

QH
81
.A44
no.2

MBL/WHOI



0 0301 0026793 6



THE AMERICAN MIDLAND NATURALIST

Monograph No. 2

THE AMERICAN MIDLAND NATURALIST

Monograph Series

EDITORIAL STAFF

THEODOR JUST	<i>Botany</i>
Editor, University of Notre Dame	
EDWARD A. CHAPIN	<i>Entomology</i>
U. S. National Museum, Washington, D. C.	
KENNETH W. COOPER.....	<i>Cytology and Genetics</i>
Princeton University, Princeton, N. J.	
CARROLL LANE FENTON.....	<i>Invertebrate Paleontology</i>
Rutgers University, New Brunswick, N. J.	
JOHN HOBART HOSKINS.....	<i>Paleobotany</i>
University of Cincinnati, Cincinnati, Ohio	
REMINGTON KELLOGG	<i>Mammalogy</i>
U. S. National Museum, Washington, D. C.	
JEAN MYRON LINDALE.....	<i>Ornithology</i>
Hastings Reservation, Monterey, California	
GEORGE WILLARD MARTIN.....	<i>Mycology</i>
State University of Iowa, Iowa City, Iowa	
KARL PATTERSON SCHMIDT.....	<i>Ichthyology and Herpetology</i>
Chicago Natural History Museum, Chicago, Illinois	
HARLEY JONES VAN CLEAVE.....	<i>Invertebrate Zoology</i>
University of Illinois, Urbana, Illinois	

1990

QH
81
.A44
no. 2

THE AMERICAN MIDLAND NATURALIST

Monograph No. 2

Edited by Theodor Just

Published by the University of Notre Dame,

Notre Dame, Ind.

FLORA OF ILLINOIS

Containing keys for identification of
the flowering plants and ferns

By **GEORGE NEVILLE JONES**

Assistant Professor of Botany

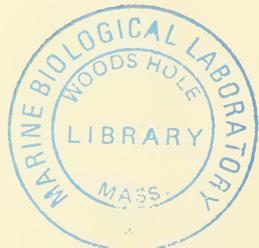
University of Illinois

The University Press

Notre Dame, Ind.

April, 1945

MBL



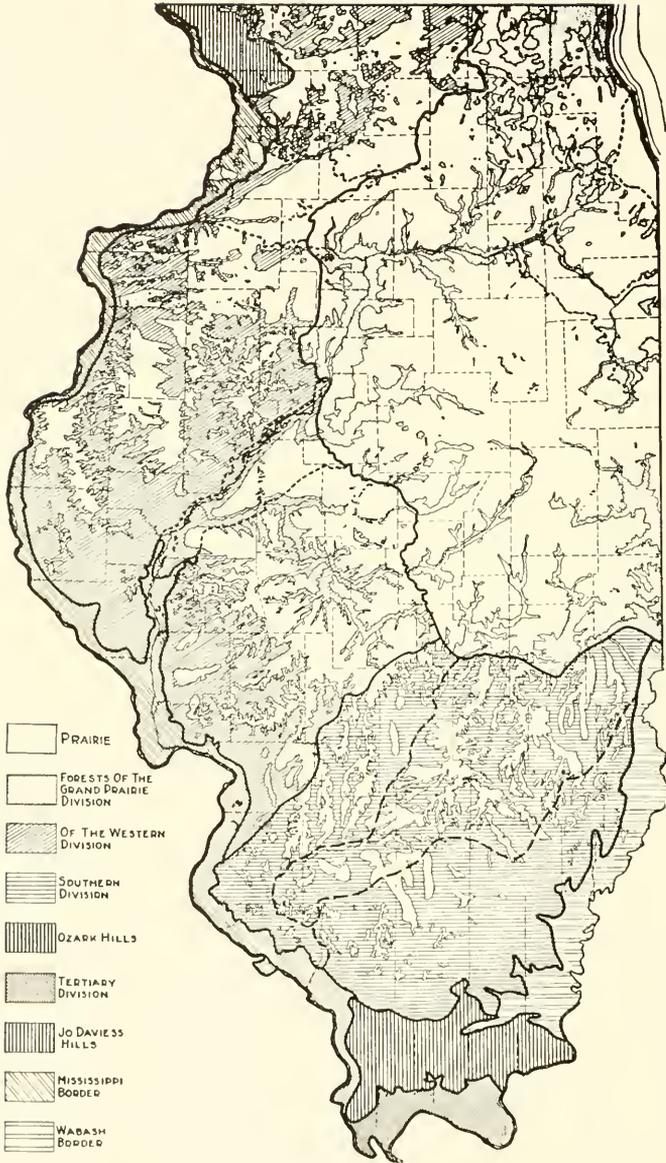
Copyright, 1945
by
The American Midland Naturalist
University of Notre Dame
Notre Dame, Ind.

