CULTIVAR CHECKLIST OF *QUERCUS* (EXCLUDING SUBG. *QUERCUS)*

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Abstract. Cultivars of species in the genus *Quercus* (excl. subgenus *Quercus*, the white oaks) are listed and described. Twent-two species and several hybrids of the subgenera *Cyclobalanopsis, Cerris, Protobalanus,* and *Erythrobalanus* are discussed and determinations made on the validity of cultivar names. The "Darlington" oak is regarded as a colloquial name for *Q. hemisphaerica.*

Résumé. Les cultivars d'espèces du genre *Quercus* (excluant le sous-genre *Quercus*, les chênes blancs) sont énumérés et décrits. Vingt-deux espèces et plusieurs hybrides du sous-genre *Cyclobalanopsis, Cerris, Protobalanus* et *Erythrobalanus* sont discutés et une détermination faite quant à la validité du nom des cultivars. Le chên "Darlington" est considéré comme un nom familier du *Q. hemisphaerica.*

Cultivars in the genus *Quercus,* subgenus *Quercus,* were addressed in two previous checklists: *Q. robur* L. (3), and the white oak species, excl. *Q. robur* (4). The present list includes cultivars of species in the other subgenera: *Cyclobalanopsis, Cerris, Protobalanus,* and *Erythrobalanus.*

The largest group of cultivar names occurs in the subgenus *Cerris,* mostly in *Q. cerris* L. and *Q.* x *hispanica* Lam., a hybrid of *Q. cerris* and *Q. suber* L. (the cork oak). An interesting history exists behind the various cultivars of *Q.* x *hispanica.* Many of these cultivars were first described as selections of *Q. cerris* (although supposed to be hybrids), since they were known to have originated as seed collected from specimen trees of *Q. cerris.* J.C. Loudon (2) described many such cultivars, giving valuable background information. One notable cultivar of *Q.* x *hispanica* is 'Lucombeana', the "old Lucombe oak", a sub-evergreen oak, raised by Mr. Lucombe of the Exeter Nursery, England, about 1762.

From the original tree of 'Lucombeana' arose several seedlings with evergreen foliage: 'Crispa', 'Suberosa', 'Incisa', 'Dentata', and 'Heterophylla'. These so-called "new evergreen Lucombe oaks" (2) were probably seedlings from back-crosses to *Q. suber* as evidenced by their evergreen nature and corky bark. Several deciduous cultivars were also introduced, 'Cana Major', 'Cana Minor', and 'Ragnal'. It may be that these arose as seedlings of 'Lucombeana' (or a selection with similar parentage) which had back-crossed to *Q. cerris,* thus the loss of the evergreen habit in these second-generation seedlings. All selections were apparently propagated by grafting onto *Q. cerris* (2).

Another sub-evergreen selection of *Q.* x *hispanica* is 'Fulhamensis', the "Fulham oak". This tree arose independently of 'Lucombeana' in the Fulham Nursery of Whitley and Osborne in England; its origin is otherwise unknown. The growth habits of 'Fulhamensis' and 'Lucombeana' are sufficiently different to distinguish them (2).

The cultivar lists are presented under each species; the species are listed alphabetically, regardless of subgeneric affiliation. Hybrids other than *Q.* x *hispanica* are listed together in a final section. We have recognized cultivars in the species given in the subsequent list, divided here by subgenera as recognized in an earlier paper by Santamour (5).

Subgenus *Cyclobalanopsis* is a small group of evergreen Asiatic species (some of which are hardy at the National Arboretum) and *Protobalanus* contains only a few species, all from western North America. Species of subgenus *Cerris* are native to both Europe and Asia and, with one exception,have been seldom cultivated in the United States. That exception is the Asiatic sawtooth oak *(Q. acutissima* Carr.) which has been widely planted along major highways in the mid-Atlantic states.

By far the most important species for landscape use in the United States are in the subgenus *Erythrobalanus,* the red or black oaks, native only to the Americas. Considering their importance and the wide range of species, site adaptabilities, and leaf and crown characteristics, it may be surprising that so few cultivars have been selected and propagated. This lack of selection has likely been caused by fear of the often encountered problem of graft incompatibilities. When vegetative propagation of oaks from cuttings becomes commer-

cially feasible through micropropagation or tissue culture techniques, or when the problems of grafting are resolved, we can expect that more red oak cultivars will become available.

