

1921

Key to the Families of Flowering Plants of Central Iowa

Henry S. Conard
Grinnell College

Winifred Ellsworth
Grinnell College

Let us know how access to this document benefits you

Copyright ©1921 Iowa Academy of Science, Inc.

Follow this and additional works at: <https://scholarworks.uni.edu/pias>

Recommended Citation

Conard, Henry S. and Ellsworth, Winifred (1921) "Key to the Families of Flowering Plants of Central Iowa," *Proceedings of the Iowa Academy of Science*, 28(1), 305-316.

Available at: <https://scholarworks.uni.edu/pias/vol28/iss1/49>

This Research is brought to you for free and open access by the Iowa Academy of Science at UNI ScholarWorks. It has been accepted for inclusion in Proceedings of the Iowa Academy of Science by an authorized editor of UNI ScholarWorks. For more information, please contact scholarworks@uni.edu.

KEY TO THE FAMILIES OF FLOWERING PLANTS OF CENTRAL IOWA

HENRY S. CONARD AND WIN IFRED ELLSWORTH

Botanizing in Iowa has always been hampered by the lack of a local flora. To identify our plants in a manual for the north-eastern United States is a task for indomitable enthusiasts, or for specialists. Beside this, the keys now extant are phrased in technical language, requiring a minute knowledge of Botany and detailed dissection of specimens.

For the aid of beginners, the writers have tried to prepare a simple key to the families of plants of central Iowa. We have omitted families not known in that region. We have disregarded species and genera which do not occur in our range. For example, our key gives *Gentianaceae*, but provides no means for tracing *Menyanthes*, since that genus occurs only in the northern counties. Such examples, however, are few, and the key could be used in schools or colleges all over the state without much inconvenience.

We have provided means for tracing dioecious plants when only one kind of flower is found. A special section is devoted also to monoecious plants. It has not been possible to eliminate the counting of ovary cells, but the calls for such counting have been reduced to a minimum. The key is eminently "artificial," avowedly so. When students have learned to know a hundred families in this simple way, they should, of course, use a more technical key. In any case, the detailed descriptions of families should be looked up in a complete manual.

By way of orientation, we have prefixed a synopsis of the plant kingdom, and a key to the principal groups of plants, along lines already published in these proceedings and elsewhere. We invite criticism of the entire contribution, hoping thereby to effect such corrections as will make a thoroughly workable key.

SYNOPSIS OF THE PLANT KINGDOM

- | | |
|-----------------------------|---|
| 1. Thallophyta | Lower Plants |
| 1. Myxomycetes | |
| 2. Schizophyta | |
| (1) Schizophyceae | Blue-Green Algæ |
| (2) Schizomycetes | Bacteria |
| 3. Flagellata | |
| 4. Diatomaceæ | Diatoms |
| 5. Chlorophyceæ | Green Algæ |
| (1) Heterocontæ | Conferva |
| (2) Acontæ | Spirogyra, Zygnema, Desmids |
| (3) Isocontæ | |
| a. Cellular series | Ulothrix, Draparnaldia,
Pleurococcus |
| b. Siphonous series | Vaucheria, Cladophora |
| (4) Stephanocontæ | Oedogonium |
| 6. Phæophyceæ | Brown seaweeds |
| 7. Rhodophyceæ | Red seaweeds |
| 8. Eumycetes | True fungi |
| (1) Phycomycetes | Molds |
| (2) Ascomycetes | Mildews, Dothidella, Taphrina,
Penicillium |
| (3) Laboulbeniomy-
cetes | Parasitic on insects. |
| (4) Basidiomycetes | Rusts, Smuts, Mushrooms, etc. |
| 9. Lichenes | Lichens |
| 10. Charales | |
| 2. Embryophyta | Embryo plants |
| 1. Atracheata | Moss Plants |
| (1) Hepaticæ | Scale Mosses, Marchantia, etc. |
| (2) Musci | True Mosses, Mnium, Hypnum, |
| 2. Tracheata | Vascular Plants: Woody Plants |
| (1) Lycopsida | Lycopodium, Selaginella
Equisetum |
| (2) Pteropsida | |
| 1. Aspermæ | Ferns |
| 2. Gymnospermæ | Pine, Ginkgo, Cypress, etc. |
| 3. Angiospermæ | |
| 1. Dicotyle-
doneæ | Smartweed, Bean, Sunflower, etc. |
| 2. Mono-
cotyledoneæ | Grass, Asparagus, Lily,
Canna, etc. |

