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AN ORDINAL CLASSIFICATION FOR THE FAMILIES OF FLOWERING PLANTS

The Angiosperm Phylogeny Group[1]

ABSTRACT

Recent cladistic analyses are revealing the phylogeny of flowering plants in increasing detail, and there is support for the monophyly of many major groups above the family level. With many elements of the major branching sequence of phylogeny established, a revised suprafamilial classification of flowering plants becomes both feasible and desirable. Here we present a classification of 462 flowering plant families in 40 putatively monophyletic orders and a small number of monophyletic, informal higher groups. The latter are the monocots, commelinoids, eudicots, core eudicots, rosids including eurosids I and II, and asterids including euasterids I and II. Under these informal groups there are also listed a number of families without assignment to order. At the end of the system is an additional list of families of uncertain position for which no firm data exist regarding placement anywhere within the system.

Why rearrange families, still less formalize orders? Higher-level classifications, the grouping of species into families, orders, etc., are needed as reference tools not only in systematics but also in many other branches of biology. Knowledge of phylogenetic relationships of major groups of organisms, that is, a phylogenetic perspective, is becoming increasingly important, and hence the need for a phylogenetic classification as a reference tool is also becoming imperative.

Our primary focus is on orders with a secondary emphasis on families of flowering plants. The family is central in flowering plant systematics. For example, in studying an unknown plant we usually first identify it to family. The orders, on the other hand, have until quite recently been of little importance, either being morphologically unrecognizable or in most cases lacking any evolutionary coherence (Heywood, 1977; Merxmüller, 1977). However, orders are useful in teaching, for studying

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family relationships, and in positioning genera of doubtful affinity. The didactic value of suprafamilial groupings has been emphasized by various authors (e.g., Dahlgren, 1975; Thorne, 1976; Davis, 1978; Takhtajan, 1997). This value is even more evident now that the phylogeny of flowering plants is being disclosed in increasing detail. Many of the orders recognized by earlier authors are not monophyletic, yet there is a pressing need for names to communicate the knowledge of monophyletic groupings of families that are becoming evident. With the major branching sequence of flowering plant phylogeny becoming clearer, a revised familial and ordinal classification is feasible.

Flowering plant classification systems from the late 1970s seemed to be stable and show substantial agreement, but this stability has been rudely shattered as new kinds of data and new methods of analyzing conventional data have become firmly established (Stevens, 1986). Classifications such as those by Cronquist (1981) and Takhtajan (1980), although still in frequent use, have become outdated. Of more recent classifications, that by Goldberg (1986) of the dicotyledons predates the advent of molecular studies at higher levels, as does that by Dahlgren et al. (1985) of the monocotyledons. However, the latter incorporated much new data and provided synapomorphy schemes for many groups. The recent system of Takhtajan (1997), although extremely elaborate, is made less useful because his propensity for splitting often results in well-known families being dismembered, then reassembled as orders. Furthermore, the findings of recent molecular studies, despite being cited, have hardly influenced his classification.

We conclude that there is a great need for a new, phylogenetic classification of flowering plants, providing names for major monophyletic groups of families. Obviously, it is not possible, nor is it desirable, to name all clades in the entire phylogeny. Any such complete classification would be so cumbersome that it would be useless for general communication. Systematists need to come to some kind of agreement concerning which clades to recognize and name, so that a reference tool of broad utility can be formulated and used to discuss diversity. An ordinal classification of flowering plant families is here proposed for that purpose (pp. 538–542). It recognizes a selected number of monophyletic suprafamilial groups, that is, clades in the phylogeny of flowering plants that are supported by at least one, and often several, lines of evidence. These are clades to which we find it useful to refer when we communicate information about higher-level interrelationships of the flowering plants.

We note that the selection of clades to be represented in a formal classification is different from the procedure of naming these clades. The latter issue of biological nomenclature in phylogenetics is currently much debated (e.g., Cantino et al., 1997; de Queiroz, 1997; Lidén et al., 1997), but we have not adopted any "phylogenetic naming" sensu de Queiroz and Gauthier (1994). We operate under the current *International Code of Botanical Nomenclature* (Greuter et al., 1994) and choose to emphasize the ranks of family and order. The Linnaean categories serve as a convenient mnemonic device for remembering hierarchical relationships, but it should of course be realized that groups of the same rank are evolutionarily non-comparable units unless they are sister groups.

There are noteworthy problems when establishing the names for taxa at ordinal and other higher taxonomic levels. Until recently, little attention has been paid to the nomenclature at these levels, and our knowledge of the early literature in which such names were used is imperfect. This situation has in considerable part been rectified by Reveal's (1998) Herculean labors. The principle of priority is not mandatory for taxa above the rank of family, although authors are exhorted "generally" to follow this principle (Greuter et al., 1994). We have tried to balance priority with general usage when assigning names to orders, but even if future bibliographic work discloses earlier ordinal names, changes are not mandated.

Which clades should be recognized in classification, or in our case, how should the orders be circumscribed? Given the primary principle of monophyly, that of recognizing clades and not grades in classification, there are nevertheless many considerations to be taken into account when circumscribing taxa at ordinal as well as all other hierarchical levels above that of species. Classification is not only a matter of grouping according to the principle of monophyly, but it is also a matter of communication (note that whatever philosophy of naming is adopted, there has to be some consensus as to the clades we are going to use in general botanical communication). For us, this raises the question of ranking, that is, after having selected clades in the phylogeny to be named, they have to be assigned an appropriate place in the hierarchy, in our case, family and order (e.g., Backlund & K. Bremer, 1998; Stevens, 1998). In choosing between alternative circumscriptions it is desirable to recognize groups that are well supported. It is also useful to select groups that have some kind of easily observed morphological synapomorphies, although this may be difficult at the ordinal level and

even sometimes at the family level. Synapomorphies also often include (sometimes exclusively) anatomical, biochemical, and developmental characters.

Many of our ordinal names are already well established and used in earlier classifications and systematic treatments. So far as they represent monophyletic groups, we retain well-known orders in the interest of preserving stability. In other cases, the size of the orders comes into consideration. However, what is reasonably broad circumscription? From the point of view of memorization of names, groups of 2–6 or a few more would seem to be ideal, and there is evidence that systematists in the past have commonly recognized groups of this size (Stevens, 1997). However, with the discoveries of new species, genera, and families, the sizes of genera, families, and orders have increased, and many orders now comprise 10–20 families, or even more. Other orders contain a few families only, and if there are only two or three families in an order, "one is not far from leaving the families unplaced" (Copeland, 1957). Concerns about the doubtful value of recognizing similarly small groups have also been expressed by others (e.g., Burtt, 1977). Nevertheless, we have chosen to recognize a number of small orders because these represent clades for which monophyly and relationships are well supported, and this better conveys the interrelationships of the families included rather than leaving them unclassified to order.

In general, we adopt a broad circumscription of the orders. We recognize 462 families and 40 orders of flowering plants. Cronquist (1981) recognized 321 families and 64 orders, Thorne (1992) 440 families and 69 orders, and Takhtajan (1997) no less than 589 families in 232 orders. Our wider ordinal circumscription is not because finer details of the phylogeny within the orders are as yet unclear, but because we think the classification will be more useful with a limited number of larger orders. As we develop more firmly supported phylogenies within and among orders, groups at the infraordinal and supraordinal levels can be recognized. Hence we anticipate that there will be little need to change the circumscription of the orders recognized here, except for inclusion of yet unassigned families of unknown systematic position and the transfer of misplaced families. Additional orders may have to be recognized as the phylogenetic relationships of families that are not yet placed are clarified. Discussion as to whether a widely accepted monophyletic group should be a superorder, order, suborder, or family is largely vacuous because this will always be an arbitrary decision.

