-Spring 1961, p. 24 with a note "Pat. applied for." It was never listed again in following years. It is unknown whether "*Fraxinus excelsior pyramidalis* (vink)" = **PYRAMIDALIS**.

RANCHO (E.H. Scanlon & Assoc., Olmsted Falls, Ohio, Wholesale List No. 14, Fall 1962-Spring 1963, p. 35) — a small round headed tree, develops rapidly and will not exceed 25 to 30 feet under street conditions; formerly known as *Fraxinus quadrangulata globosa* - Globeheaded Blue Ash. First listed in E.H. Scanlon & Assoc., Descriptive and Use List of Tailored Trees, No. 11, Fall 1959-Spring 1960, p. 26. Tree was renamed after its identity came into question and to avoid confusion with the "*globosa* form of *excelsior*", p. 34 of the same catalog.

- RAYWOODII — According to H. Scheller, Mitt. Deutsch. Dendr. Ges. 69: 49-162, 1977, name mistakenly applied at one time to *F. excelsior* for a cultivar belonging to *F. angustifolia* Vahl.
- RETICULATA (K. Koch, Dendrologie 2, 1872, p. 243) — may = **VERTICILLATA**.
- RUFA (K. Koch, Dendrologie 2, 1872, p. 243) — as *Fr. rufa*, name used in the garden for 'Diversifolia'. Also listed as a cultivar by Pierre Lombarts, Zundert, The Netherlands, Cat. 1957-1958 (and perhaps earlier) — growth steeper and leaves darker green than the common ash.
- SALICIFOLIA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 501) = **LINEARIS**.
- SAMBUCIFOLIA (K. Koch, Dendrologie 2, 1872, p. 243) — Koch received a plant with numerous leaflets under the false name *Fr. sambucifolia*. This is probably not *F. sambucifolia* Lam. (= *F. nigra* Marshall) since the description "numerous leaflets" would not seem to suggest this. Therefore 'Sambucifolia' has been taken as a valid cultivar name for this plant described by Koch.
- SAMBUCIFOLIA COARCTATA (K. Koch, Dendrologie 2, 1872, p. 244) — the lowest leaflets are at the base of the rachis and the others follow closely; name used in the nursery trade.
- SCOLOPENDRIFOLIA (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. Scolopendrifolia*, name used in the garden for 'Atrovirens', 'Crispa', or 'Aspleniifolia' (p. 244). Also listed as a cultivar in W.J. Bean, *Trees and Shrubs Hardy in the British Isles*, Ed. 8, vol. II, 1972, p. 217, leaflets narrow, often curled and deformed; an example at Kew received from Spath's nurseries in 1900, similar to 'Erosa'.
- SCOLOPENDRIIFOLIA (L. Beissner, E. Schelle, and H. Zabel, *Handbuch der Laubholz-Benennung*, Berlin, 1903, p. 409) = **SCOLOPENDRIFOLIA**.
- SCOLOPENDRIUM (K. Koch, Dendrologie 2, 1872, p. 241) — as *Fr. Scolopendrium*, name used in the garden for ATROVIRENS or **CRISPA**.
- SIMPLICIFOLIA (K.L. Willdenow, *Species Plantarum*, 1806, vol. IV, Part II, p. 1098-1099) — as *F. simplicifolia*. = **DIVERSIFOLIA**.
- SIMPLICIFOLIA LACINIATA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 503) — arising from seed of 'Diversifolia', of compact somewhat weak growth; leaves small, acuminate, irregularly bordered, deeply toothed, almost lacerated.