KEY TO FLOWERING PLANTS

KEY TO THE PRINCIPAL GROUPS OF PLANTS

1. Plants without distinction of root, stem, and leaf; no flowers (green scum, water weeds, fungi, etc.)
 1. THALLOPHYTA
1. Plants with distinct lvs., with or without roots or fls.
 2. EMBRYOPHYTA2
2. Small plants (to 1 dm. tall) with green lvs.; or scalelike growths on earth; or floating; without true roots or fls. (Mosses, etc.)
 1. ATRACHEATA
2. Plants with true roots and vascular bundles; mostly with veiny lvs.
 2. TRACHEATA3
3. Plants without fls.; herbs, propagated by spores4
3. Plants with fls. (stamens and pistils), propagated by seeds5
4. Spores yellow; lvs. small; one sporangium in each axil
 - 2.1. LYCOPSIDA
 1. LYCOPODIALES
4. Spores green, cottony, borne in terminal cones; stems jointed
 - 2.1. LYCOPSIDA
 2. EQUISETALES
4. Spores borne on the backs of ordinary or modified lvs.
 - 2.2. PTEROPSIDA
 1. ASPERMÆ
5. Trees with light grey bark, and 2-lobed lvs. with fine, forked, parallel veins
 - 2.2. PTEROPSIDA
 2. GYMNOSPERMÆ
 5. GINKGOALES
5. Trees or shrubs with conelike fls., and needle-like, mostly evergreen lvs.
 - 2.2. PTEROPSIDA
 2. GYMNOSPERMÆ
 6. CONIFERALES
5. Trees, shrubs, or herbs with true fls., and seeds borne in an ovary. Pollen received on a stigma.*
 - 2.2. PTEROPSIDA
 3. ANGIOSPERMÆ6
6. Fls. usually with their parts in 5's; lvs. net-veined; stems with central pith, surrounded by a ring of wood, or vascular bundles, with growth in thickness by means of cambium; cotyledons 2.
 - 2.2.3.1. DICOTYLEDONEÆ
6. Fls. usually with their parts in 3's; lvs. parallel-veined; vascular bundles scattered about in stems, without growth in thickness (cambium); cotyledon 1. All herbs except 1 prickly woody vine.
 - 2.2.3.2. MONOCOTYLEDONEÆ

* "Double flowers" must usually be identified by means of their single prototypes. Where doubling is due to change of stamens into petals, the key may be used by counting the inner petals as stamens.