Subgenus *Cyclobalanopsis* (Oersted) Schneider
Q. glauca Thunberg

Subgenus *Cerris* Oersted
Q. acutissima Carruthers
Q. castaneaefolia Meyer
Q. cerris L.
Q. x *hispanica* Lamarck
Q. cerris x *Q.* suber
Q. libani Oliver
Q. x *libanerris* Boom
Q. cerris x *Q libani*
Q. suber L.

Subgenus *Protobalanus* Muller
Q. chrysolepis Liebmann

Subgenus *Erythrobalanus* (Spach) Oersted
Q. coccinea Muenchhausen
Q. falcata Michaux
Q. hemisphaerica Bartram ex Willdenow
Q. laurifolia Michaux
Q. marilandica Muenchhausen
Q. x *ludoviciana* Sargent
Q. falcata x *Q. phellos*
Q. nigra L.
Q. palustris Muenchhausen
Q. phellos L.
Q. x *porteri* Trelease
Q. rubra x *Q velutina*
Q. rubra L.
Q. shumardii Buckley
Q. velutina Lamarck

As in previous lists, **VALID CULTIVARS** are given in boldface capitals and INVALID names in lightface capitals. These determinations of validity were made in accordance with the International Code of Nomenclature of Cultivated Plants (1).

Q. acutissima

GOBBLER - Name proposed by USDA Soil Conservation Service for open-pollinated progeny from USDA Plant Introduction PI-168939 which were seedlings (1948) from a specimen of unknown origin growing at U.S. Plant Introduction Station, Glenn Dale, Maryland. Name refers to early and prolific bearing of acorns for wild turkey food. Approval of name is pending.

Q. castaneaefolia

ASPLENIFOLIA (A. Camus, Les Chenes, Monographie du genre *Quercus*, Text vol. 1, 1936-38, p. 556) - without description; propagated by grafting, according to Medwediew (Caucase, 1919).

AUREO-VARIEGATA (A. Camus, Les Chenes, Monographie du genre *Quercus*, Text vol. 1, 1936-38, p. 556) -without description; propagated by grafting, according to Medwediew (Caucase, 1919).

FILICIFOLIA (A. Camus, Les Chenes, Monographie du genre *Quercus*, Text vol. 1, 1936-38, p. 556) - without description; propagated by grafting, according to Medwediew (Caucase, 1919).

GREENSPIRE (Hilliers' Manual of Trees and Shrubs, Ed. 2, Hillier and Sons Limited, Winchester, England, 1972, p. 253)-broadly columnar form of compact habit. A Hilliers' introduction.

PYRAMIDALIS (A. Camus, Les Chenes, Monographie du genre *Quercus*, Text vol. 1, 1936-38, p. 556)-without description; propagated by grafting according to Medwediew (Caucase, 1919).

Q. cerris

ANGUSTIFOLIA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 96)- as *Q. cerris angustifolia*, narrow-leaved cerr-oak *(Qu. cerris dentata* hort., not Wats., *Qu. cerris cana major* Lodd. Cat. 1836). = *Q. x hispanica* **CANA MAJOR.**

ARGENTEO-VARIEGATA (B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20: 37-120, 1954-55)-Leaves edged with cream-colored border, also may be spotted. Described as early as 1864 by E. Petzold and G. Kirchner (Arboretum Muscaviense, Gotha, p. 636) as *Q. cerris foliis variegatis.*

AUREO-MARGINATA (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 69)-as *Quercus cerris aureo-marginata* hort. Probably = **AUREO-VARIEGATA.**

AUREO-VARIEGATA (B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20:37-120, 1954-55)-leaves yellow-spotted to yellow-margined. Described as early as 1867 by de Vos (Woordenboek, p. 95) as *Q. aegilops fol. aureo var.*

CANA MAJOR - See *Q.* x *hispanica* **CANA MAJOR.**

CANA MINOR - See *Q.* x *hispanica* **CANA MINOR.**

CRISPA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 636-637)-plant received from the Flottbeck Nurs. of J. Booth & Sons (Flottbeck, Germany), doubtful whether it belongs to this species. Probably = *Q.* x *hispanica* **CRISPA.**

DENTATA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Goth, 1864, p. 637)-as *Quercus cerris dentata* Bth. Cat., received under this name from Flottbeck Nursery. Probably = *Q.* x *hispanica* **DENTATA.**

FOLIIS VARIEGATIS (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 636)-as *Qu. C. foliis variegatis* Hort. = **ARGENTEO-VARIEGATA,** according to B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20:37-120, 1954-55.