CONTENTS

	PAGE
Introduction	1
Flora and Vegetation	
Description of the Area	2
Vegetational Divisions	4
Systematic Treatment	
Key to the sections	8
Key to the families	9
Keys to the genera and species	32
Glossary	274
Bibliography	284
Taxonomic Monographs and Revisions	286
Author Index	298
Index of Plant Names	301

FIGURES

Vegetational Map of Illinois	vii
County Map of Illinois	273



VEGETATIONAL MAP OF ILLINOIS. The boundaries of the principal geographical divisions of the state are indicated by solid lines, and their subdivisions by broken lines. Shading, as shown in the key, indicates approximately the areas that formerly were forested. (Reproduced by permission from A. G. Vestal's map of 1930, which was based on C. J. Telford's map in Illinois Nat. Hist. Surv. Bull. vol. 16, 1926).

Flora of Illinois

Introduction

The following synopsis of the flora of Illinois is based on field and herbarium studies carried on during the past five years. The principal objectives in its preparation have been to furnish a concise account of the vascular plants of Illinois, and to provide a convenient means of identifying them. No comprehensive treatment of the botany of this state has hitherto been published, and it is hoped that the present study may serve to stimulate further interest in the local flora.

This study is based mainly upon material contained in the Herbarium of the University of Illinois, which consists of nearly 300,000 specimens from various parts of the earth, of which approximately one-fourth were collected in Illinois. These comprise all or part of the collections of many Illinois botanists, including M. S. Bebb, F. Brendel, Agnes Chase, V. H. Chase, H. A. Gleason, E. Hall, E. J. Hill, F. E. McDonald, W. S. Moffat, H. N. Patterson, R. Ridgway, J. Schneck, and others. The writer's collections of the vascular plants of Illinois consist of approximately 15,000 sheets. In addition, the herbaria of the Field Museum of Natural History, and the Missouri Botanical Garden, have been consulted. Mr. V. H. Chase of Peoria has generously placed at the writer's disposal his rich personal collection and that of the Peoria Academy of Science. Dr. G. D. Fuller, Professor of Botany, Emeritus, at the University of Chicago, and Curator of the Herbarium of the State Museum at Springfield, has contributed a number of specimens and has given valued help in other ways. Other specimens have been donated by several former students, including Mr. Robert Evers of Quincy, and Mr. Richard Schneider of Kankakee.

During the preparation of these keys numerous sources of information have been drawn upon. The standard botanical manuals,* and monographs, have been of course a constant guide. Special mention should be made of Deam's excellent *Flora of Indiana* (1940). Parts of the keys to the families

* Including: Robinson & Fernald, *Gray's New Manual of Botany* (ed. 7) 1908; Britton, *Manual of the Flora of the Northern States and Canada* (ed. 3) 1907; Britton & Brown, *Illustrated Flora of the Northern States* (ed. 2) 1913; Rydberg, *Flora of the Prairies and Plains*, 1932; Bailey, *Manual of Cultivated Plants*, 1924; Small, *Manual of the Southeastern Flora*, 1933; Hitchcock, *Manual of the Grasses of the United States*, 1935; Rehder, *Manual of Cultivated Trees and Shrubs* (ed. 2) 1940. The following publications of the Illinois Natural History Survey are useful: *Illinois Wild Flowers*, by W. B. McDougall; *Trees of Illinois*, by R. B. Miller & L. R. Tehon; and *Shrubs of Illinois*, by L. R. Tehon. Other works containing data of value to the student of the flora of Illinois are: Pepoon, H. S., *Annotated Flora of the Chicago Area*; Palmer, E. J., & Steyermark, J. A., *Annotated Catalogue of the Flowering Plants of Missouri*, and Steyermark, J. A., *Spring Flora of Missouri*; Fassett, N. C., *Spring Flora of Wisconsin*; and Peattie, D. C., *Flora of the Indiana Dunes*.