Takhtajan (1997) opted in favor of "smaller, more natural families and orders, which are more coherent and better-defined, where characters are easily grasped, and which are more suitable for information retrieval and phylogenetic studies, including cladistic analyses (e.g., because it reduces polymorphic codings)." However, the size of a group has nothing to do with its "naturalness." For a smaller group, one will often be able to say more about all of its constituent members, and so the characters may be more easily grasped. However, segregates of well established monophyletic families like Rubiaceae (Gentianales) or Asteraceae (Asterales) would by Takhtajan's generalization also be more natural; by this criterion, the smaller the group, the more natural it will necessarily be, so there is no ranking criterion to be derived from "naturalness." If by "more natural" is meant "has more synapomorphies" then this, too, is incorrect; the number of synapomorphies is not connected to the size of the group or the hierarchical level at which it is recognized.

In our classification, these considerations have had little impact. The principle of monophyly in combination with the desirability of maintaining already well established and familiar entities has largely formed the ordinal classification. Monofamilial orders (and monogeneric families) are avoided as much as possible, minimizing redundancy in classification. In a few cases we have, however, recognized some monofamilial orders (Ceratophyllales, Acorales, Arecales) because these are sister groups of more than one other order. Hence, the families of these monofamilial orders cannot be included in any other order without violating monophyly.

The principle of monophyly in combination with the mandatory usage of the family category (Greuter et al., 1994) may lead to the recognition of many small families. For example, in Dipsacales, if Dipsacaceae and Valerianaceae are to be retained as families separate from Caprifoliaceae, the principle of monophyly requires the recognition also of Diervillaceae, Linnaeaceae, and Morinaceae (Backlund & K. Bremer, 1998; Backlund & Pyck, 1998). This is because each of these latter families is the sister group of more than one family so they cannot be merged with any other family without violating monophyly. Similar considerations apply at the ordinal level. Unfortunately, no absolute guidelines as to reasonable practice can be offered, but we simply observe that caution is always in order.

In other cases there are small families that may be reduced to synonymy of their sister group if the

latter consists of a single family. Examples are Cabombaceae, which may be merged with Nymphaeaceae, and Kingdoniaceae, which may be merged with Circaeasteraceae (Ranunculales). Such commonly recognized families that nevertheless may be merged with their sister family are in our classification placed within square brackets below the family with which they may be merged (in Ranunculales either Fumariaceae or both Fumariaceae and Pteridophyllaceae may be merged with Papaveraceae; alternatively, either Pteridophyllaceae or both Fumariaceae and Pteridophyllaceae may be retained as distinct).

We do not attempt to thoroughly revise family circumscriptions. In general we follow recent authors and attempt to recognize as many monophyletic families as possible. It should be emphasized, however, that following additional investigation some families listed below may be shown to be non-monophyletic; revised circumscriptions, either by merging or splitting, into monophyletic taxa are not yet possible given our current knowledge. Examples are Euphorbiaceae and Flacourtiaceae of Malpighiales (Källersjö et al., 1998) and several families of Myrtales (Conti et al., 1996; Gadek et al., 1996) and core Caryophyllales (which comprise Achatocarpaceae, Aizoaceae, Amaranthaceae, Basellaceae, Cactaceae, Caryophyllaceae, Didiereaceae, Molluginaceae, Nyctaginaceae, Phytolaccaceae, Portulacaceae, Sarcobataceae, and Stegnospermataceae; Hershkovitz & Zimmer, 1997). Other probably non-monophyletic families that cannot yet be recircumscribed are Boraginaceae (euasterids I; Chase et al., 1993), Scrophulariaceae (Lamiales; Olmstead & Reeves, 1995), and Santalaceae (Santalales; Nickrent & Duff, 1996; Nickrent et al., 1998). Brassicaceae (Brassicales) include also the former, paraphyletic Capparaceae (Brassicaceae sensu stricto being nested inside Capparaceae; Judd et al., 1994; Rodman et al., 1996). A supposedly parallel case comprises Apiaceae and Araliaceae (Apiales), since the former have been assumed to be nested inside the latter (Plunkett et al., 1996). However, with a transfer of Hydrocotyloideae from Apiaceae to Araliaceae, it seems that two monophyletic families can be recognized, only a few genera remaining unplaced (Plunkett et al., 1997). Delimitation of Bombacaceae, Malvaceae, Sterculiaceae, and Tiliaceae (Malvales) is problematical, and only Malvaceae are monophyletic (Alverson et al., 1998; Bayer et al., 1999). Here all four are treated together as a single monophyletic family, Malvaceae sensu lato (Judd & Manchester, 1997).

Our proposed classification is a modification of that conceived by Bremer et al. (1995, 1996, 1997) and since 1996 available on the Internet (Bremer et al., 1998). This classification is based on various recently published mostly molecular phylogenetic analyses (e.g., Chase et al., 1993; Chase et al., 1995; Bremer et al., 1994; Struwe et al., 1994; Nadot et al., 1995; Nickrent & Soltis, 1995; Soltis et al., 1995; Gadek et al., 1996; Gustafsson et al., 1996; Morton et al., 1996; Soltis & Soltis, 1997; Soltis et al., 1997; Anderberg et al., 1998; Backlund & B. Bremer, 1998; Bakker et al., 1998; Källersjö et al., 1998; Soltis et al., 1998; Thulin et al., 1998; further references above). The major differences are in the expansion of Alismatales (including also Araceae), Caryophyllales (including Droseraceae, Nepenthaceae, Polygonaceae, Plumbaginaceae, and several other families outside the traditional, core Caryophyllales), the recognition of a comparatively widely circumscribed Rosales (including Rhamnaceae, Urticaceae, Moraceae, and their allies), in the addition of a number of smaller orders (Ceratophyllales, Acorales, Arecales, Proteales, Garryales, Aquifoliales), and in the deletion of a few others (Aristolochiales, Nymphaeales, Bromeliales, Trochodendrales, Zygophyllales). Monocots and eudicots are not formally ranked and named because it is not yet clear at which level they should be recognized. The same problems occur with commelinoids (a phylogenetically derived subgroup of monocots) and with rosids and asterids (subgroups of eudicots), although these are commonly known as subclasses Commelinidae, Rosidae, and Asteridae, respectively.

Well supported ordinal interrelationships are shown in Figure 1. Interrelationships among the basal branches of the tree and the position of the root of the flowering plant phylogeny remain elusive. Within the eudicots there is increasing support for a large subgroup with predominantly pentamerous and isomerous flowers, the core eudicots, mainly comprising Caryophyllales, Santalales, Saxifragales, rosids, and asterids. Rosids and asterids each comprise two large subgroups, eurosids I and II and euasterids I and II, also receiving increasing support as monophyletic. These correspond to the similarly numbered rosid and asterid clades of Chase et al. (1993).