FULHAMENSIS - See *Q.* x *hispanica* **FULHAMENSIS.**

FULHAMENSIS LATIFOLIA - See *Q.* x *hispanica* **FULHAMENSIS LATIFOLIA.**

HETEROPHYLLA - See *Q.* x *hispanica* **HETEROPHYLLA.**

KARLSRUHENSIS (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 636) - as *Qu. C. Karlsruhensis* Hort., leaves lighter in color, broader, irregular, and shallow lobed.

LATIFOLIA (A. Lavallee, Arb. Segrezianum, Paris, 1877, p. 198) - as *Q. cerris latifolia,* without description.

LONGIFOLIA NOVA (Royal Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 83) - as var. *longifolia nova* Hort., without description.

LUCOMBEANA - See *Q.* x *hispanica* **LUCOMBEANA.**

LUCOMBEANA CRISPA - See *Q.* x *hispanica* **CRISPA.**

LUCOMBEANA DENTATA - See *Q.* x *hispanica* **DENTATA.**

LUCOMBEANA INCISA - See *Q.* x *hispanica* **INCISA.**

LUCOMBEANA SUBEROSA - See *Q.* x *hispanica* **SUBEROSA.**

MAJOR (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 638) - as *Qu. C. major* Hort.? Probably = *Q.* x *hispanica* **CANA MAJOR.**

PENDULA (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1847) - branches droop to the ground and, after touching it, creep along the surface for some distance.

RAGNAL - See *Q.* x *hispanica* **RAGNAL.**

PARVIFOLIA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 96) - as *Q. cerris parvifola,* with *Qu. cana minor* Lodd. Cat. 1836 as synonymous. = *Q.* x *hispanica* **CANA MINOR.**

VARIEGATA (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, p. 1848) - as *Quercus cerris variegata,* leaves variegated; apparently listed in Loddiges (Nurs.), Hackney, England, Cat. 1836. Although the name 'Variegata' was apparently the earliest name used for a variegated *Q. cerris,* the lack of a more specific description makes it impossible to determine to which variegated selection the name referred. Therefore **AUREO-VARIEGATA** and **ARGENTEO-VARIEGATA** have been accepted in place of 'Variegata' (B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20:37-120, 1954-55) to distinguish between the two different variegated selections.

VARIEGATA ARGENTEA (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 69) - as *Quercus cerris variegata argentea* hort. Probably = **ARGENTEO-VARIEGATA.**

VARIEGATA ELEGANTISSIMA (L. Beissner, E. Schelle, and H. Zabel, Handbuch der Laubholz-Benennung, Berlin, 1903, p. 69) - as *Quercus cerris variegata elegantissima* hort. without description.

VARIEGATED (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = VARIEGATA.

Q. Chrysolepis

MINOR - Name found in the records of the Plant Science Data Center of the American Horticultural Society, plant at University of Washington Arboretum, Seattle, Washington, received as *Q. chrysolepis* Minor from George Schenck (nurseryman), Bothell, Washington, in 1962. Considered to = var. *nana* Jepson (Jepson) by Dr. Brian Mulligan, Director emeritus of the Washington Park Arboretum.

Q. coccinea

CUCULLATA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 650) - with somewhat hood-shaped (concave) leaves.

KNAP HILL = **SPLENDENS**

LATIFOLIA (A. Camus, Les Chenes, Monographie du genre *Quercus,* Text vol. 3, 1952-54, p. 419) - as var. *latifolia* Chancerel, Flore forest, globe, p. 125 (1920), leaves very wide.

PENDULA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 650) - a few examples of this raised from local seedbeds and ranging in height from 6 to 12 feet; an extremely elegant pendulous habit.

SPLENDENS (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 471) - also known as 'Knap Hill', introduced by the Knap Hill Nursery (England) at the end of the last century; selection with unusually brilliant autumn color. Mentioned in W.J. Bean, Ed. 4, Vol. II. 1925, p. 307 as *"Q. americana splendens".*

SUPERBA (L.H. Bailey, Hortus third: a concise dictionary of plants cultivated in the United States and Canada, Macmillan, 1976, p. 933) - "Cv. 'Superba' is listed." Invalid without description.