KEY TO DICOTYLEDONEÆ

1. Fls. crowded in dense heads surrounded by an involucre, the 5 stam. united by their anthers into a tube	134
1. Fls. not crowded, or if so not involucrate, or the stam. not united	2
2. Fls. with no perianth, or with only one circle, in this case arbitrarily called a calyx	4
2. Fls. with both calyx and corolla	3
3. Petals separate from one another	38
3. Petals united at least at base into a tube	99
4. Stam. and pist. in different fls. on different plants (dioecious)	5
4. Stam. and pist. in different fls. on the same plant (monoecious)	13
4. Stam. and pist. in the same fl. (perfect)	22
5. Vines with opposite compound lvs.	Ranunculaceæ
5. Vines with alternate lvs.	Vitaceæ
5. Trees or Shrubs	6
5. Herbs	11
6. Lvs. opposite	8
6. Lvs. alternate	7
7. Shrub with 2 short spines at each node	Rutaceæ
7. Spineless	9
8. Twigs scaly-roughened; sep. 4; shrub	Eleagnaceæ
8. Twigs smooth and shiny; sep. 4-12 or none; tree	Aceraceæ
8. Twigs not shiny; bud scales downy; tree	Oleaceæ
9. Fls. in catkins with no perianth, each in the axil of a scale	Salicaceæ
9. Fls. with well defined perianth	10
10. Bark aromatic to smell and taste; sep. 6	Lauraceæ
10. Not aromatic; sep. 4	Urticaceæ
11. Lvs. deeply palmately lobed or divided	Urticaceæ
11. Lvs. 2-3 times divided into small lifts.	Ranunculaceæ
11. Lvs. simple	12
12. Lvs. entire, with 2 narrow lobes at base	Polygonaceæ
12. Lvs. toothed, oval, pointed	Urticaceæ
13. Trees or shrubs	14
13. Woody vines	Vitaceæ
13. Herbs	21
14. Lvs. opposite	Aceraceæ
14. Lvs. alternate	15
15. Both stam. and pist. fls. in catkins or dense heads	16
15. Only the stam. fls. in catkins or dense heads	19
16. Heads of fls. globular; cal. absent	17
16. Fls. in cylindric catkins	18
17. Stipules early falling off	Hamamelidaceæ
17. Stipules forming a sheath around the twig	Platanaceæ

KEY TO FLOWERING PLANTS

- 18. Fls. separate, each with 4 sep. (stam. 4) Urticaceæ
- 18. Fls. very small, crowded upon the scales of the catkin Betulaceæ
- 19. Lvs. pinnately compound Juglandaceæ
- 19. Lvs. simple 20
- 20. Pist. fls. or groups of fls. exposed Fagaceæ
- 20. Pist. fls. enclosed in the scaly winter bud Betulaceæ
- 21. Ov. 1-celled, 1-seeded; sprawling herb Chenopodiaceæ
- 21. Ov. 3-celled, 3-seeded; erect Euphorbiaceæ
- 22. White leafless saprophyte 10-20 cm. tall Ericaceæ
- 22. Submerged aquatic Haloragidaceæ
- 22. Trees or shrubs 24
- 22. Woody vines 23
- 22. Herbs, not woody, or slightly so at base 28
- 23. Fls. showy; sep. 4; stam. many; carp. many Ranunculaceæ
- 23. Fls. minute, green, panicled, sweet-scented Vitaceæ
- 23. Fls. large, solitary, chocolate brown, tubular curved Aristolochiaceæ
- 24. Lvs. opposite, palmately lobed or 3-parted Aceraceæ
- 24. Lvs. alternate 25
- 25. Lvs. silvery with star-shaped hairs Eleagnaceæ
- 25. Lvs. not silvery 26
- 26. Lvs. and twigs with aromatic odor and taste Lauraceæ
- 26. Not aromatic 27
- 27. Stig. 2, large; ov. 1-celled, 1-seeded Urticaceæ
- 27. Stig. 1-4, minute; ov. 2-4 celled, 2-4 seeded Rhamnaceæ
- 27. Stig. 1; ov. 1-celled, 1-seeded; stam. 8 Thymelaceæ
- 28. Ov. inferior, the fl. coming from its upper surface (epigynous) 29
- 28. Ov. superior, the fl. coming up around it (hypogynous) 30
- 29. Sep. 3; stam. 6; ov. 6-celled Aristolochiaceæ
- 29. Sep. 4; stam. 4; lvs. whorled Rubiaceæ
- 29. Sep. 4; stam. 4; lvs. not whorled Onagraceæ
- 29. Stam. 5; one in front of each sepal; ov. 1-celled Santalaceæ
- 29. Stam. 5, attached between the perianth parts; ov. 2-celled Umbelliferae
- 30. Ov. 2 or more, separate Ranunculaceæ
- 30. Ov. 1, 1-many celled 31
- 31. Ov. 1-celled; stam. 9 or less 33
- 31. Ov. 2-celled; stam. 2 Cruciferae
- 31. Ov. 3-celled 32
- 31. Ov. 5-celled; many seeded Crassulaceæ
- 31. Ov. 5-10 celled and seeded; fr. a purple berry Phytolactaceæ
- 32. Ov. many-seeded; lvs. whorled Aizoaceæ
- 32. Ov. many-seeded; lvs. scattered Cistaceæ
- 32. Ov. 3-seeded Euphorbiaceæ
- 33. Fls. showy; perianth tubular at base Nyctaginaceæ
- 33. Fls. individually small, insignificant 34