Under each of the supraordinal groups of monocots, commelinoids, core eudicots, rosids, etc., there are a number of families listed without assignment to order. These families are known to belong within the major group under which they are listed, but their ordinal position is still uncertain. Similarly, Amborellaceae, Austrobaileyaceae, Canellaceae, etc., are listed at the beginning because

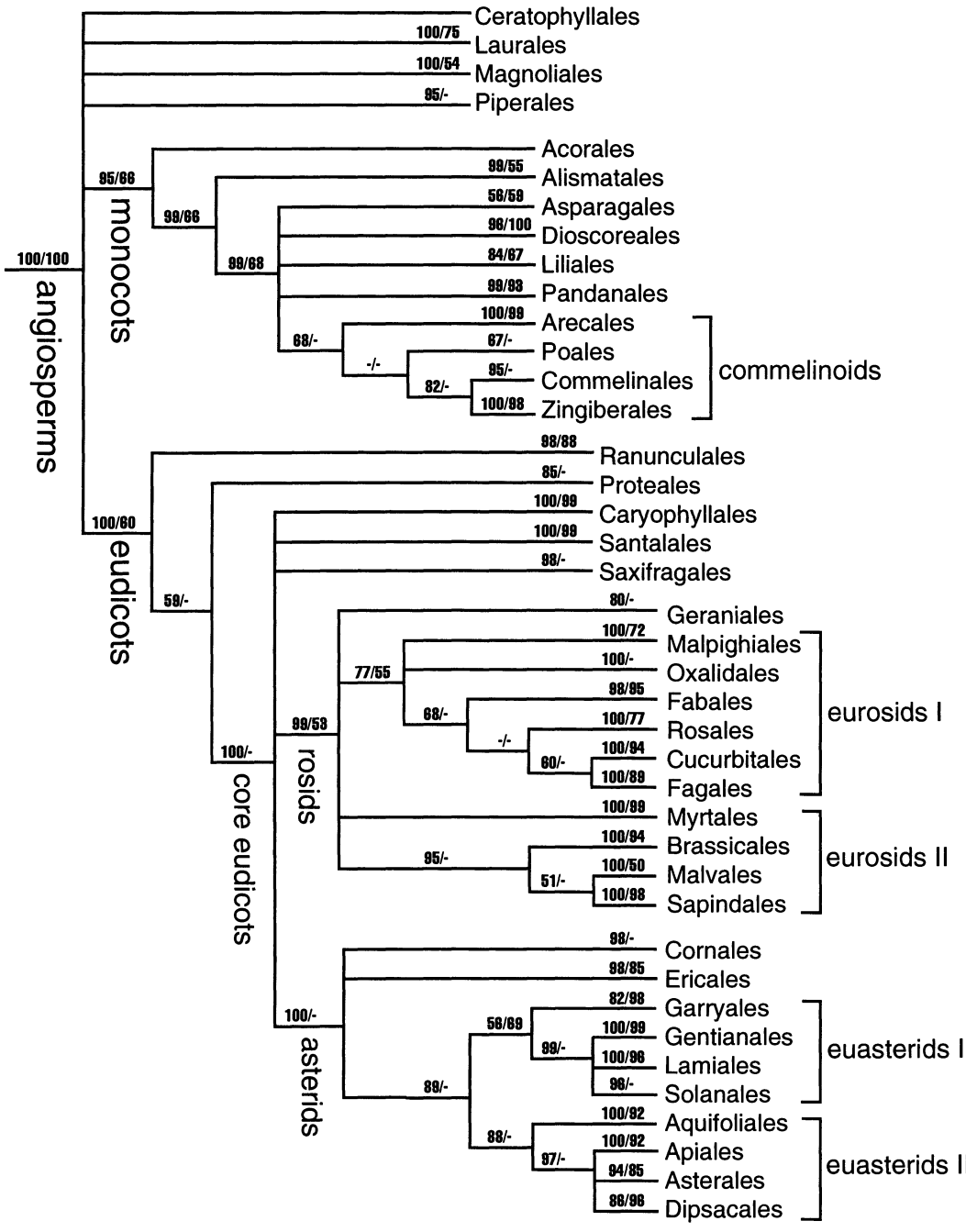

Figure 1. Phylogenetic interrelationships of the orders of flowering plants, compiled from recent cladistic analyses cited in the text. Jackknife support is given on the branches (a dash for values < 50%), first jackknife values from analysis of 545 sequences of the *rbc*L, *atp*B, and 18S rDNA genes (D. E. Soltis, M. W. Chase, P. S. Soltis, D. Albach, M. E. Mort, V. Savolainen, M. Zanis & J. S. Farris, unpublished, in prep.) and second jackknife values from analysis of 2538 *rbc*L sequences (Källersjö et al., 1998).

they belong neither in any of the phylogenetically "basal" orders at the beginning nor in the monocots or eudicots. Furthermore, families listed directly under monocots without an order are monocots but not commelinoids, and families similarly listed directly under eudicots and core eudicots are eudicots or core eudicots, respectively, but neither rosids nor asterids. At the end of the system is an additional list of families of uncertain position. Most of these are probably eudicots (including core eudicots, rosids, and asterids), but so far there are no firm data supporting their placement anywhere within the eudicots.

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CLASSIFICATION OF FLOWERING PLANTS

Amborellaceae
Austrobaileyaceae
Canellaceae
Chloranthaceae
Hydnoraceae
Illiciaceae
Nymphaeaceae
[+Cabombaceae]
Rafflesiaceae
Schisandraceae
Trimeniaceae
Winteraceae

Ceratophyllales Bisch.
Ceratophyllaceae

Laurales Perleb
Atherospermataceae
Calycanthaceae
Gomortegaceae
Hernandiaceae
Lauraceae
Monimiaceae
Siparunaceae

Magnoliales Bromhead
Annonaceae
Degeneriaceae
Eupomatiaceae
Himantandraceae
Magnoliaceae
Myristicaceae

Piperales Dumort.
Aristolochiaceae
Lactoridaceae
Piperaceae
Saururaceae

MONOCOTS
Corsiaceae
Japonoliriaceae
Nartheciaceae
Petrosaviaceae
Triuridaceae

Acorales Reveal
Acoraceae

Alismatales Dumort.
Alismataceae
Aponogetonaceae
Araceae
Butomaceae
Cymodoceaceae
Hydrocharitaceae
Juncaginaceae
Limnocharitaceae
Posidoniaceae
Potamogetonaceae
Ruppiaceae
Scheuchzeriaceae
Tofieldiaceae
Zosteraceae

Asparagales Bromhead
Agapanthaceae
Agavaceae
Alliaceae
Amaryllidaceae
Anemarrhenaceae
Anthericaceae
Aphyllanthaceae
Asparagaceae
Asphodelaceae
Asteliaceae
Behniaceae
Blandfordiaceae
Boryaceae
Convallariaceae
Doryanthaceae
Hemerocallidaceae
Herreriaceae
Hesperocallidaceae
Hyacinthaceae
Hypoxidaceae
Iridaceae
Ixioliriaceae
Lanariaceae
Laxmanniaceae
Orchidaceae
Tecophilaeaceae
Themidaceae
Xanthorrhoeaceae
Xeronemataceae

Dioscoreales Hook. f.
Burmanniaceae
Dioscoreaceae
Taccaceae
Thismiaceae
Trichopodaceae

Liliales Perleb
Alstroemeriaceae
Campynemataceae
Colchicaceae
Liliaceae
Luzuriagaceae
Melanthiaceae
Philesiaceae
Ripogonaceae
Smilacaceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Pandanales Lindl.
- Cyclanthaceae
- Pandanaceae
- Stemonaceae
- Velloziaceae

COMMELINOIDS
- Abolbodaceae
- Bromeliaceae
- Dasypogonaceae
- Hanguanaceae
- Mayacaceae
- Rapateaceae

Arecales Bromhead
- Arecaceae

Commelinales Dumort.
- Commelinaceae
- Haemodoraceae
- Philydraceae
- Pontederiaceae

Poales Small
- Anarthriaceae
- Centrolepidaceae
- Cyperaceae
- Ecdeiocoleaceae
- Eriocaulaceae
- Flagellariaceae
- Hydatellaceae
- Joinvilleaceae
- Juncaceae
- Poaceae
- Prioniaceae
- Restionaceae
- Sparganiaceae
- Thurniaceae
- Typhaceae
- Xyridaceae