- SPECTABILIS (K. Koch, Dendrologie 2, 1872, p. 242) — as *Fr. spectabilis*, a "recent" introduction to the trade; branches stand off at a slight angle, so that the crown maintains a pyramidal appearance.
- STREUBELI (L. Beissner, E. Schelle, and H. Zabel, *Handbuch der Laubholz-Benennung*, Berlin, 1903, p. 410) — without description. May = **PUNCTATA**.
- STRIATA (C. Loddiges & Sons, *Catalogue of Plants*, Ed. 11, London, 1818, p. 28, and perhaps earlier editions) — as *cortice striata*, without description.
- STRIATA LUTEA (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — listed as "Striata lutea Hort. Dieck." with other cultivars under the general description of branches erect, leaves green, but with no further description. May = **STRIATA**.
- STRICTA (Royal Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 83) — without description, as var. *stricta* Loud., but not found in J.C. Loudon, *Arboretum et Fruticetum Britannicum*, London, 1838.
- THEOPHRASTI (L. Dippel, *Handbuch der Laubholzkunde*, 1889, p. 82) — as *Fr. Theophrasti*, a synonym for one of the "Nana" selections.
- TORTUOSA (L. Dippel, *Handbuch der Laubholzkunde*, 1889, p. 84) — as *Fr. tortuosa*. May = **MONSTROSA**.
- TORTUOSA PENDULA (K. Koch, Dendrologie 2, 1872, p. 242) — a weeping ash with twisted branches, from France. Apparently raised by Simon-Louis Freres, Metz, France, according to A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892.
- TOTA AUREA (Barbier & Co., Orleans, France, Nursery Trade List, Fall 1899-Spring 1900, p. 99) — nice golden foliage.
- TRANSONII (A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892) — as 'Transonii'; in a list of cultivars under the general description of branches erect, leaves green, but with no further description. In W.J. Bean, *Trees and Shrubs Hardy in the British Isles*, Ed. 8, vol. II, 1973, p. 217, as "Transonii"; although the tree no longer exists in Kew, it was described in earlier editions as having yellow leaves; presumably raised or distributed by Transon's Nursery in France.
- UMBACULIFERA (E.H. Scanlon & Assoc., Olmsted Falls, Ohio, *Descriptive and Use List of Tailored Trees*, No. 10, Fall 1958-Spring 1959, p. 25) — medium grower, approximately 20 feet in diameter, 27 feet in height. Name appears to have been changed to *Fraxinus excelsior globosa* in E.H. Scanlon & Assoc., Wholesale List No. 13, Fall 1961-Spring 1962, p. 26. Probably = **GLOBOSA**.
- VARIEGATA (Pierre Lombarts Nurs., Zundert, The Netherlands, Cat. 1964-1965, p. 59) — weeping, leaves white-spotted to marbled, very rare. Not known whether this may be the same as **PENDULA VARIEGATA** or other older cultivars, but 'Variegata' is invalid because published in Latin form after January 1, 1959.
- VERRUCOSA (G.L.M. DuMont-Courset, Le Botaniste Cultivateur, I, Paris, 1802, p. 711) — as *F. verrucosa*, wood rough and uneven.
- VERRUCOSA PENDULA (J.C. Loudon, *Arboretum et Fruticetum Britannicum*, London, 1838, p. 1218) — a