34. Perianth hard, scalelike, beset with scale-like bracts	Amaranthaceæ
34. Perianth soft, not scalelike; no scaly bracts	35
35. Stipules sheathing stem above node	Polygonaceæ
35. Stipules not sheathing, or none	36
36. Ov. many-seeded; plant spreading on the ground	Caryophyllaceæ
36. Ov. few-several-seeded; plant stiff, erect	Cistaceæ
36. Ov. 1-seeded	37
37. Sep. 4; style and stig. 1	Urticaceæ
37. Sep. 5 (3-5); stig. 2 (-5)	Chenopodiaceæ
38. Fls. often with pistils only or stamens only	39
38. Fls. perfect, i.e., pist. and stam. both	47
39. Tendril-bearing herbs	Cucurbitaceæ
39. Submerged aquatic with threadlike lfts.	Haloragidaceæ
39. Herbs	40
39. Woody vines	41
39. Trees and shrubs	43
40. Lvs. simple, oval; fls. minute	Euphorbiaceæ
40. Lvs. compound	Araliaceæ
41. Sep. and pet. absent when fl. is open	Vitaceæ
41. Sep. and pet. present	42
42. Lvs. simple, palmately veined	Menispermaceæ
42. Lvs. simple, pinnately veined	Celastraceæ
42. Lvs. of 3 lfts.; poisonous to touch	Anacardiaceæ
43. Lvs. opposite	Aceraceæ
43. Lvs. alternate	44
44. Lvs. simple, entire	Anacardiaceæ
44. Lvs. simple, finely toothed	Rhamnaceæ
44. Lvs. simple, palmately-lobed	Saxifragaceæ
44. Lvs. of 3 lfts.	Rutaceæ
44. Lvs. once pinnately compound	45
44. Lvs. twice or thrice pinnately compound	Leguminosæ
45. Lfts. 1-3 cm. long, oval, entire	Leguminosæ
45. Lfts. 5-12 cm. long	46
46. Juice watery, ill-scented	Simarubaceæ
46. Juice of bark resinous, sticky	Anacardiaceæ
47. Stam. more than 10	48
47. Stam. not more than 10	63
48. Shrubs or trees	49
48. Herbs	55
49. Ov. inferior or mostly so (epigynous or perigynous)	50
49. Ov. obviously superior (hypogynous)	52
50. Lvs. opposite	51
50. Lvs. alternate; carp. 3-many	Rosaceæ
50. Lvs. alternate; carp. 2	Saxifragaceæ
51. Fls. white	Saxifragaceæ
51. Fls. chocolate brown	Calycanthaceæ