Zingiberales Griseb.
- Cannaceae
- Costaceae
- Heliconiaceae
- Lowiaceae
- Marantaceae
- Musaceae
- Strelitziaceae
- Zingiberaceae

EUDICOTS
- Buxaceae
- Didymelaceae
- Sabiaceae
- Trochodendraceae
- [+Tetracentraceae]

Proteales Dumort.
- Nelumbonaceae
- Platanaceae
- Proteaceae

Ranunculales Dumort.
- Berberidaceae
- Circaeasteraceae
- [+Kingdoniaceae]
- Eupteleaceae
- Lardizabalaceae
- Menispermaceae
- Papaveraceae
- [+Fumariaceae]
- [+Pteridophyllaceae]
- Ranunculaceae

CORE EUDICOTS
- Aextoxicaceae
- Berberidopsidaceae
- Dilleniaceae
- Gunneraceae
- Myrothamnaceae
- Vitaceae

Caryophyllales Perleb
- Achatocarpaceae
- Aizoaceae
- Amaranthaceae
- Ancistrocladaceae
- Asteropeiaceae
- Basellaceae
- Cactaceae
- Caryophyllaceae
- Didiereaceae
- Dioncophyllaceae
- Droseraceae
- Drosophyllaceae
- Frankeniaceae
- Molluginaceae
- Nepenthaceae
- Nyctaginaceae
- Physenaceae
- Phytolaccaceae
- Plumbaginaceae
- Polygonaceae
- Portulacaceae
- Rhabdodendraceae
- Sarcobataceae
- Simmondsiaceae
- Stegnospermataceae
- Tamaricaceae

Santalales Dumort.
- Olacaceae
- Opiliaceae

CLASSIFICATION OF FLOWERING PLANTS (cont'd.)

Loranthaceae
Misodendraceae
Santalaceae

Saxifragales Dumort.
Altingiaceae
Cercidiphyllaceae
Crassulaceae
Daphniphyllaceae
Grossulariaceae
Haloragaceae
Hamamelidaceae
Iteaceae
Paeoniaceae
Penthoraceae
Pterostemonaceae
Saxifragaceae
Tetracarpaeaceae

ROSIDS
Aphloiaceae
Crossosomataceae
Ixerbaceae
Krameriaceae
Picramniaceae
Podostemaceae
Stachyuraceae
Staphyleaceae
Tristichaceae
Zygophyllaceae

Geraniales Dumort.
Francoaceae
Geraniaceae
[+Hypseocharitaceae]
Greyiaceae
Ledocarpaceae
Melianthaceae
Vivianiaceae

EUROSIDS I
Celastraceae
Huaceae
Parnassiaceae
[+Lepuropetalaceae]
Stackhousiaceae

Cucurbitales Dumort.
Anisophylleaceae
Begoniaceae
Coriariaceae
Corynocarpaceae
Cucurbitaceae
Datiscaceae
Tetramelaceae

Fabales Bromhead
Fabaceae
Polygalaceae
Quillajaceae
Surianaceae

Fagales Engl.
Betulaceae
Casuarinaceae
Fagaceae
Juglandaceae
Myricaceae
Nothofagaceae
Rhoipteleaceae
Ticodendraceae

Malpighiales Mart.
Achariaceae
Balanopaceae
Caryocaraceae
Chrysobalanaceae
Clusiaceae
Dichapetalaceae
Erythroxylaceae
Euphorbiaceae
Euphroniaceae
Flacourtiaceae
Goupiaceae
Hugoniaceae
Humiriaceae
Irvingiaceae
Ixonanthaceae
Lacistemataceae
Linaceae
Malesherbiaceae
Malpighiaceae
Medusagynaceae
Ochnaceae
Pandaceae
Passifloraceae
Putranjivaceae
Quiinaceae
Rhizophoraceae
Salicaceae
Scyphostegiaceae
Trigoniaceae
Turneraceae
Violaceae

Oxalidales Heintze
Cephalotaceae
Connaraceae
Cunoniaceae
Elaeocarpaceae
Oxalidaceae
Tremandraceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Rosales Perleb
- Barbeyaceae
- Cannabaceae
- Cecropiaceae
- Celtidaceae
- Dirachmaceae
- Elaeagnaceae
- Moraceae
- Rhamnaceae
- Rosaceae
- Ulmaceae
- Urticaceae

EUROSIDS II
- Tapisciaceae

Brassicales Bromhead
- Akaniaceae
- [+Bretschneideraceae]
- Bataceae
- Brassicaceae
- Caricaceae
- Emblingiaceae
- Gyrostemonaceae
- Koeberliniaceae
- Limnanthaceae
- Moringaceae
- Pentadiplandraceae
- Resedaceae
- Salvadoraceae
- Setchellanthaceae
- Tovariaceae
- Tropaeolaceae

Malvales Dumort.
- Bixaceae
- [+Diegodendraceae]
- Cistaceae
- Cochlospermaceae
- Dipterocarpaceae
- Malvaceae
- Muntingiaceae
- Neuradaceae
- Sarcolaenaceae
- Sphaerosepalaceae
- Thymelaeaceae

Myrtales Rchb.
- Alzateaceae
- Combretaceae
- Crypteroniaceae
- Heteropyxidaceae
- Lythraceae
- Melastomataceae
- Memecylaceae
- Myrtaceae
- Oliniaceae
- Onagraceae
- Penaeaceae
- Psiloxylaceae
- Rhynchocalycaceae
- Vochysiaceae

Sapindales Dumort.
- Anacardiaceae
- Biebersteiniaceae
- Burseraceae
- Kirkiaceae
- Meliaceae
- Nitrariaceae
- [+Peganaceae]
- Rutaceae
- Sapindaceae
- Simaroubaceae

ASTERIDS
- Cornales Dumort.
  - Cornaceae
  - [+Nyssaceae]
  - Grubbiaceae
  - Hydrangeaceae
  - Hydrostachyaceae
  - Loasaceae

Ericales Dumort.
- Actinidiaceae
- Balsaminaceae
- Clethraceae
- Cyrillaceae
- Diapensiaceae
- Ebenaceae
- Ericaceae
- Fouquieriaceae
- Halesiaceae
- Lecythidaceae
- Marcgraviaceae
- Myrsinaceae
- Pellicieraceae
- Polemoniaceae
- Primulaceae
- Roridulaceae
- Sapotaceae
- Sarraceniaceae
- Styracaceae
- Symplocaceae
- Ternstroemiaceae
- Tetrameristaceae
- Theaceae
- Theophrastaceae

EUASTERIDS I
- Boraginaceae
- Plocospermataceae
- Vahliaceae

CLASSIFICATION OF FLOWERING PLANTS (cont'd.)