UNDULATA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 650) - leaves smaller than *Q. c.* 'Cucullata', also more compact, and quite undulate.

Q. falcata

LUDOVICIANA (A. Lavallee, Arb. Segrezianum, Paris, 1877, p. 207) - as *Q. falcata* var. *Ludoviciana,* with *Q. Novi-Aureliani* Hort. as synonymous; without description. May be = *Q.* x *ludoviciana* Sarg.

SCHOCHIANA - Name found in the records of the Plant Sciences Data Center of the American Horticultural Society; plant at Longwood Gardens, Kennett Square, PA, received as PI 265656, from H.A. Hesse (Nurs.), Weener, Germany, May 13, 1960, as *Quercus* x *schochiana* Dieck. Whether the plant received is actually *Q.* x *schociana* Dieck (a hybrid of *Q. palustris* and *Q.*

phellos) or a selection of *Q. falcata* is unknown, but the name is considered invalid as a cultivar name because of uncertain parentage.

AUREA - Name found in the records of the Plant Sciences Data Center of th American Horticultural Society; plant at Longwood Gardens, Kennett Square, PA, received as PI 265654, from H.A. Hesse (Nurs.), Weener, Germany, May 13, 1960, as *Quercus borealis* Michx. f. 'Aurea'. Probably = *Q. rubra* **AUREA.**

Q. glauca

FASCIATA (C.L. Blume, Museum botanicum Lugduno-Batavum, I., p. 303, 1849-1851, orig. not seen) - leaves spotted here and there with white (A. Camus, Les Chenes, Monographie du genre *Quercus,* Text vol. 1, 1936-38, p. 287).

Q. hemisphaerica

DARLINGTON - The colloquial name "Darlington oak" has been applied to an evergreen or semi-evergreen oak of the outer coastal plain of the south, also planted, near the turn of the century, along the streets of Darlington, South Carolina and elsewhere. According to M.L. Fernald (Rhodora 48: 137-164, 1946) the correct epithet for the so-called "Darlington oak", and *Q. laurifolia* of many authors, not Michaux, is *Q. hemisphaerica* Bartram ex Willdenow. Fernalds' article is a thorough treatise on the identity of *Q. laurifolia* Michaux and *Q. hemisphaerica.*

EVERGREEN - not a valid cultivar; = *Q. hemisphaerica* Bartr. ex Willd. See *Q. phellos* EVERGREEN.

Q. x *hispanica*

AMBROZYANA (G. Krussmann, Handbuch der Laubgeholze, Ed. 2, Berlin, 1978, p. 90) - a semi-evergreen shrub or small tree, leaves obovate-oblong, 6-10 cm long, glabrous above, grayish felt beneath; found in Mlynany, Czechoslovakia (formerly Malonya, Hungary) before 1909.

BROADLEAF (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = **LATIFOLIA.**

CANA MAJOR (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 480) - described by Loudon as *Q. cerris cana major* (Arboretum et Fruticetum Britannicum, London, 1838 vol. 3, p. 1849) who said it was named by Hammersmith Nursery but knew nothing of its origin; according to Elwes and Henry it resembles 'Dentata' and 'Incisa', two second-generation seedlings raised by Lucombe and Pince. Foliage deciduous (Loudon, l.c.).

CANA MINOR (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1849) - as *Quercus cerris cana minor,* leaves downy beneath and narrow; apparently introduced by Loddiges (Nurs.), Hackney, England and listed in their 1836 catalog; foliage deciduous.

CRISPA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 303) - bark very corky, leaves almost evergreen, only 5-8 cm. long, margin ruffled. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1856, as *Q. cerris Lucombeana crispa,* arose from acorns from the original 'Lucombeana' at the Exeter Nurs.

CURLYLEAF (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = **CRISPA.**

DEEPLOBE (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = **HETEROPHYLLA.**

DENTATA (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 480) - resembles 'lucombeana' in foliage but with corkier bark, raised by Lucombe and Pince at the same time as 'Diversifolia', not to be confused with 'Fulhamensis' which is also, incorrectly, known as 'Dentata'. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1857, as *Q. cerris Lucombeana dentata.* The name "dentata" has been applied to the tree known as the Fulham oak (*Q.* x *hispanica* **FULHAMENSIS**), first as *Q. cerris* var. *dentata* Watson, then as *Q.* x *hispanica* dentata (Wats.) Rehder. However, the name "dentata", as applied to the seedling of **LUCOMBEANA** described above, has priority over the later appellations to the Fulham oak.