KEY TO FLOWERING PLANTS

- | | |
|---|--------------|
| 52. Sepals 3 | 53 |
| 52. Sepals 5 (or 4) | 54 |
| 53. Fls. chocolate brown; carp. 2-5 | Anonaceæ |
| 53. Fls. pink, white or yellowish; carp. many, in a conelike head | Magnoliaceæ |
| 54. Stam. on the edge of a cup- or saucer-shaped receptacle | Rosaceæ |
| 54. Stam. stalks united into a tube around the style | Malvaceæ |
| 54. Stam. attached beneath the ovary | Tiliaceæ |
| 55. Ov. 1, 1-celled | 56 |
| 55. Ov. 1, 2-many celled | 60 |
| 55. Ovaries several | 62 |
| 56. Seeds minute, attached to base of ov.; stig. 2-8; sep. 2 | Portulacaceæ |
| 56. Seeds attached all over inside of ov. | Papaveraceæ |
| 56. Seeds attached to one side of ov. | 57 |
| 56. Seeds attached to wall of ov. in 2 opposite rows | 58 |
| 56. Seeds attached to wall of ov. in 3-5 rows | 59 |
| 57. Stig. 1; fls. regular, white | Berberidaceæ |
| 57. Fl. with a long spur behind | Ranunculaceæ |
| 58. Sep. 2; juice colored | Papaveraceæ |
| 58. Sep. 4; juice watery | Capparidaceæ |
| 59. Lvs. with minute transparent dots | Hypericaceæ |
| 59. Lvs. without transparent dots | Cistaceæ |
| 60. Aquatic; roots under water | Nymphæaceæ |
| 60. Terrestrial | 61 |
| 61. Stam. stalks united into a columnar tube | Malvaceæ |
| 61. Stam. separate from each other | Rosaceæ |
| 62. Stam. attached to a flat or cup-shaped calyx | Rosaceæ |
| 62. Stam. attached to stem between pet. and pist. | Ranunculaceæ |
| 63. Stam. 6, of which 4 are longer and 2 shorter; or only 2 | Cruciferae |
| 63. One stam. in front of each pet. | 64 |
| 63. Stam. between the pet., or more numerous | 66 |
| 63. Stam. 6, in 2 sets of 3, their stalks often united | Fumariaceæ |
| 64. Woody vines; calyx minute | Vitaceæ |
| 64. Herbs or shrubs; petals rolled in from tip | Rhamnaceæ |
| 64. Herbs or shrubs; pet. flat or curving around the bud | 65 |
| 65. Sep. 2; pet. 5 | Portulacaceæ |
| 65. Sep. 5; pet. 5; stig. 1 | Primulaceæ |
| 65. Sep. 6, with 2-6 extra scales (bracts); stam. 6 | Berberidaceæ |
| 66. Ov. wholly superior (hypogynous) | 67 |
| 66. Ov. wholly or mostly inferior (perigynous or epigynous) | 92 |
| 67. Ov. 2 or more, wholly or mostly separate | 68 |
| 67. Ov. 1, simple or compound | 73 |

68. Stam. united with the thick united stig.	Asclepiadaceæ
68. Stam. free from each other and from the pist.	69
69. Stam. on the axis of the fl., not on the calyx	70
69. Stam. attached to calyx	72
70. Lvs. very thick, fleshy	Crassulaceæ
70. Lvs. thin, with fine transparent dots	Rutaceæ
70. Lvs. thin, not dotted	71
71. Trees; lvs. pinnate, large	Simarubaceæ
71. Herbs; ov. several, each with stig.	Ranunculaceæ
71. Herbs; style 1; stig. and ov. 5-lobed	Geraniaceæ
72. Stipules present	Rosaceæ
72. Stipules absent	Saxifragaceæ
73. Fls. radially symmetrical, the petals all alike, and sepals all alike	74
73. Fls. 2-sided, the petals unlike, or sepals unlike, or reduced in number	89
74. Trees, shrubs, or woody vines	75
74. Herbs	81
75. Lvs. alternate	76
75. Lvs. opposite	78
76. Woody vines	77
76. Shrubs with pinnately compound lvs.	Anacardiaceæ
77. Lvs. simple	Celastraceæ
77. Lvs. of 3 lfts.; poisonous to touch	Anacardiaceæ
78. Trees of large size	80
78. Shrub or small tree (to 3 cm. thick)	79
79. Lvs. undivided, oval	Celastraceæ
79. Lvs. of 3 lfts.	Staphyleaceæ
80. Lvs. pinnately compound	Leguminosæ
80. Lvs. not compound	Aceraceæ
81. White, leafless saprophyte, 10-20 cm. tall	Ericaceæ
81. Green plants rooting in ordinary fashion	82
82. Lvs. with fine transparent dots, as if punctured	Hypericaceæ
82. Lvs. not transparent-dotted	83
83. Sepals all separate from each other	84
83. Sepals united at base into a cup	87
84. Ov. 1-celled	85
84. Ov. 5 or 10-celled	86
85. Seeds in two rows on sides of ov.; lvs. alternate	Capparidaceæ
85. Seeds on a free column at center of ov.; lvs. opposite	Caryophyllaceæ
86. Lvs. narrow, entire	Linaceæ
86. Lvs. of 3 notched lfts.	Oxalidaceæ
86. Lvs. large, lobed and toothed, hairy	Geraniaceæ
86. Lvs. round or oval, finely toothed	Ericaceæ