Garryales Lindl.
- Aucubaceae
- Eucommiaceae
- Garryaceae
- Oncothecaceae

Gentianales Lindl.
- Apocynaceae
- Gelsemiaceae
- Gentianaceae
- Loganiaceae
- Rubiaceae

Lamiales Bromhead
- Acanthaceae
- Avicenniaceae
- Bignoniaceae
- Buddlejaceae
- Byblidaceae
- Cyclocheilaceae
- Gesneriaceae
- Lamiaceae
- Lentibulariaceae
- Myoporaceae
- Oleaceae
- Orobanchaceae
- Paulowniaceae
- Pedaliaceae
- [+Martyniaceae]
- Phrymaceae
- Plantaginaceae
- Schlegeliaceae
- Scrophulariaceae
- Stilbaceae
- Tetrachondraceae
- Verbenaceae

Solanales Dumort.
- Convolvulaceae
- Hydroleaceae
- Montiniaceae
- Solanaceae
- Sphenocleaceae

EUASTERIDS II
- Adoxaceae
- Bruniaceae
- Carlemanniaceae
- Columelliaceae
- [+Desfontainiaceae]
- Eremosynaceae
- Escalloniaceae
- Icacinaceae
- Polyosmaceae
- Sphenostemonaceae
- Tribelaceae

Apiales Nakai
- Apiaceae
- Araliaceae
- Aralidiaceae
- Griseliniaceae
- Melanophyllaceae
- Pittosporaceae
- Torricelliaceae

Aquifoliales Senft
- Aquifoliaceae
- Helwingiaceae
- Phyllonomaceae

Asterales Lindl.
- Alseuosmiaceae
- Argophyllaceae
- Asteraceae
- Calyceraceae
- Campanulaceae
- [+Lobeliaceae]
- Carpodetaceae
- Donatiaceae
- Goodeniaceae
- Menyanthaceae
- Pentaphragmataceae
- Phellinaceae
- Rousseaceae
- Stylidiaceae

Dipsacales Dumort.
- Caprifoliaceae
- Diervillaceae
- Dipsacaceae
- Linnaeaceae
- Morinaceae
- Valerianaceae

FAMILIES OF UNCERTAIN POSITION
- Balanophoraceae
- Bonnetiaceae
- Cardiopteridaceae
- Ctenolophonaceae
- Cynomoriaceae
- Cytinaceae
- Dipentodontaceae
- Elatinaceae
- Geissolomataceae
- Hoplestigmataceae
- Kaliphoraceae
- Lepidobotryaceae
- Lissocarpaceae
- Lophopyxidaceae
- Medusandraceae
- Metteniusaceae
- Mitrastemonaceae
- Paracryphiaceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Pentaphylacaceae
Peridiscaceae
Plagiopteraceae
Pottingeriaceae
Sladeniaceae
Strasburgeriaceae
Tepuianthaceae

ORDINAL SYNONYMS

Acanthales Lindl.
= Lamiales
Acerales Lindl.
= Sapindales
Actinidiales Takht. ex Reveal
= Ericales
Adoxales Nakai
- not accepted, family under euasterids II
Aesculales Bromhead
= Sapindales
Agavales Hutch.
= Asparagales
Alliales Traub
= Asparagales
Alstroemeriales Hutch.
= Liliales
Altingiales Doweld
= Saxifragales
Amaranthales Dumort.
= Caryophyllales
Amaryllidales Bromhead
= Asparagales
Ambrosiales Dumort.
= Asterales
Ammiales Small
= Apiales
Amomales Lindl.
= Zingiberales
Ancistrocladales Takht.
= Caryophyllales
Annonales Lindl.
= Magnoliales
Anthobolales Dumort.
= Santalales
Apocynales Bromhead
= Gentianales
Aponogetonales Hutch.
= Alismatales
Arales Dumort.
= Alismatales
Araliales Reveal
= Apiales
Aralidiales Takht. ex Reveal
= Apiales
Aristolochiales Dumort.
= Piperales
Asarales Horan.
= Piperales
Asclepiadales Dumort.
= Gentianales
Asteliales Dumort.
= Asparagales
Atriplicales Horan.
= Caryophyllales
Aucubales Takht.
= Garryales
Austrobaileyales Takht. ex Reveal
- not accepted, family at beginning of system
Avenales Bromhead
= Poales
Balanopales Engl.
= Malpighiales
Balanophorales Dumort.
- not accepted, family unplaced
Balsaminales Lindl.
= Ericales
Barbeyales Takht. & Reveal
= Rosales
Batales Engl.
= Brassicales
Begoniales Dumort.
= Cucurbitales
Berberidales Dumort.
= Ranunculales
Betulales Bromhead
= Fagales
Biebersteiniales Takht.
= Sapindales
Bignoniales Lindl.
= Lamiales
Bixales Lindl.
= Malvales
Boraginales Dumort.
- not accepted, family under euasterids I
Brexiales Lindl.
- not accepted, family under eurosids I
Bromeliales Dumort.
- not accepted, family under commelinoids
Bruniales Dumort.
- not accepted, family under euasterids II
Brunoniales Lindl.
= Asterales
Burmanniales Heintze
= Dioscoreales
Burserales Baskerville
= Sapindales
Butomales Hutch.
= Alismatales

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Buxales Takht. ex Reveal
- not accepted, family under eudicots
Byblidales Nakai ex Reveal
= Lamiales
Cactales Dumort.
= Caryophyllales
Callitrichales Dumort.
= Lamiales
Calycanthales Mart.
= Laurales
Calycerales Takht. ex Reveal
= Asterales
Campanulales Rchb.
= Asterales
Canellales Cronquist
- not accepted, family at beginning of system
Cannales Dumort.
= Zingiberales
Capparales Hutch.
= Brassicales
Caprifoliales Lindl.
= Dipsacales
Cardiopteridales Takht.
- not accepted, family under euasterids II
Carduales Small
= Asterales
Caricales L. D. Benson
= Brassicales
Cassiales Horan.
= Fabales
Casuarinales Lindl.
= Fagales
Celastrales Baskerville
- not accepted, family under eurosids I
Centrolepidales Takht.
= Poales
Cephalotales Nakai
= Oxalidales
Cercidiphyllales Hu ex Reveal
= Saxifragales
Chenopodiales Dumort.
= Caryophyllales
Chironiales Griseb.
= Gentianales
Chloranthales A. C. Sm. ex J. -F. Leroy
- not accepted, family at beginning of system
Cinchonales Lindl.
= Gentianales
Circaeasterales Takht.
= Ranunculales
Cistales Rchb.
= Malvales
Citrales Dumort.
= Sapindales
Cocosales Nakai
= Arecales
Colchicales Dumort.
= Liliales
Combretales Baskerville
= Myrtales
Connarales Takht. ex Reveal
= Cunoniales
Convolvulales Dumort.
= Solanales
Coriariales Lindl.
= Cucurbitales
Corylales Dumort.
= Fagales
Corynocarpales Takht.
= Cucurbitales
Crassulales Lindl.
= Saxifragales
Crossosomatales Takht. ex Reveal
- not accepted, family under rosids
Cunoniales Hutch.
= Oxalidales
Cyclanthales J. H. Schaffn.
= Pandanales
Cymodoceales Nakai
= Alismatales
Cynomoriales Burnett
- not accepted, family unplaced
Cyperales Hutch.
= Poales
Cytinales Dumort.
- not accepted, family unplaced
Daphnales Lindl.
= Malvales
Daphniphyllales Pulle ex Cronquist
= Saxifragales
Datiscales Dumort.
= Cucurbitales
Desfontainiales Takht.
- not accepted, family under euasterids II
Diapensiales Engl. & Gilg
= Ericales
Didymelales Takht.
- not accepted, family under eudicots
Dilleniales Hutch.
- not accepted, family under core eudicots
Dioncophyllales Takht. ex Reveal
= Caryophyllales
Diospyrales Prantl
= Ericales
Droserales Griseb.
= Caryophyllales