DIVERSIFOLIA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 304) - smaller tree, twigs ascending, bark very corky; leaves ovate, usually with a very deep sinus on either side in the mid-section, lower section with 1-4 lobes, the upper section entire to dentate. Of uncertain origin although certainly of the same parentage as the Lucombe oak, distributed by Smith's Nurs., Worcester, before 1877 (W.J. Bean, Trees and Shrubs Hardy in the British Isle, Ed. 8, vol. III, 1976, p. 480-1).

FULHAM (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) - with *dentata* and *lucombeana fulhamensis* as synonyms. Prob. = either **DENTATA** or **FULHAMENSIS.**

FULHAMENSIS (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 481) - a tall head of more slender and graceful branches than those of 'Lucombeana', leaves somewhat shorter and relatively broader than in 'Lucombeana', scales of acorn-cup almost all reflexed; selection of unknown origin that grew in the nursery of Whitley and Osborne at Fulham. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1850-51, as *Q. cerris fulhamensis.*

FULHAMENSIS LATIFOLIA (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 481) - a seedling of the Fulham oak, raised and put into commerce by Osborne's nursery shortly before 1838, leaves elliptic, rounded at apex, shallowly toothed, about 3.5 in long by 2.5 in wide. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1851, as *Q. cerris fulhamensis latifolia.*

FULHAMENSIS MACROPHYLLA (T. Ottolander, Sieboldia 5 (17): 131-133, 1879) - as *Q. Fulhamensis macrophylla;* a variety of the Fulham oak, the difference between the

two seen mainly in young plants.

HETEROPHYLLA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 304) - leaves oblong, irregularly and deeply lobed. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1938 vol 3, p. 1857, as *Q. cerris heterophylla,* arose as a seedling of the original 'Lucombeana' in the Exeter Nurs. (of Lucombe and Pince); foliage evergreen or nearly so.

INCISA (J.C. Loudon, Arboretum et Fruticetum Britainnicum, London, 1838 vol. 3, p. 1857) - as *Quercus cerris Lucombeana incisa,* leaves nearly evergreen and somewhat deeply cut; arose from acorns collected from the original 'Lucombeana' at the Exter Nurs.

LATIFOLIA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 304) = **FULHAMENSIS LATIFOLIA.**

LUCOMBE (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = **LUCOMBEANA.**

LUCOMBEANA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 304) - semi-evergreen with a conical form, bark somewhat corky. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1851, as *Q. cerris Lucombeana,* originated about 1762 in the Exeter Nurs., from seed collected from a specimen *Q. cerris* by Mr. Lucombe (founder of the Exeter Nurs.) who thought it to be a hybrid between *Q. cerris* and *Q. suber.*

RAGNAL (J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1849-1850) - as *Q. cerris, Ragnal; Q. Ragnal* Lodd. Cat., ed. 1836, leaves narrower and more deeply cut than **CANA MAJOR** but otherwise very similar to that selection; foliage deciduous; Miller (Mill Dict. ed. 3, App., No. 12) mentions a large Ragnal oak growing at Ragnal, near Tuxford, in Nottinghamshire. Possibly a second-generation hybrid, back-crossed to *Q. cerris.*

SMALL (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 507) = **DIVERSIFOLIA.**

SUBEROSA (W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 480) - bark is twice as thick as 'Crispa', leaves smaller than 'Lucombeana', ovate, with rounded or sinuated mucronate teeth. Described by J.C. Loudon, Arboretum et Fruticetum Britannicum, London, 1838, vol. 3, p. 1856-7, as *Q. cerris Lucombeana suberosa,* arose from acorns collected from the original 'Lucombeana' at Exeter Nurs; leaves evergreen or nearly so.

WAGENINGEN (H.J. Grootendorst, Dendroflora Nr. 17, 1980, p. 24-33) - small, compact tree with bark like that of *Q. cerris,* leaves leathery and shiny; an introduction of the N.A.K.B. (Nederlandse Algemene Keuringsdienst voor Boomwekerij - General Netherlands Inspection Service).