have been adapted (by permission) from a similar key prepared several years ago by Mr. P. C. Standley, and which appeared in volume 21 of the Contributions of the United States National Herbarium. For convenience, the keys to the families have been divided into sections. Trees and shrubs may be usually keyed out largely on vegetative characters — a considerable advantage in identifying those plants when flowering specimens are not available. The keys to species include, in addition to diagnostic characters, a statement of habitat, time of flowering, suitable common name, and relevant synonymy, the intention having been to correlate the valid name of the plant with other names that may be found in the older manuals. The known distribution in Illinois of the indigenous species was first plotted on a series of outline maps, the data in all instances having been compiled from duly vasaed specimens, but on account of the necessity for extreme brevity it has been possible to include only the briefest summary of the geographical ranges of the species in Illinois. An attempt has been made to indicate frequency of occurrence by use of the terms common, local, infrequent, etc. For rare plants, specimens are often cited by collector and number or date, although exact localities, even when these are known, are for obvious reasons not mentioned. All species of vascular plants known to the writer to grow spontaneously in Illinois have been included. Further study, however, will probably reveal the presence of additional species. With few exceptions no species has been admitted unless authentic specimens from Illinois have been examined. For the sake of uniformity and convenience the sequence of families is chiefly that of Engler & Diels.

Although it is now almost a century and a half since the first botanical explorers visited Illinois, our knowledge of the botany of this region is far from complete. In a few areas fairly adequate botanical collections have been made, but more than half of the 102 counties of Illinois, according to the records at present, are almost wholly unexplored botanically. The distribution of the "lower plants" of Illinois is comparatively unknown, and we lack even a checklist of the algae, fungi, and bryophytes. Obviously, much work remains to be done on the botany of Illinois.

Thanks are due Professor A. G. Vestal of the University of Illinois for aid in writing the account of the vegetational divisions; to Florence Freeman Jones, for help in preparing manuscript; to Professor Alfred Rehder, and Mr. E. J. Palmer, of the Arnold Arboretum of Harvard University, for identification of certain ligneous plants, and to Dr. Leon Croizat for bibliographical aid. The assistance of these persons is gratefully acknowledged.

Flora and Vegetation

DESCRIPTION OF THE AREA

Illinois is part of the Great Central Plain of North America, and is situated between 37° and 42° N. lat., and 87° and 91° W. long. It is bounded on the north by Wisconsin, on the east by Indiana, on the west by

Iowa and Missouri, and on the south by Kentucky. The maximum length is 380 miles, and the width more than 200 miles. Its area is approximately 57,926 square miles. Physiographically, most of this state except the southern portion lies in the Till Plains Section of the Central Lowland Province. Biogeographically, almost all of Illinois lies in the Austral Zone. The great majority of native species of plants are therefore of southern affinities, and the boreal element is extremely small. The Austroriparian Province enters the state only at its extreme southern end. The average elevation above sea level is about 600 feet. The highest point is 1257 feet altitude at Charles Mound in Jo Daviess county along the Wisconsin-Illinois boundary. Although most of the area has a low elevation and comparatively level surface there is a good drainage system with more than 275 streams, which may be grouped in two river systems, one having the Mississippi River, and the other the Wabash and Ohio rivers as its outlet. The soils of Illinois are remarkable for their fertility, and agriculture is one of the important occupations. The better agricultural districts are characterized by a black loam, and the alluvial soil of the river valleys is especially fertile. On many of the river bluffs the soil is loess. Nearly all the rocks of Illinois are sedimentary and belong to the Paleozoic era. Igneous rocks are found only in a few places, and metamorphic rocks are almost unknown.

During the Glacial period there were four advances of the ice-sheet into Illinois. The ice of the third, or Illinoian, stage covered approximately nine-tenths of the state, and extended southward to the Ozark Ridge, the most southerly latitude reached by the North American ice-sheet. Hence, there are only three districts in Illinois that have remained untouched by the Pleistocene glaciation. These are 1) the seven southernmost counties of the state, 2) an area between the Mississippi and Illinois rivers in Calhoun County, and 3) Jo Daviess county and a small portion of Carroll County. The second and third districts are part of a much larger non-glaciated region known as the Driftless Area, which occupies adjacent portions of Wisconsin, Minnesota, and Iowa.

The flora and fauna of Illinois are similar to those of adjacent states. Extensive forests and grasslands formerly covered the entire region. In the northern part there were large prairies with tongues of forest extending along the principal watercourses. At the present time, although the vegetation has been greatly disturbed, the flora is still rich and varied, with a large number of species of grasses, as well as other herbs, and ligneous plants. The more extensive forested areas are chiefly in the southern counties, especially on the flood plains of the principal rivers, and in the Ozark Hills. These forests are composed almost entirely of hardwoods. Oak, hickory, maple, and ash are among the more common kinds of trees.