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Ebenales Engl.
= Ericales
Elaeagnales Bromhead
= Rosales
Elaeocarpales Takht.
= Oxalidales
Elatinales Nakai
- not accepted, family unplaced
Elodeales Nakai
= Alismatales
Empetrales Raf.
= Ericales
Eriocaulales Nakai
= Poales
Eucommiales Nemejc ex Cronquist
= Garryales
Euphorbiales Lindl.
= Malpighiales
Eupomatiales Takht. ex Reveal
= Magnoliales
Eupteleales Hu ex Reveal
= Ranunculales
Euryalales H.L.Li
- not accepted, family at beginning of system
Ficales Dumort.
= Rosales
Flacourtiales Heintze
= Malpighiales
Fouquieriales Takht. ex Reveal
= Ericales
Francoales Takht.
= Geraniales
Frangulales Wirtg.
= Rosales
Galiales Bromhead
= Gentianales
Geissolomatales Takht. ex Reveal
- not accepted, family unplaced
Gesneriales Dumort.
= Lamiales
Glaucidiales Takht. ex Reveal
= Ranunculales
Globulariales Dumort.
= Lamiales
Goodeniales Lindl.
= Asterales
Greyiales Takht.
= Geraniales
Grossulariales Lindl.
= Saxifragales
Gunnerales Takht. ex Reveal
- not accepted, family under core eudicots
Gyrocarpales Dumort.
= Laurales
Gyrostemonales Takht.
= Brassicales
Haemodorales Hutch.
= Commelinales
Haloragales Bromhead
= Saxifragales
Hamamelidales Griseb.
= Saxifragales
Hanguanales R. Dahlgren ex Reveal
= not accepted, family under commelinoids
Helleborales Nakai
= Ranunculales
Helwingiales Takht.
= Aquifoliales
Himantandrales Doweld & Shevyryova
= Magnoliales
Hippuridales Pulle ex Reveal
= Lamiales
Homaliales Bromhead
= Malpighiales
Hortensiales Griseb.
= Cornales
Hydatellales Cronquist
= Poales
Hydnorales Takht. ex Reveal
- not accepted, family at beginning of system
Hydrangeales Nakai
= Cornales
Hydrastidales Takht.
= Ranunculales
Hydropeltidales (Bartl.) Spenn.
- not accepted, family Nymphaeaceae at beginning of system
Hydrostachyales Diels ex Reveal
= Cornales
Hypericales Dumort.
= Malpighiales
Hypoxidales Takht.
= Asparagales
Icacinales Tiegh. ex Reveal
- not accepted, family under euasterids II
Illiciales Hu ex Cronquist
- not accepted, family at beginning of system
Iridales Raf.
= Asparagales
Ixiales Lindl.
= Asparagales
Jasminales Dumort.
= Lamiales
Juglandales Dumort.
= Fagales

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Julianiales Engl.
= Sapindales
Juncaginales Hutch.
= Alismatales
Juncales Dumort.
= Poales
Lacistematales Baskerville
= Malpighiales
Lactoridales Takht. ex Reveal
= Piperales
Lardizabalales Loconte
= Ranunculales
Lecythidales Cronquist
= Ericales
Leitneriales Engl.
= Sapindales
Lentibulariales Lindl.
= Lamiales
Ligustrales Bartl. ex Bisch.
= Lamiales
Limnanthales Nakai
= Brassicales
Linales Baskerville
= Malpighiales
Loasales Bessey
= Cornales
Loganiales Lindl.
= Gentianales
Lonicerales T. Liebe
= Dipsacales
Loranthales Dumort.
= Santalales
Lythrales Caruel
= Myrtales
Marathrales Dumort.
- not accepted, family Podostemaceae under rosids
Mayacales Nakai
- not accepted, family under commelinoids
Medusagynales Takht.
= Malpighiales
Medusandrales Brenan
- not accepted, family unplaced
Melanthiales R. Dahlgren ex Reveal
= Liliales
Melastomatales Oliv.
= Myrtales
Meliales Lindl.
= Sapindales
Menispermales Bromhead
= Ranunculales
Menyanthales T. Yamaz. ex Takht.
= Asterales
Metteniusales Takht.
- not accepted, family unplaced
Mitrastemonales Makino
- not accepted, family unplaced
Monimiales Dumort.
= Laurales
Moringales Nakai
= Brassicales
Myricales Engl.
= Fagales
Myristicales Thomé
= Magnoliales
Myrothamnales Nakai ex Reveal
- not accepted, family under core eudicots
Myrsinales Spenn.
= Ericales
Najadales Dumort.
= Alismatales
Narcissales Dumort.
= Asparagales
Nartheciales Reveal & Zomlefer
- not accepted, family under monocots
Nelumbonales Reveal
= Proteales
Nepenthales Dumort.
= Caryophyllales
Nolanales Lindl.
= Solanales
Nyctaginales Dumort.
= Caryophyllales
Nymphaeales Dumort.
= not accepted, family at beginning of system
Ochnales Hutch. ex Reveal
= Malpighiales
Oenotherales Bromhead
= Myrtales
Olacales Benth.
= Santalales
Oleales Lindl.
= Lamiales
Onagrales Rchb.
= Myrtales
Opuntiales Willk.
= Caryophyllales
Orchidales Raf.
= Asparagales
Paeoniales Heintze
= Saxifragales
Pandales Engl. & Gilg
= Malpighiales
Papaverales Dumort.
= Ranunculales
Paracryphiales Takht.
- not accepted, family unplaced
Paridales Dumort.
= Liliales

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Parnassiales Nakai
- not accepted, family under eurosids I
Passiflorales Dumort.
= Malpighiales
Penaeales Lindl.
= Myrtales
Petiveriales Lindl.
= Caryophyllales
Petrosaviales Takht.
- not accepted, family under monocots
Philydrales Dumort.
= Commelinales
Physenales Takht.
= Caryophyllales
Pinguiculales Dumort.
= Lamiales
Pittosporales Lindl.
= Apiales
Plantaginales Lindl.
= Lamiales
Platanales J. H. Schaffn.
= Proteales
Plumbaginales Lindl.
= Caryophyllales
Podophyllales Dumort.
= Ranunculales
Podostemales Lindl.
= not accepted, family under rosids
Polemoniales Bromhead
= Ericales
Polygalales Dumort.
= Fabales
Polygonales Dumort.
= Caryophyllales
Pontederiales Hook. f.
= Commelinales
Portulacales Dumort.
= Caryophyllales
Posidoniales Nakai
= Alismatales
Potamogetonales Dumort.
= Alismatales
Primulales Dumort.
= Ericales
Quercales Burnett
= Fagales
Rafflesiales Oliv.
- not accepted, family at beginning of system
Resedales Dumort.
= Brassicales
Restionales J. H. Schaffn.
= Poales
Rhamnales Dumort.
= Rosales
Rhinanthales Dumort.
= Lamiales
Rhizophorales Tiegh. ex Reveal
= Malpighiales
Rhodorales Horan.
= Ericales
Rhoipteleales Novák ex Reveal
= Fagales
Roridulales Nakai
= Ericales
Rubiales Dumort.
= Gentianales
Ruppiales Nakai
= Alismatales
Rutales Perleb
= Sapindales
Sabiales Takht.
= not accepted, family under eudicots
Salicales Lindl.
= Malpighiales
Salvadorales R. Dahlgren ex Reveal
= Brassicales
Samolales Dumort.
= Ericales
Samydales Dumort.
= Malpighiales
Sanguisorbales Dumort.
= Rosales
Sapotales Hook. f.
= Ericales
Sarraceniales Bromhead
= Ericales
Scheuchzeriales B. Boivin
= Alismatales
Scleranthales Dumort.
= Caryophyllales
Scrophulariales Lindl.
= Lamiales
Scyphostegiales Croizat
= Malpighiales
Sedales Rchb.
= Saxifragales
Silenales Lindl.
= Caryophyllales
Simmondsiales Reveal
= Caryophyllales
Smilacales Lindl.
= Liliales
Stellariales Dumort.
= Caryophyllales
Stylidiales Takht. ex Reveal
= Asterales
Styracales Bisch.
= Ericales
Taccales Dumort.
= Dioscoreales

CLASSIFICATION OF FLOWERING PLANTS (cont'd.)