Q. laurifolia

DARLINGTON - Considered a cultivar of *Q. laurifolia* by various authors (including M. Dirr, Manual of Woody Landscape Plants, Ed. 3, Stipes Publ. Co., 1983, p. 587). Plants known as "Darlington" oaks are best considered at the species level, = *Q. hemisphaerica* Bartram ex Willdenow. See *Q. hemisphaerica* DARLINGTON.

Q. libani

ANGUSTIFOLIA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 100-101) - as *Quercus Libani augustifolia;* leaves on short reddish-yellow petioles, narrow lanceolate or narrow oblong, each side with fifteen ciliate, mucronate teeth.

Q. marilandica

ATROPURPUREA (A. Camus, Les Chenes, Monographie du genre *Quercus,* Text vol. 3, 1952-54, p. 335) - as var. *atropurpurea (Q. nigra)* Chancerel, Flore forest. globe, p. 130 (120). Probably not cultivated.

LOMBARTS - Name found in the records of the Plant Sciences Data Center of the American Horticultural Society; plant growing at the Plant Research Institute, Ottawa, Canada, received from Lombarts Nursery (the Netherlands) in 1967. Name invalid without a published description.

Q. nigra

ATROPURPUREA (A. Camus, Les Chenes, Monographie du genre *Quercus,* Text vol. 3, 1952-54, p. 329) - as var. *atropurpurea* hort., leaves darken to red. See *Q. marilandica.*

Q. palustris

CROWNRIGHT - Plant Patent 2,936, by William Flemer III, Princeton, New Jersey, Oct. 28, 1969; resulted from seed of a specimen known as "Rutherford" (a hybrid of *Q. palustris* x *Q. coccinea),* the pollen parent being *Q. palustris;* differs from the common pin oak in that the habit is more upright, the branches joining the central leader at an angle from 30° to 60°, and therefore lacking the usual pendant lower branches.

HOBBS - Names found in the records of the Plant Sciences Data Center of the American Horticultural Society, plant selected in Tennessee, propagated in Iowa, specimen at the Bickelhaupt Arboretum, Clinton, Iowa. Wide vase-shaped crown, slow-growing. Of questionable identity as to species.

LOMBARTS (Pierre Lombarts Nurs., Zundert, the Netherlands, cat. 1957-1958, p. 81) a Lombart's selection, more upright growth habit, densely branched.

MILLS VARIEGATED - Plant Patent 2,899, by Foster Mills, Groveport, Ohio, July 1, 1969; leaves variegated with ivory flecks on green upper surface, lower surface lighter ivory flecked on lighter green; inventor made 12 successful grafts. Not known if in cultivation or available in nursery trade.

PENDULA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 312) - branches more pendant than in the type.

REICHENBACHII (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 312) - new growth beautiful red (= f. *reichenbachii* Wendl.).

SOVEREIGN - *Plant Patent 2,662, by David B. Cole, Mentor,* Ohio, August 23, 1966; a seedling selected for its more upright habit, the branches diverging from the main trunk at an angle from 45° to 90° in contrast to the more common drooping condition of many pin oaks, branches form an oval or pyramidal head; mass propagation was begun as early as 1958 by budding onto seedling understock.

UMBRACULIFERA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 312) - crown globose, leaves shiny green, beautiful red in fall (=var. *umbraculifera* Chancerel), before 1920.

Q. phellos

DENTATA (B.K. Boom, Nederlandse Dendrologie, Wageningen, 1972, p. 124) - with *Q. p.* var. *d.* Mouill. as synonymous, leaves on the tip somewhat indented *(hybrid?).*

EVERGREEN - Name found in undated (c. 1956) brochure from Gardens Beautiful, Garden Planning & Service, Willard, N.C. as Evergreen Willow Oak (*Q. phellos* x *Q. virginiana).* Correspondence in file of U.S. National Arboretum indicates this is likely to be *Q. hemisphaerica Bartr. ex Willd., the Darlington oak.*

LATIFOLIA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 106-107 illus.) - as *Quercus Phellos latifolia,* broad-leaved willow oak, Lodd. Cat. 1836; occasionally with mucronate teeth, probably a hybrid. This oak is still in cultivation judging from its listing as the only *Q. phellos* in *the Catalogue of Woody Plants in the Botanical Gardens,* Wageningen, the Netherlands, 1981.