sixteen-year-old tree in the Horticultural Society's Garden was, in 1835, 10 feet high. According to A. Lingelsheim, in A. Engler, *Das Pflanzenreich*, IV. 243 I, 1920, p. 51, branches corky, warty, pendulous.

VERTICILLATA (K. Koch, *Dendrologie* 2, 1872, p. 243) — cultivated by Loddiges (Nurs.), Hackney, England, leaves aggregated. Leaves occasionally in threes, and frequently alternate, in W.J. Bean, *Trees and Shrubs Hardy in the British Isles*, Ed. 8, vol. II, 1973, p. 217.

VIRIDIS (A. Lavalley, *Arb. Segrezianum*, Paris, 1877, p. 164) = **ASPLENIIFOLIA**.

VIRIDIS NOBILIS (E. Petzold and G. Kirchner, *Arboretum Muscaviense*, Gotha, 1864, p. 500) — as *F. viridis nobilis* Bth. Cat., a synonym for **ASPLENIIFOLIA**.

WEEPING (H.P. Kelsey and W.A. Dayton, *Standardized Plant Names*, 1942, p. 232) — as a name for both **PENDULA** and **WENTWORTH**.

WENTWORTH (K. Koch, *Dendrologie* 2, 1872, p. 242) — a pendulous ash carried by Simon-Louis Freres, Metz, France; branches begin spreading horizontally, then finally slope to the ground. Koch wondered if this name was a corrupt spelling of Hepworth, the name of the vicar of the parish in Gamlingay (at the time J.C. Loudon wrote *Arboretum et Fruticetum Britannicum*, 1838) in whose field the original 'Pendula' still existed. This is probably not a misspelling as this appears to be distinct from 'Pendula'.

WENTWORTHII PENDULA (H. Jager and L. Beissner, *Die Ziergeholze*, Ed. 3, Weimar, 1889, p. 161) = **WENTWORTH**.

WESTHOF'S GLORIE (*Nederlandse Staatscourant* No. 146, July 29, 1949, p. 3) — thus entered in the Central Register of Plant Varieties, without description — although a description could be obtained (upon payment) from the Board for Breeders Rights; breeder's rights given to J.C. van't Westeinde and P.C. van't Westeinde, 's-Heer Abtskerke, The Netherlands. According to B.K. Boom, *Nederl. Dendrol. Ver.* 20: 37-120, 1954-1955, this selection was found in 1947 by J.C. van't Westeinde; straight trunk, basically male.

WOLLASTONII — According to H. Scheller, *Mitt. Deutsch. Dendr. Ges.* 69: 49-162, 1977, name mistakenly applied at one time to *F. excelsior* for a cultivar of *F. angustifolia* Vahl.

Fraxinus holotricha

MORAINE (The Siebenthaler Co., Dayton, Ohio, Cat. No. 174, Fall 1957, p. 13) — without description. Plant Patent No. 1768, November 4, 1958. Medium sized at maturity (about 40 ft.) upright, oval-shaped crown; foliage persists later into autumn than most ash trees; scant seed production, and adaptable to a wide range of soil conditions.

Fraxinus ornus

ARGENTEA (J.C.M. Grenier and D.A. Godron, *Flore de France*, 1850, vol. 2, p. 473) — leaves whitish-silver.

ANITA (T. van Eeten, *Dendroflora* Nr. 18, 1981, p. 15) — similar to 'Arie Peters'; but branches more upright, slender pyramidal growth habit; a seedling selection from seed brought from Italy to The Netherlands by the author, and a subsequent introduction by the N.A.K.B. (*Nederlandse Algemene Keuringsdienst voor Boomwekerij* - the General Netherlands Service for the Inspection of Trees). Named for Anita van Eeten-Christiani of Nijmegen, The Netherlands.

ARIE PETERS (T. van Eeten, *Dendroflora* Nr. 18, 1981, p. 15) — broad oval crown, leaves 18-24 cm. long, upper surface of leaflet dark green, lower surface lighter; flowers equally distributed over the tree, May-June, with some blooming later and lasting into September; a seedling selection (a sibling of 'Anita') and subsequent introduction of the N.A.K.B.; named for Arie Peters of Ophensden, The Netherlands.

BUNGEANA (H.F. Hance, *Jour. Bot.* 13: 133, 1875, original not seen). According to H. Scheller, *Mitt. Deutsch. Dendr. Ges.* 69: 49-162, 1977, = *F. rhyrachophylla* Hance.

CORYMBOSA (A. Lavalley, *Arb. Segrezianum*, Paris, 1877, p. 162) — without description, but with *Ornus corymbosa* Hort. as a synonym.

GLOBIFERA (A. Lavalee, *Arb. Segrezianum*, Paris, 1877, p. 162-163) — without description, but with *Ornus globifera* Hort. and *O. glomerata* Hort. as synonyms.

GLOBOSA (H.A. Hesse (Nurs.), Germany, Cat. Fall 1933-Spring 1934, p. 69) — globe flowering ash.

NANA (A. Lavalley, *Arb. Segrezianum*, Paris, 1877, p. 162) — without description, but with *Ornus nana* Hort. as a synonym.