Tamales Dumort.
= Dioscoreales
Tamaricales Hutch.
= Caryophyllales
Tecophilaeales Traub ex Reveal
= Asparagales
Theales Lindl.
= Ericales
Theligonales Nakai
= Gentianales
Thymelaeales Willk.
= Malvales
Tiliales Caruel
= Malvales
Tofieldiales Reveal & Zomlefer
= Alismatales
Torricelliales Takht. ex Reveal
= Apiales
Tovariales Nakai
= Brassicales
Trilliales Takht.
= Liliales
Triuridales Hook. f.
- not accepted, family under monocots
Trochodendrales Takht. ex Cronquist
- not accepted, family under eudicots
Tropaeolales Takht. ex Reveal
= Brassicales
Turnerales Dumort.
= Malpighiales
Typhales Dumort.
= Poales
Ulmales Lindl.
= Rosales
Urticales Dumort.
= Rosales
Vacciniales Dumort.
= Ericales
Vallisneriales Nakai
= Alismatales
Velloziales R. Dahlgren ex Reveal
= Pandanales
Veratrales Dumort.
= Liliales
Verbenales Horan.
= Lamiales
Viburnales Dumort.
- not accepted, family under euasterids II
Vincales Horan.
= Gentianales
Violales Perleb
= Malpighiales
Vitales Reveal
- not accepted, family under core eudicots
Vochysiales Dumort.
= Myrtales
Winterales A. C. Sm. ex Reveal
- not accepted, family at beginning of system
Xyridales Lindl.
= Poales
Zosterales Nakai
= Alismatales
Zygophyllales Takht.
- not accepted, family under rosids

SELECTED FAMILIAL SYNONYMS

Abrophyllaceae
= Carpodetaceae
Acanthochlamydaceae
= Velloziaceae
Aceraceae
= Sapindaceae
Achradaceae
= Sapotaceae
Aegiceratacaceae
= Myrsinaceae
Agdestidaceae
= Phytolaccaceae
Aitoniaceae
= Meliaceae
Alangiaceae
= Cornaceae
Aloaceae
= Asphodelaceae
Alsinaceae
= Caryophyllaceae
Ambrosiaceae
= Asteraceae
Amygdalaceae
= Rosaceae
Androstachyaceae
= Euphorbiaceae
Antoniaceae
= Loganiaceae
Apodanthaceae
= Rafflesiaceae
Apostasiaceae
= Orchidaceae
Aptandraceae
= Olacaceae
Aristoteliaceae
= Elaeocarpaceae
Asclepiadaceae
= Apocynaceae
Asteranthaceae
= Lecythidaceae
Averrhoaceae
= Oxalidaceae
Avetraceae
= Dioscoreaceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Balanitaceae
= Zygophyllaceae
Barbeiuaceae
= Phytolaccaceae
Barclayaceae
= Nymphaeaceae
Barringtoniaceae
= Lecythidaceae
Baueraceae
= Cunoniaceae
Baxteriaceae
= Dasypogonaceae
Bembiciaceae
= Flacourtiaceae
Berzeliaceae
= Bruniaceae
Bischofiaceae
= Euphorbiaceae
Blepharocaryaceae
= Anacardiaceae
Boerlagellaceae
= Sapotaceae
Bombacaceae
= Malvaceae
Boopidaceae
= Calyceraceae
Bretschneideraceae
= Akaniaceae
Brexiaceae
= Celastraceae
Brunelliaceae
= Cunoniaceae
Brunoniaceae
= Goodeniaceae
Bumeliaceae
= Sapotaceae
Burchardiaceae
= Colchicaceae
Byttneriaceae
= Malvaceae
Cabombaceae
= Nymphaeaceae
Caesalpiniaceae
= Fabaceae
Calectasiaceae
= Dasypogonaceae
Callitrichaceae
= Plantaginaceae
Calochortaceae
= Liliaceae
Camelliaceae
= Theaceae
Canotiaceae
= Celastraceae
Cansjeraceae
= Opiliaceae
Capparaceae
= Brassicaceae
Carduaceae
= Asteraceae
Cassythaceae
= Lauraceae
Chailletiaceae
= Dichapetalaceae
Chenopodiaceae
= Amaranthaceae
Chionographidaceae
= Melanthiaceae
Chloanthaceae
= Lamiaceae
Cichoriaceae
= Asteraceae
Cleomaceae
= Brassicaceae
Cneoraceae
= Rutaceae
Cobaeaceae
= Polemoniaceae
Compositae
= Asteraceae
Conostylidaceae
= Haemodoraceae
Cordiaceae
= Boraginaceae
Coridaceae
= Primulaceae
Corokiaceae
= Argophyllaceae
Corylaceae
= Betulaceae
Croomiaceae
= Stemonaceae
Cruciferae
= Brassicaceae
Curtisiaceae
= Cornaceae
Cuscutaceae
= Convolvulaceae
Cyananthaceae
= Campanulaceae
Cyanastraceae
= Tecophilaeaceae
Cynocrambaceae nom. illeg.
= Rubiaceae
Cyphiaceae
= Campanulaceae
Cyphocarpaceae
= Campanulaceae
Cypripediaceae
= Orchidaceae
Dactylanthaceae
= Balanophoraceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Davidiaceae
= Cornaceae
Davidsoniaceae
= Cunoniaceae
Decaisneaceae
= Lardizabalaceae
Desfontainiaceae
= Columelliaceae
Dialypetalanthaceae
= Rubiaceae
Dianellaceae
= Hemerocallidaceae
Dichondraceae
= Convolvulaceae
Diclidantheraceae
= Polygalaceae
Diegodendraceae
= Bixaceae
Dionaeaceae
= Droseraceae
Dracaenaceae
= Convallariaceae
Duabangaceae
= Lythraceae
Duckeodendraceae
= Solanaceae
Dulongiaceae nom. illeg.
= Phyllonomaceae
Dysphaniaceae
= Amaranthaceae
Ehretiaceae
= Boraginaceae
Ellisiophyllaceae
= Scrophulariaceae
Empetraceae
= Ericaceae
Epacridaceae
= Ericaceae
Eremolepidaceae
= Santalaceae
Eriospermaceae
= Convallariaceae
Erycibaceae
= Convolvulaceae
Erythropalaceae
= Olacaceae
Eucryphiaceae
= Cunoniaceae
Euryalaceae
= Nymphaeaceae
Exocarpaceae
= Santalaceae
Flindersiaceae
= Rutaceae
Foetidiaceae
= Lecythidaceae
Frangulaceae
= Rhamnaceae
Fumariaceae
= Papaveraceae
Funkiaceae
= Agavaceae
Galacaceae
= Diapensiaceae
Geitonoplesiaceae
= Hemerocallidaceae
Geniostomaceae
= Loganiaceae
Geosiridaceae
= Iridaceae
Gisekiaceae
= Phytolaccaceae
Glaucidiaceae
= Ranunculaceae
Globulariaceae
= Plantaginaceae
Goetzeaceae
= Solanaceae
Gonystylaceae
= Thymelaeaceae
Gouaniaceae
= Rhamnaceae
Gramineae
= Poaceae
Gronoviaceae
= Loasaceae
Gustaviaceae
= Lecythidaceae
Guttiferae
= Clusiaceae
Gyrocarpaceae
= Hernandiaceae
Halophilaceae
= Hydrocharitaceae
Halophytaceae
= Amaranthaceae
Hectorellaceae
= Portulacaceae
Heliotropiaceae
= Boraginaceae
Heloniadaceae
= Melanthiaceae
Helosidaceae
= Balanophoraceae
Henriqueziaceae
= Rubiaceae
Hippocastanaceae
= Sapindaceae
Hippocrateaceae
= Celastraceae
Hippuridaceae
= Plantaginaceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Hortoniaceae
= Monimiaceae
Hostaceae
= Agavaceae
Humbertiaceae
= Convolvulaceae
Hydrastidaceae
= Ranunculaceae
Hydrocotylaceae
= Araliaceae
Hydropeltidaceae
= Nymphaeaceae
Hydrophyllaceae
= Boraginaceae
Hymenocardiaceae
= Euphorbiaceae
Hypecoaceae
= Papaveraceae
Hypericaceae
= Clusiaceae
Hypseocharitaceae
= Geraniaceae
Idiospermaceae
= Calycanthaceae
Illecebraceae
= Caryophyllaceae
Jasionaceae
= Campanulaceae
Jasminiaceae
= Oleaceae
Johnsoniaceae
= Hemerocallidaceae
Julianiaceae
= Anacardiaceae
Kiggelariaceae
= Flacourtiaceae
Kingdoniaceae
= Circaeasteraceae
Kirengeshomaceae
= Hydrangeaceae
Labiatae
= Lamiaceae
Langsdorffiaceae
= Balanophoraceae
Leeaceae
= Vitaceae
Leguminosae
= Fabaceae
Leitneriaceae
= Simaroubaceae
Lemnaceae
= Araceae
Lennoaceae
= Boraginaceae
Leoniaceae
= Violaceae
Lepuropetalaceae
= Parnassiaceae
Lilaeaceae
= Juncaginaceae
Limoniaceae
= Plumbaginaceae
Liriodendraceae
= Magnoliaceae
Lobeliaceae
= Campanulaceae
Lomandraceae
= Laxmanniaceae
Lophiraceae
= Ochnaceae
Lophophytaceae
= Balanophoraceae
Luxemburgiaceae
= Ochnaceae
Malaceae
= Rosaceae
Martyniaceae
= Pedaliaceae
Mastixiaceae
= Cornaceae
Medeolaceae
= Liliaceae
Meliosmaceae
= Sabiaceae
Mendonciaceae
= Acanthaceae
Mesembryanthemaceae
= Aizoaceae
Mimosaceae
= Fabaceae
Monotaceae
= Dipterocarpaceae
Monotropaceae
= Ericaceae
Mouririaceae
= Memecylaceae
Moutabeaceae
= Polygalaceae
Myriophyllaceae
= Haloragaceae
Mystropetalaceae
= Balanophoraceae
Najadaceae
= Hydrocharitaceae
Nandinaceae
= Berberidaceae
Napoleonaceae
= Lecythidaceae
Naucleaceae
= Rubiaceae
Nectaropetalaceae
= Erythroxylaceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Nelsoniaceae
= Acanthaceae
Nemacladaceae
= Campanulaceae
Nesogenaceae
= Cyclocheilaceae
Nolanaceae
= Solanaceae
Nolinaceae
= Convallariaceae
Nupharaceae
= Nymphaeaceae
Nyctanthaceae
= Oleaceae
Nyssaceae
= Cornaceae
Octoknemaceae
= Olacaceae
Oftiaceae
= Scrophulariaceae
Ophiopogonaceae
= Convallariaceae
Osyridaceae
= Santalaceae
Pachysandraceae
= Buxaceae
Palmae
= Arecaceae
Papilionaceae
= Fabaceae
Peganaceae
= Nitrariaceae
Pentastemonaceae
= Stemonaceae
Peperomiaceae
= Piperaceae
Periplocaceae
= Apocynaceae
Peripterygiaceae
= Cardiopteridaceae
Petermanniaceae
= Colchicaceae
Petiveriaceae
= Phytolaccaceae
Philadelphaceae
= Hydrangeaceae
Phormiaceae
= Hemerocallidaceae
Phylicaceae
= Rhamnaceae
Picrodendraceae
= Euphorbiaceae
Pinguiculaceae
= Lentibulariaceae
Pistaciaceae
= Anacardiaceae
Pistiaceae
= Araceae
Platystemonaceae
= Papaveraceae
Plumeriaceae
= Apocynaceae
Podoaceae
= Anacardiaceae
Podophyllaceae
= Berberidaceae
Polygonanthaceae
= Anisophylleaceae
Potaliaceae
= Gentianaceae
Ptaeroxylaceae
= Rutaceae
Pteridophyllaceae
= Papaveraceae
Punicaceae
= Lythraceae
Pyrolaceae
= Ericaceae
Ranzaniaceae
= Berberidaceae
Reaumuriaceae
= Tamaricaceae
Retziaceae
= Stilbaceae
Rhinanthaceae
= Orobanchaceae
Rhodoleiaceae
= Hamamelidaceae
Rhopalocarpaceae
= Sphaerosepalaceae
Rhynchothecaceae
= Ledocarpaceae
Roxburghiaceae
= Stemonaceae
Ruscaceae
= Convallariaceae
Saccifoliaceae
= Gentianaceae
Salaciaceae
= Celastraceae
Salicorniaceae
= Amaranthaceae
Salpiglossidaceae
= Solanaceae
Sambucaceae
= Adoxaceae
Samolaceae
= Primulaceae
Saniculaceae
= Apiaceae
Sarcophytaceae
= Balanophoraceae