Formerly one of the most remarkable features of the state of Illinois was its great stretches of prairies covered with rich growth of tall grasses and several hundred species of other herbaceous flowering plants. The most extensive of these prairies occurred in northern and central Illinois, and were interspersed with numerous swamps and shallow ponds which have long since

disappeared. However, the original prairie has all but vanished from the Illinois landscape, and no typical area of upland prairie remains for botanical study. Extensive tracts of these upland prairies were swampy, but almost all have been drained and their natural vegetation has since disappeared except from roadsides and along the railroads. Other areas are covered chiefly with sand or sandy loam, and support a flora of psammophilous species, including *Leptoloma cognatum*, *Tephrosia virginiana*, *Helianthemum canadense*, *Oenothera rhombipetala*, *Phlox bifida*, *Lithospermum croceum*, and *Chrysopsis villosa*. The principal sand-areas are in the northern half of the state.

Statistical summary.—The total known number of native and naturalized species of vascular plants growing spontaneously in Illinois is 2124. Of this number, 1786 are indigenous, and 338 have been either adventive or introduced, and are now more or less established. Trees and shrubs belong to 49 families, 111 genera, and 302 species. *Salix* has 17 species and *Quercus* 19. In the genus *Crataegus*, 14 species are recognized as occurring within the boundaries of the state. Herbaceous plants belong to 113 families, 713 genera, and 1822 species. *Carex* is the largest genus with 114 species. There are 70 genera and 215 species of grasses, of which 166 species are native. Panicum is the largest genus of grasses with 36 species. Twelve genera and 26 species of orchids are recorded for Illinois. Compositae is the largest family, with 63 genera and 243 species. Aster is the largest genus in this family with 34 species; *Solidago* comes next with 22 species. For a "prairie state" there is a surprisingly large number of ferns and fern-allies, and the number of species of ligneous plants is remarkably high.

	Families	Genera	Species
Ferns and fern-allies.....	10	29	63
Gymnosperms	4	7	11
Monocotyledons	22	154	575
Dicotyledons	116	526	1475
T o t a l	152	716	2124

VEGETATIONAL DIVISIONS

The spontaneous flora of Illinois comprises a vegetation that is rather sharply differentiated into prairie and forest. Each of these two types of vegetation includes a number of communities or associations, reflecting the transitions in temperature and rainfall, as well as the topographic and edaphic conditions. On the accompanying map the ecological divisions are based principally upon the broader topographical features, including the effects of glacial geology. The area affected by the recent (Wisconsin) glaciation is mostly treeless, and extensive areas of upland prairie formerly occurred in the western division. It will be noted that the botanical areas are correlated with the various agricultural districts, and are thus intimately connected with various phases of human geography. Moreover, it is obvious that faunal areas parallel the natural botanical divisions, and thus these divisions are useful to zoologists, as well as to students of the applied branches of biology, including

plant pathology, agriculture, etc. The biotic divisions now recognized are as follows:

Grand Prairie Division	Southern Division
Western Division	Wabash Border
Jo Daviess Hills	Ozark Hills
Mississippi Border	Tertiary Division

GRAND PRAIRIE DIVISION

The term is applied to the eastern portion of Illinois, and includes all the area of recent or Wisconsin glaciation which is for the most part treeless. This area has the youngest soils of the state, in which leaching of dissolved materials has not progressed to any great extent. Characteristic prairie-plants, including *Silphium terebinthinaceum*, *Eryngium yuccifolium*, *Sorghastrum nutans*, *Andropogon furcatus*, and *Sporobolus heterolepis*, are frequent in these areas of black prairie soil. The morainal country of Lake and McHenry counties is hilly, and was formerly extensively forested. Small tracts of timber still remain. *Quercus macrocarpa* is one of the conspicuous trees. *Tilia americana* and *Quercus borealis* are frequent in drier habitats. Many of the lower areas are occupied by marshes, bogs, and lakes, and in these places colonies of *Larix laricina* are to be found.