ROTTERDAM (H.J. Grootendorst, *Dendroflora* Nr. 3, 1966, p. 28-36) — sturdy small tree with ascending branches, forming a broadly pyramidal crown, dark green leaves, free-flowering in May, male; selected by the City Parks Department in Rotterdam, The Netherlands.

SPAETHIANA (Notcutts Nurs. Ltd., Woodbridge, Suffolk, England, 75th Anniversary Edition, p. 26, (Catalog, apparently 1972-1973) and perhaps earlier catalogs) — roundly pyramidal in habit, leaves yellow in autumn. Name invalid because in Latin form and published after January 1, 1959.

SPECIOSA (K. Koch, *Dendrologie* 2, 1872, p. 236) — as *Fr. speciosa*, seen in some nurseries; only the lower pinules roundish, the others very narrow and elongate, so that they appear almost linear.

STRIATA (J.C. Loudon, *Arboretum et Fruticetum Britannicum*, London, 1838, p. 1248) — as *Ornus striata*, with striped bark; incorrectly ascribed as native to North America, and introduced to Europe in 1818. Not seen by Loudon.

SUPERBA (A. Lavalley, Arb. Segrezianum, Paris, 1877, p. 163) — without description.

THEOPHRASTI (K. Koch, Dendrologie 2, 1872, p. 236) — as *Fr. Theophrasti*. = *F. excelsior* 'Theophrasti', a synonym for one of the "Nana" selections.

VARIEGATA (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 164) — as var. *fol. variegat.* Also as *Fraxinus ornus* subsp. *rotundifolia* var. *Foliis variegatis* in A. Wesmael, Bull. Soc. Roy. Bot. Belg. 31: 69-117, 1892; leaflets spotted with white.

3. Santamour, F.S., Jr. and A.J. McArdle. 1983. *Checklist of cultivars of North American ash (Fraxinus) species*. J. Arboric. 9:

4. Scheller, H. 1977. *Kritische Studien über die Kultivierten Fraxinus-Arten*. Mitt. Deutsch. Dendr. Ges. 69: 49-162.

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2. Rehder, A. 1940. Manual of cultivated trees and shrubs. Ed. 2, Macmillan, 996 p.

*Horticulturist and Research Geneticist,
respectively*

U.S. National Arboretum

Agricultural Research Service

U.S. Department of Agriculture

Washington, D.C. 20002

ABSTRACTS

GREIG, B.J.W. and R.A.G. COXWELL. 1983. **Experiments with thiabendazole (TBZ) for control of Dutch elm disease**. Arboric. J. 7: 119-126.

The experiments reported here show that trees can be cured of Dutch elm disease if sufficient quantities of TBZ are injected while the disease is restricted to a very small part of the crown. It should be noted that the treatment cannot be expected to work on more severely affected trees, or trees subject to root graft transmission or on trees showing carry-over infections from the previous year. These results are similar to those obtained by Stennes in Minnesota using TBZ at the same rate. Phytotoxicity damage to the foliage of treated trees varied considerably from year to year. It was the most severe on pollarded trees with small crowns. Reduction should be made in the volume injected in such trees to compensate for the smaller crown sizes. Although the appearance of symptoms of phytotoxicity can be alarming, trees recovered and generally regained full foliage the following summer.

BILES, LARRY E. 1983. **Urban forestry American style**. Arboric. J. 7: 149-154.

Urban forest management and maintenance programs are not new. Many American cities have a basic urban forestry program. However, because of limited budgets, unfamiliar management requirements, and intangible contributions, most cities manage trees on a crisis basis. That is, the removal of trees when they fall, the trimming of trees in response to citizen complaints, and the planting of trees under duress by citizen groups. The objective of urban forest management in America is to elevate public tree care to a respectable level within the nation's communities. In so doing, trees can be managed more effectively and less costly than crisis management. What is urban forest management? Urban forest management is generally regarded as a systematic approach to the management of municipal trees for current and long-range planting, trimming, maintenance, and removal needs. The need for systematic management of trees on city streets, city parks, and other public areas is three-fold, involving aesthetics, safety, and efficiency.