CLASSIFICATION OF FLOWERING PLANTS
(cont'd.)

Sarcospermataceae
= Sapotaceae
Sargentodoxaceae
= Lardizabalaceae
Saurauiaceae
= Actinidiaceae
Sauvagesiaceae
= Ochnaceae
Scaevolaceae
= Goodeniaceae
Scepaceae
= Euphorbiaceae
Schoepfiaceae
= Olacaceae
Sclerophylacaceae
= Solanaceae
Scoliopaceae
= Liliaceae
Scybaliaceae
= Balanophoraceae
Scytopetalaceae
= Lecythidaceae
Selaginaceae
= Scrophulariaceae
Sesamaceae
= Pedaliaceae
Sesuviaceae
= Aizoaceae
Simethidaceae
= Hemerocallidaceae
Siphonodontaceae
= Celastraceae
Sonneratiaceae
= Lythraceae
Spigeliaceae
= Loganiaceae
Stenomeridaceae
= Dioscoreaceae
Sterculiaceae
= Malvaceae
Stilaginaceae
= Euphorbiaceae
Strychnaceae
= Loganiaceae
Stylobasiaceae
= Surianaceae
Styloceratacaceae
= Buxaceae
Symphorematacaceae
= Lamiaceae
Syringaceae
= Oleaceae
Tetracentraceae
= Trochodendraceae
Tetradiclidaceae
= Peganaceae
Tetragoniaceae
= Aizoaceae
Tetrastylidiaceae
= Olacaceae
Thalassiaceae
= Hydrocharitaceae
Theligonaceae
= Rubiaceae
Thunbergiaceae
= Acanthaceae
Tiliaceae
= Malvaceae
Trapaceae
= Lythraceae
Trapellaceae
= Pedaliaceae
Tribulaceae
= Zygophyllaceae
Tricyrtidaceae
= Liliaceae
Trilliaceae
= Melanthiaceae
Triplostegiaceae
= Valerianaceae
Uapacaceae
= Euphorbiaceae
Ullucaceae
= Basellaceae
Umbelliferae
= Apiaceae
Utriculariaceae
= Lentibulariaceae
Uvulariaceae
= Colchicaceae
Vacciniaceae
= Ericaceae
Viburnaceae
= Adoxaceae
Viscaceae
= Santalaceae
Viticaceae
= Lamiaceae
Walleriaceae
= Tecophilaeaceae
Wellstediaceae
= Boraginaceae
Xanthophyllaceae
= Polygalaceae
Xerophyllaceae
= Melanthiaceae
Zannichelliaceae
= Potamogetonaceae