The counties near Lake Michigan contain a number of northern species, including *Larix laricina*, *Pinus banksiana*, *Scheuchzeria americana*, *Carex aurea*, *Eriophorum angustifolium*, *Betula pumila*, *Ribes hirtellum*, *Shepherdia canadensis*, *Cornus canadensis*, *Andromeda glaucophylla*, and *Chamaedaphne calyculata*. The beach area of Lake Michigan has numerous sand-ridges and dunes, with intervening sand-prairies and sloughs. Several species are peculiar to this area, such as: *Juniperus canadensis*, *J. horizontalis*, *Ammophila breviligulata*, *Calamovilfa longifolia*, *Salix adenophylla*, *Cakile edentula*, *Potentilla anserina*, *Prunus pumila*, *Lathyrus maritimus*, *Chamaesyce polygonifolia*, *Arc-tostaphylos uva-ursi*, and *Artemisia caudata*.

WESTERN DIVISION

This division includes most of the western part of Illinois. Much of the area is covered by relatively old glacial drift (Illinoian) with recent deposits of loess. These prairie areas contain several xerophytic western species, including *Bouteloua gracilis*, *Stylyma pickeringii*, *Lesquerella argentea*, *Amorpha canescens*, *Opuntia rafinesquii*, and *Synthyris bullii*. Areas of lower elevation include prairie sloughs. Southwest of the Grand Prairie, and west of the Illinois River, more than half the area is occupied by forest, and only a few flat upland prairies of fair size, such as the Bucknell and Carthage prairies occur. This condition has been brought about by the extensive dissection of the country near the larger rivers.

JO DAVIESS HILLS

The Driftless Area in Jo Daviess County has served as a refuge for pre-glacial plants. At the present time there are several species of limited distribu-

tion within the state, including *Primula mistassinica*, *Ranunculus rhomboideus*, *Anemone ludoviciana*, and others. Much of the terrain is maturely dissected, and consists of steep, forested slopes. The tops of the plateaus are treeless or only sparsely forested. Along the cliffs of the larger streams there are several northern species of trees, including *Pinus strobus*, *Taxus canadensis*, and *Betula papyrifera*, as well as a number of herbaceous plants.

MISSISSIPPI BORDER

The dry western-exposed bluffs of the Mississippi River and of the lower Illinois River have intermittent areas of grassland vegetation containing western prairie species. Sand-prairies are present in the Hancock and Oquawka areas. In a few places sand has been carried by the wind from the river valley to the uplands. Along the northern and central river bluffs the terrain has been deeply eroded, with resultant interruptions of the mantle of loess, and are thus at present not continuously forested. The American beech, *Fagus grandifolia*, and the tulip tree, *Liriodendron tulipifera*, extend northward to Randolph and Jackson counties. The common trees of the northern part of the river bottoms of the Mississippi River are *Acer saccharinum*, *Ulmus americana*, *Betula nigra*, *Quercus palustris*, and *Fraxinus americana*. In the southern part of this area *Liquidambar styraciflua* and *Quercus lyrata* are common.

SOUTHERN DIVISION

The Southern Division is the area of oldest Illinoian Drift. Later depositions of loess with subsequent weathering have complicated the soil profiles. With the exception of the bottomlands, which have a vegetation similar to that of the alluvial soils of the Mississippi Border, the soils throughout the Southern Division are generally poor for plant growth on account of their fine texture and impervious subsoil. Thus they prevent good drainage and aeration, with the result that there is too much water in spring and early summer, and too little in late summer. The principal upland species of woody plants are *Quercus palustris*, *Q. imbricaria*, *Q. stellata*, and *Gleditsia triacanthos*. *Sassafras albidum* and *Diospyros virginiana* are of not infrequent occurrence.

WABASH BORDER

This division includes the bottomlands and bluffs of the Wabash and Ohio rivers, as well as the adjoining upland areas. A great variety of species of ligneous plants is to be found in the forested areas, including *Celtis laevigata*, *Acer saccharum*, *Tilia americana*, *Quercus borealis*, *Nyssa aquatica*, and *Liriodendron tulipifera*. Three species of oak, *Quercus rubra*, *Q. prinus*, and *Q. shumardii*, as well as *Catalpa speciosa*, are characteristic species of this part of the state. The sweet gum, *Liquidambar styraciflua*, extends northward to Crawford County, and the mistletoe, *Phoradendron flavescens*, parasitic principally on elm and other bottomland trees, is known to occur as far north as Lawrence County. This bottomland vegetation extends many miles up the tributaries of the Wabash River.