MARITIMA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 658) - as *Qu. Ph. 2. maritima?* Mx.; plant obtained from nursery of Wilhelmshohe in Cassel, grows along the coast of Virginia and the Carolinas where it is an evergreen shrub. Probably not a cultivar.

MICROCARPA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 108, illus.- p. 107) - as *Q. Phellos microcarpa* Willd.; leaves somewhat, leathery with very short petioles, oblong or lanceolate, margin irregular with a *mucronate tip. Illustration suggests hybridity.*

GENABII (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 290) - as var. *Genabii,* with larger leaves. Probably not a cultivar.

UNDULATA (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, *Weimar, 1889, p. 290) - leaves undulating.*

Q. rubra

AUREA - According to B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20:37-120, 1954-55, this selection was found by Th. van der Bom, in Oudenbosch, the Netherlands, and brought into commerce in 1880; leaves are a splendid yellow, especially in early summer; relatively true from seed but there is enough variation that it must be clonally propagated. There are probably other golden selections in cultivation which arose from seed of **AUREA** (R. de Belder, J. Roy. Hort. Soc. 94:81-94, 1969).

FOLIIS VARIEGATIS (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 654) - as *Quercus rubra foliis variegatis;* a young plant found in a seedbed, leaves very heavily spotted with white. Unable to determine whether actually cultivated beyond seedbed.

HETEROPHYLLA (L. Dippel, *Handbuch der Laubholzkunde* 2, 1892, p. 118) - as *Quercus rubra heterophylla;* leaves oval-oblong to lineal-lanceolate, frequently sickle-shaped, shallowly incised, bristly dentate, or with one or two large teeth. Also described and illustrated, as a cultivar, by B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 21:85-178, 1956, 1957 and 1958.

MAGNIFICA (H. Jager and L. Beissner, Die Ziergeholze, Ed. 3, Weimar, 1889, p. 293) - as *Q. rubra magnifica,* stated to have especially large leaves. Plant by same name listed in H.A. Hesse (Nurs.), Weener, Germany, Cat. Fall 1927-Spring 1928, p. 132 (and perhaps earlier catalogs); vigorous, with large red-brown new foliage, *which takes on beautiful fall color.*

MAXIMA - The name *Q. borealis* var. *maxima* (Marsh.) Ashe was generally used after 1916 (following Ashe, Soc. Amer. Forest. Proc. 11:90, 1916) for the "northern red oak", until sometime after 1950, the year M.L. Fernald (Gray's Manual of Botany, Ed. 8, 1950, p. 546) proposed a return to *Q. rubra* L., and designated *Q. rubra* var. *borealis* (Michx. f.) Farw. to describe the most northern variation in *Q. rubra* L. It is generally accepted today that *Q. rubra* L. (red oak) be used to designate the composite group of oaks known as "red oaks", but to exclude the species known as "southern red oak", *Q. falcata* Michx.

MONTANA (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 653-654) - as *Quercus rubra montana?* Ait., red mountain oak. Probably not cultivated and seemingly within the normal range of variation.

PENDULA (Royal Botanic Gardens, Kew Hand-list of Trees and Shrubs Grown in Arboretum, 1896, Part II, p. 201) -as *Q. rubra var. pendula,* without description, with *Q. coccinea pendula* Hort. as a synonym. Probably = *Q. coccinea* **PENDULA.**

SCHREFELDII (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 118) - as *Quercus rubra Schrefeldii;* leaves generally obovate with the base wedge-shaped and constricted towards the petiole, lobes often deeply cut and partially overlapping, a seedling selection. Also described and illustrated, as a cultivar, by B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 21:85-178, 1956, 1957 and 1958.

VIRIDIS (E. Petzold and G. Kirchner, Arboretum Muscaviense, Gotha, 1864, p. 654) - as *Qu. r. viridis; scions received* from the estate-owner Lehmann of Horscha in Niesky, leaves somewhat shorter, broader and somewhat lighter and bluish in color, distinguished in that the leaves do not change color in autumn.

Q. shumardii

ROYAL FLUSH (S.A. Spongberg, AABGA Bull. 15:67-70, 1981) - registered by J. Frank Schmidt, III of J. Frank Schmidt & Son Co., Boring Oregon; a chance seedling selected for its young leaves that retain their deep maroon color throughout the spring until early summer. Plant Patent No. 4149, Nov. 15, 1977.