KEY TO FLOWERING PLANTS

- | | |
|---|-----------------|
| 87. Ov. half inferior (perigynous) | Saxifragaceæ |
| 87. Ov. wholly superior (hypogynous) | 88 |
| 88. Petals attached between sepals at top of calyx cup | Lythraceæ |
| 88. Petals attached to stem within base of calyx cup | Caryophyllaceæ |
| 89. Trees with large palmately compound lvs. | Hippocastanaceæ |
| 89. Not as above | 90 |
| 90. Ov. 1-celled | 91 |
| 90. Ov. 2-celled, 2-seeded | Polygalaceæ |
| 90. Ov. 5-celled, several seeded; stems transparent | Balsaminaceæ |
| 91. Ov. with 1 row of seeds; fls. mostly shaped like a sweet pea | Leguminosæ |
| 91. Ov. with 2 opposite rows of seeds; sep. and pet. 4 | Capparidaceæ |
| 91. Ov. with 3 rows of seeds; fl. violet or pansy shaped | Violaceæ |
| 92. Tendril-bearing vines | Cucurbitaceæ |
| 92. Not tendril-bearing | 93 |
| 93. Ovules and seeds more than 1 in each cell | 94 |
| 93. Ovules and seeds only 1 in each cell | 96 |
| 94. Stam. attached to calyx | 95 |
| 94. Stam. attached to a flat disc which covers the ov. | Celastraceæ |
| 95. Stam. 4 or 8; ov. long | Onagraceæ |
| 95. Stam. 5 or 10; ov. broad | Saxifragaceæ |
| 96. Stam. 5-10 | 97 |
| 96. Stam. 2, 4, or 8 | 98 |
| 97. Trees or shrubs; lvs. simple | Rosaceæ |
| 97. Trees or shrubs; lvs. compound | Araliaceæ |
| 97. Herbs; fr. berry-like, juicy | Araliaceæ |
| 97. Herbs; fr. dry, splitting into 2 parts | Umbelliferæ |
| 98. Shrubs; style and stig. 1 | Cornaceæ |
| 98. Shrubs; stig. more than 1 | Hamamelidaceæ |
| 98. Herbs; style 1 | Onagraceæ |
| 98. Fine leafed aquatic; stig. 4 | Haloragidaceæ |
| 99. Ov. superior (hypogynous), in center of fl. and separate from perianth | 100 |
| 99. Ov. inferior (epigynous), appearing below perianth as a swelling at apex of stalk | 127 |
| 100. Stam. more numerous than lobes of corolla | 101 |
| 100. Stam. as many as corolla lobes, and directly in front of them | 105 |
| 100. Stam. between the corolla lobes, or fewer than the lobes | 106 |
| 101. Trees; stam. attached to base of corolla; styles 4 | Ebenaceæ |
| 101. Herbs | 102 |
| 102. Petals all alike | 103 |
| 102. Petals very different from one another | 104 |