OZARK HILLS

The Ozark Ridge of southern Illinois is the most conspicuous topographic feature in the state. The axis of the ridge lies along an east-west line across the southern part of the state from Jackson and Union counties to Gallatin and Hardin counties. The highest point is Williams Hill in Pope County, with an elevation of 1065 feet. The flora of the Ozark Hills has been little affected by the Illinois ice-sheet, which apparently did not reach beyond the northern edge of the area. There are several species of vascular plants which have not extended their ranges northward in Illinois and are therefore peculiar to this part of the state. Some of these plants are: *Polypodium ceteracinum*, *Pinus echinata*, *Smilax bona-nox*, *Ulmus alata*, *Magnolia acuminata*, *Sedum pulchellum*, *Rhododendron nudiflorum*, *Vaccinium arboreum*, and *Phlox stellaria*.

TERTIARY DIVISION

The Mississippi Embayment of the Coastal Plain of the south Atlantic and Gulf states extends into Illinois as far as the southern base of the Ozark Hills. The Tertiary deposits in the bottomlands of Alexander, Pulaski, and Massac counties contain a number of austroriparian species that have not migrated northward into the glaciated areas. Some of these are: *Taxodium distichum*, *Arundinaria gigantea*, *Quercus phellos*, *Planera aquatica*, *Itea virginica*, *Wisteria macrostachya*, *Nyssa aquatica*, *Bumelia lycioides*, and *Bignonia capreolata*.

SYSTEMATIC TREATMENT

Key to the Sections

GROUP I. Seed Plants. Plants normally reproducing by seeds containing an embryo.
Gymnosperms and Angiosperms.

A. Herbaceous Plants

1. Plants grasses, sedges, or rushes; perianth green or absentSECTION 1, p. 9
1. Plants not grasses, sedges, or rushes.
 2. Terrestrial plants, not floating on or submerged in water; sometimes growing at the edge of water but then usually erect.
 3. Leaves compound, composed of few or many leaflets, or divided to the midrib or baseSECTION 2, p. 9
 3. Leaves simple, sometimes lobed, but the lobes not extending to the midrib or base (leaves rarely absent or reduced to spines or scales).
 4. Stems not climbing or twining; tendrils absent; plants never cacti or cactus-like.
 5. Plants green, normally possessing chlorophyll, not parasitic or saprophytic or noticeably so.
 6. Plants without a leafy stem, or the stems underground, the flower-stalks leafless, or with a single leaf or a pair or whorl of leaves subtending the inflorescenceSECTION 3, p. 11
 6. Plants with leafy stems, the leaves sometimes reduced to scales; stem sometimes with only a single leaf, but this borne far below the inflorescence.
 7. Leaves evidently parallel-veined; mostly Monocotyledons (except *Eryngium* and *Tragopogon*) with the floral parts, or some of them in threes, not in fives; stem in cross-section showing the vascular bundles irregularly distributed throughout the pith or around a central cavity; cotyledon 1SECTION 4, p. 13
 7. Leaves not evidently parallel-veined, almost always net-veined (or sometimes apparently only 1-veined); mostly Dicotyledons (except *Trillium* and *Smilax*) with the floral parts often in fives or fours, only exceptionally in threes; stem in cross-section showing a central pith (or, in hollow stems, a cavity) surrounded by a circle of vascular bundles; cotyledons 2.
 8. Leaves, or at least some of them, opposite or whorled.
 9. Leaves entireSECTION 5, p. 13
 9. Leaves more or less toothed or lobedSECTION 6, p. 16
 8. Leaves alternate.
 10. Leaves entireSECTION 7, p. 17
 10. Leaves toothed (or sinuate) or lobedSECTION 8, p. 19
 5. Plants parasitic or saprophytic, without chlorophyll; leaves reduced to scales; fruit a capsuleSECTION 9, p. 21
 4. Stems either twining or climbing (tendrils sometimes present); or else cactus plants with conspicuously jointed, succulent, spiny stems.....SECTION 10, p. 21
 2. Aquatic plants, floating on or submerged in water (or sometimes growing on muddy or sandy shores)SECTION 11, p. 22

B. Trees and Shrubs (including woody climbers and trailers)

11. Gymnosperms (except *Hudsonia*). Leaves needle-like (acicular), scale-like, or subulate, evergreen (deciduous in *Larix* and *Taxodium*)SECTION 19, p. 31
11. Angiosperms. Leaves not as above; "broadleaf" trees and shrubs.
 12. Flowers appearing with or after the leaves.
 13. Leaves opposite or whorledSECTION 12, p. 23