SCHNECKII (C.S. Sargent, Bot. Gaz. 65;425, 1918, orig. not seen) - as *Q. Shumardii* var. *Schneckii* (Britt.) Sarg. Not valid at the cultivar level.

Q. velutina

ALBERTSII (DeVos, Woordenboek, 97, 1867; reference not seen by authors) - as *Q. macrophylla albertsii.* According to B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 20:37-120, 1954-55, this oak was found by G.L. Alberts, a nurseryman in Boskoop, the Netherlands; brought into commerce by DeVos about 1863; characterized by particularly large (34 x 25 cm) and beautifully formed leaves which are generally not too deeply incised and which are broadest above the mid-point.

CHAMPION (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 508) - both *albertsii* and *rubrifolia* given as synonyms. Not considered a valid name for either entity.

DISCOLOR (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 121-122) - listed under *Quercus tinctoria* Bartr., with various synonyms, including *Q. discolor* Willd. Berl. Baumz. p. 274, 1796, not Spec. plant. and not Ait., and *Q. tinctoria* Willd. These synonyms are at odds with those listed for *Q. tinctoria* Bartr. and cast doubt as to which species this plant belongs. May refer to a group of hybrids and is therefore considered not valid at the cultivar level.

MACROPHYLLA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 321) - leaves oval to broadly ovoid, each side with 4, 3-cornered oval lobes, new growth violet, later smooth with dark red veins. Described and illustrated by L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 123-124, as *Q. tinctoria* Bartr. *macrophylla.*

MAGNIFICA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 321) - leaves broadly obovate, apex blunt, leaves becoming deep, shiny green, underside yellowish - green with hair along veins. Described and illustrated by L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 122-123, as *Q. tinctoria* Bartr. *magnifica.*

NOBILIS (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 321) - leaves rounded to obovate, base broadly wedge-shaped to round, each side with 2-3 short, rounded lobes, leaves becoming dark green with red-brown veins. Described and illustrated by L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 124, as *Q. tinctoria* Bartr. *nobilis.*

RUBRIFOLIA (W.J. Bean, New Flora and Sylva, vol. II, 1939, p. 152) - a large-leaved (15 in. in length) selection seen by author at Lee's old nursery at Isleworth about 1893, called Champion oak or var. *rubrifolia* in the Kew Handlist, no authority for the name known. Listed as a cultivar in W.J. Bean, Trees and Shrubs Hardy in the British Isles, Ed. 8, vol. III, 1976, p. 520; history of Lee's oak is not known.

WILLDENOWIANA (L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 122) - listed under *Q. tinctoria* Bartr., with various synonyms including *Q. tinctoria* Willd. Spec. plant. IV, p. 444, 1805, not Bartr. Doubtful as to which species this plant belongs; considered not valid here.

HYBRIDS

HAWKINS (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 508) - listed under *Q.* x *porteri* with x *Q. hawkinsi(ae)* Sudw. as synonym. = *Q.* x *porteri* Trel., a hybrid of *Q. rubra* and *Q. velutina.*

LITTLELEAF (H.P. Kelsey and W.A. Dayton, Standardized Plant Names, 1942, p. 508) = *Q.* x *ludoviciana* **MICROCARPA**

MICROCARPA (G. Krussmann, Handbuch der Laubgeholze, Berlin, 1962, vol. 2, p. 309) - a cultivar of the hybrid species *Q.* x *ludoviciana* Sarg. *(Q. falcata* and *Q. phellos),* leaves oblong lanceolate, 7-9 cm long, shallow lobed; (= var. *microcarpa* (Sarg.) Rehd.), 1880. Described by L. Dippel, Handbuch der Laubholzkunde 2, 1892, p. 108 (fig. 49) as *Q. phellos microcarpa* Willd.

TROMPENBURG (B.K. Boom, Nederl. Dendrol. Ver. Jaarb. 21:85-178, 1956, '57, and '58) - a selection of the hybrid between *Q. cerris* and *Q. libani* (Q. x *libanerris* Boom) found by Mr. van Hoey Smith at Rotterdam; intermediate between the parents, persistent stipules, upper surface of leaf rough, underside finely pilose, a large number of lobes; fruit unknown.

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