103. Stam. 5-10, separate	Oxalidaceæ
103. Stam. many, their stalks united into a tube	Malvaceæ
104. One or two pet. sac-like; stam. 6, in 2 sets	Fumariaceæ
104. Fl. sweet-pea shaped; stam. 10, their stalks united	Leguminosæ
104. Stam. 4-8, in 1 or 2 groups; pet. 3	Polygalaceæ
105. Styles 5: fl. pink or white	Plumbaginaceæ
105. Style 1: fl. yellow or pink	Primulaceæ
106. Corolla lobes all alike (regular)	107
106. Corolla lobes different from one another	122
107. Stam. as many as corolla lobes	108
107. Stam. fewer than corolla lobes	118
108. Ov. 2: stig. often united	109
108. Ov. deeply 4-lobed	110
108. Ov. 1, not deeply lobed	111
109. Stam. not united, often touching	Apocynaceæ
109. Stam. united with each other and with stigma	Asclepiadaceæ
110. Lvs. alternate	Borraginaceæ
110. Lvs. opposite	Labiataæ
111. Lvs. entire, all from the ground; fls. in narrow spikes; corolla small, dry and hard	Plantaginaceæ
111. Lvs. some or all on the stem	112
111. Leafless, yellow, twining parasite	Convolvulaceæ
112. Ov. 1-celled	113
112. Ov. 2-10 celled; herbs with stam. on tube of corolla	114
113. Lvs. entire, perfectly smooth	Gentianaceæ
113. Lvs. lobed or compound, hairy	Hydrophyllaceæ
114. Stam. 4; lvs. opposite	Verbenaceæ
114. Stam. 5, or rarely more	115
115. Fr. 2-6 seeded	116
115. Fr. many-seeded, dry or juicy	Solanaceæ
116. Twining vines; corolla showy	Convolvulaceæ
116. Not twining	117
117. Fl. white, solitary, 4-5 cm. long; stig. 2	Convolvulaceæ
117. Fl. 1-2 cm. long, in groups; stig. 3	Polemoniaceæ
117. Fl. 0.5-2 cm. long, in groups; stig. 2	Hydrophyllaceæ
118. Stam. 4, in pairs	119
118. Stam. 2	120
119. Corolla blue, the tube 2.5-4 cm. long; ov. many seeded	Acanthaceæ
119. Corolla tube 2-10 mm. long; ov. 2-4 seeded	Verbenaceæ
120. Ov. deeply 4-lobed	Labiataæ
120. Ov. 2-celled, not 4-lobed	121
121. Herbs with leafy stem	Scrophulariaceæ
121. Trees or shrubs	Oleaceæ
122. Stam. with anthers 5, attached to corolla	123
122. Stam. with anthers 2 or 4	124