- 13. Leaves alternate.
 - 14. Leaves compoundSECTION 13, p. 25
 - 14. Leaves simple.
 - 15. Leaves entireSECTION 14, p. 26
 - 15. Leaves toothed or lobed, not entire.
 - 16. Leaves lobedSECTION 15, p. 27
 - 16. Leaves toothed, but not lobed.....SECTION 16, p. 28
 - 12. Flowers on leafless or almost leafless twigs, appearing before the leaves (or in autumn when they are falling, in *Hamamelis*).....SECTION 17, p. 29
- GROUP II. Ferns and Fern-allies. Plants without flowers or seeds, reproducing by spores borne in sporangiaSECTION 18, p. 30

Key to the Families

Section 1. Grasses (or Grass-like Plants), or Sedges, and Rushes

- 1. Flowers enclosed by chaffy scales; perianth none, or of bristles; fruit a grain or an achene.
 - 2. Stem usually cylindrical, usually hollow except at the nodes; leaves in 2 rows on the stem, the sheaths usually split; fruit usually a grain..... 22. GRAMINEAE
 - 2. Stem cylindrical or triangular, solid, the nodes usually not conspicuous; leaves in 3 rows on the stem, the sheaths not split; fruit an achene.....23. CYPERACEAE
- 1. Flowers not enclosed by chaffy scales; perianth 6-parted; stems terete; fruit a capsule.
 - 3. Stem not glandular30. JUNCACEAE
 - 3. Stem glandular*Tofieldia* in 31. LILIACEAE

Section 2. Herbs with Compound (or Deeply Divided) Leaves

- 1. Plants without leafy stems, the leaves all basal and the flowering stems leafless.
 - 2. Leaves 2-cleft; flowers white; fruit a capsule opening by a lid*Jeffersonia* in 66. BERBERIDACEAE
 - 2. Leaflets 3 or more; fruit not opening by a lid.
 - 3. Flowers on a spadix surrounded by a spathe; fruit a berry.....*Arisaema* in 24. ARACEAE
 - 3. Flowers in racemes or umbels.
 - 4. Leaflets 3.
 - 5. Leaflets entire; flowers regular; stamens 10.....86. OXALIDACEAE
 - 5. Leaflets not entire.
 - 6. Flowers papilionaceous; stamens 10.....84. LEGUMINOSAE
 - 6. Flowers regular; stamens numerous.....83. ROSACEAE
 - 4. Leaflets numerous; flowers irregular.....70. FUMARIACEAE
 - 1. Plants with stems bearing 1 or more leaves.
 - 7. Flowers borne in a dense head on a common receptacle surrounded or subtended by an involucre of bracts; fruit an achene; stipules none.....152. COMPOSITAE
 - 7. Flowers not borne in a dense head on a common receptacle surrounded or subtended by an involucre.
 - 8. Flowers on a spadix surrounded by a spathe; fruit a berry.....*Arisaema* in 24. ARACEAE
 - 8. Flowers not borne on a spadix surrounded by a spathe.
 - 9. Flowers in umbels; petals 5; stamens 5; ovary inferior.
 - 10. Fruit dry, composed of 2 carpels; styles 2.....119. UMBELLIFERAE
 - 10. Fruit a berry; styles 5, or 3, or 2.....118. ARALIACEAE
 - 9. Flowers not in umbels, or if so, the flowers not as above in all respects.
 - 11. Corolla papilionaceous; fruit a legume or loment; leaves alternate, usually stipulate.....84. LEGUMINOSAE
 - 11. Corolla not papilionaceous.
 - 12. Stem bearing only a single leaf or a pair or whorl of leaves.
 - 13. Sepals and petals each 4; fruit a pod; leaflets 3 or 5, toothed.....*Dentaria* in 71. CRUCIFERAE