KEY TO FLOWERING PLANTS

- 123. Stalks of stam. wooly Scrophulariaceæ
- 123. Stalks of stam. not wooly Solanaceæ
- 124. Trees or woody vines Bignoniaceæ
- 124. Low, yellowish, leafless parasite Orobanchaceæ
- 124. Submerged aquatic, with threadlike. lfts. bearing tiny pouches Lentibulariaceæ
- 124. Ordinary, terrestrial, leafy herbs 125
- 125. Ov. not deeply 4-lobed 126
- 125. Ov. deeply 4-lobed; lvs. opposite Labiatæ
- 126. Ov. 1-celled, 1-seeded; fr. turned downward Phrymaceæ
- 126. Ov. 2-celled, many seeded Scrophulariaceæ
- 126. Ov. 2-4 celled, 2-4 seeded; fr. not turned downward Verbenaceæ
- 127. Tendril bearing herbaceous vine Cucurbitaceæ
- 127. Tendrils none 128
- 128. Stam. separate from one another 129
- 128. Stam. united by their anthers into a ring or tube 134
- 129. Fls. in dense heads surrounded by an involucre 130
- 129. Fls. separate, or if crowded, without involucre 131
- 130. Anthers parallel and touching; often monoecious; ov. 1-celled Compositæ
- 130. Anthers wide apart; ov. 1-celled Dipsacæ
- 130. Anthers wide apart; ov. 2-celled Rubiaceæ
- 131. Stam. free from corolla or nearly so, as many as its lobes; stipules none; juice milky Campanulaceæ
- 131. Stam. attached to corolla tube 132
- 132. Stam. 1-3, fewer than corolla lobes Valerianaceæ
- 132. Stam. 4-5; lvs. opposite or whorled 133
- 133. Lvs. opposite, without stipules Caprifoliaceæ
- 133. Lvs. opposite with stipules, or whorled Rubiaceæ
- 134. Fls. separate, with evident calyx and corolla Lobeliaceæ
- 134. Fls. in dense heads surrounded by an involucre; calyx reduced to hairs, scales or zero Compositæ

KEY TO MONOCOTYLEDONEAE

- 1. Fls. minute, in chaffy bracts or scales without a 3-parted perianth 2
- 1. Fls. not in chaffy bracts 3
- 2. Stems hollow, cylindrical; lvs. 2-ranked; fls. 2-bracted Gramineæ
- 2. Stems solid, triangular; lvs. 3-ranked; fls. 1-bracted Cyperaceæ
- 3. Aquatic plants 4
- 3. Terrestrial plants 8
- 4. Leafless plants. Tiny, floating bodies (1-3 mm.) Lemnaceæ
- 4. Leafy plants 5

5. Lvs. floating or submerged	Potamogetonaceæ
5. Lvs. not floating or submerged	6
6. Lvs. linear with no distinction between stalk and blade. Fls. without petals, in heads	7
6. Fls. with petals, in racemes or panicles	Alismataceæ
7. Heads long and narrow	Typhaceæ
7. Heads globular	Sparganiaceæ
8. Fls. stalkless on a thick axis forming a spike	9
8. Fls. not on thick axis	10
9. Spike cylindric with seed-bearing fls. at base and pollen-bearing fls. above; axis woody	Typhaceæ
9. Axis of spike fleshy, soft	Araceæ
10. Climbing or twining stems	11
10. Non-twining stems	12
11. Fls. small in racemes or panicles	Dioscoreaceæ
11. Fls. small, green, in globular umbels	Liliaceæ
12. Fls. greenish or brown, chaffy; lvs. less than 5 mm. wide or none	Juncaceæ
12. Fls. with conspicuous perianth	13
13. Ov. inferior, appearing below perianth as a swelling at apex of stalk	14
13. Ov. superior, in center of fl. and separate from perianth	19
14. Lvs. grasslike, 5 mm. or less wide	15
14. Lvs. broader than 5 mm.	16
15. Fls. yellow, 1-2 cm. across	Amaryllidaceæ
15. Fls. blue or white; if yellow, 4-6 cm. long	Iridaceæ
16. Lvs. with one edge toward stem; stam. 3	Iridaceæ
16. Lvs. with a flat side toward stem	17
17. Anther-bearing stamens 6	Amaryllidaceæ
17. Anther-bearing stamens 1 or 2	18
18. Plants 6-20 dm. tall; lvs. 1.5 dm. wide or more; cult.	Cannaceæ
18. Plants 1-10 dm. tall; lvs. 8 cm. or less wide. Native	Orchidaceæ
19. Fls. with green sepals	20
19. Fls. with sepals and petals colored alike	Liliaceæ
20. Stems leafy; fls. clustered	Commelinaceæ
20. Stems naked, with three lvs. and 1 fl. at top	Liliaceæ

GRINNELL COLLEGE
DEPARTMENT OF BOTANY