13. Sepals 5 or more; petals 5 or none.
14. Pistils several to many, separate, simple; fruit achenes or follicles62. RANUNCULACEAE
14. Pistil 1; fruit a succulent drupe, or the seeds berry-like; petals small, gland-like.....*Caulophyllum* in 66. BERBERIDACEAE
12. Stem with usually 2 or more alternate leaves, or 2 or more pairs of leaves.
15. Leaves, or some of them, opposite.
16. Leaves pinnate or pinnately lobed.
17. Sepals 4, purple, petaloid; petals none; stamens numerous; plants climbing; achenes with hairy persistent styles*Clematis* in 62. RANUNCULACEAE
17. Sepals not as above; corolla present; stamens few; plants not climbing.
18. Flowers blue or white; fruit a capsule.
19. Corolla regular; stamens 5 132. HYDROPHYLLACEAE
19. Corolla 2-lipped; stamens 4 137. SCROPHULARIACEAE
18. Flowers yellow or pink.
20. Flowers yellow; stamens 10; fruit 5-angled, spiny...*Tribulus* in 90. ZYGOPHYLLACEAE
20. Flowers pink; stamens 3; fruit 1-seeded 147. VALERIANACEAE
16. Leaves palmately lobed, or digitate, or trifoliate; petals none; fruit an achene.
21. Flowers small, green, unisexual; leaves digitately divided into 5-11 serrate, acuminate divisions..... 45. CANNABINACEAE
21. Flowers not green; sepals petal-like62. RANUNCULACEAE
15. Leaves alternate.
22. Stems climbing; flowers purple (or white); leaves ovate or hastate, often 3-lobed or 3-divided.....*Solanum dulcamara* in 136. SOLANACEAE
22. Stems not climbing.
23. Corolla of united petals, blue or white; leaves pinnate or pinnately lobed; fruit a capsule.
24. Leaflets entire; style 1.....131. POLEMONIACEAE
24. Leaflets toothed or lobed; styles 2, or style 2-cleft 132. HYDROPHYLLACEAE
23. Corolla of separate or nearly separate petals, or petals none.
25. Corolla irregular, yellow or pink, 1-spurred; leaflets finely dissected; plants glabrous.....70. FUMARIACEAE
25. Corolla regular, or somewhat irregular, or absent, not spurred.
26. Leaflets 3, obcordate, otherwise entire; flowers yellow; fruit a capsule.....86. OXALIDACEAE
26. Leaflets not obcordate.
27. Leaves with stipules.
28. Flowers small, pink; plants annual, pubescent; leaves pinnate, the leaflets incised*Erodium* in 85. GERANIACEAE
28. Flowers yellow, white, or purple.
29. Leaflets entire; fruit a legume 84. LEGUMINOSAE
29. Leaflets toothed or lobed; fruit not a legume.

- 30. Stamens and petals perigynous 83. ROSACEAE
- 30. Stamens and petals hypogynous, or flowers dioecious 62. RANUNCULACEAE
- 27. Leaves without stipules.
 - 31. Petals and sepals each 3; flowers very small, axillary; annual plants with pinnate leaves.. 89. LIMNANTHACEAE
 - 31. Petals and sepals 4 or more, or absent; or the sepals united, sometimes only 2.
 - 32. Sepals 2, caducous (falling as the flower opens); plants with milky or yellowish juice; stamens numerous, hypogynous; fruit a capsule 69. PAPAVERACEAE
 - 32. Sepals 4 or 5; plants with watery juice.
 - 33. Petals and sepals each 4; fruit a pod.
 - 34. Leaves trifoliolate; stamens 6 or more, exserted 72. CAPPARIDACEAE
 - 34. Leaves not trifoliolate; stamens 6, four long and two short 71. CRUCIFERAE
 - 33. Petals 5 or none; sepals usually 5, sometimes 4; fruit an achene or follicle, or rarely a berry.
 - 35. Stamens and petals hypogynous, or flowers unisexual; sepals free 62. RANUNCULACEAE
 - 35. Stamens and petals perigynous; sepals united at base 83. ROSACEAE

Section 3. Herbs Without Leafy Stems; Leaves Simple

- 1. Leaves either pitcher-like or covered with glandular appendages; petals 5; fruit a capsule; insectivorous plants growing in bogs.
 - 2. Leaves large, pitcher-like; flower solitary, nodding.....73. SARRACENIACEAE
 - 2. Leaves small, covered with glandular appendages; flowers in a raceme 74. DROSERACEAE
- 1. Leaves not as above; plants not insectivorous.
 - 3. Flowers sessile in dense heads, or in spikes.
 - 4. Flowers in heads.
 - 5. Leaves net-veined, or apparently 1-veined; flower-heads surrounded by an involucre of bracts; stamens 5, inserted on the corolla, their anthers united in a tube; ovary inferior; fruit an achene 152. COMPOSITAE
 - 5. Leaves parallel-veined or somewhat translucent and showing many cross-veins.
 - 6. Leaves subulate, soft, translucent, loosely cellular, round in cross-section; flowers whitish, monoecious; capsule 2-3-seeded26. ERIOCAULACEAE
 - 6. Leaves grass-like, stiff, flat, linear, twisted; flowers yellow, perfect; capsule many-seeded27. XYRIDACEAE
 - 4. Flowers in spikes (or on a spadix).
 - 7. Flowers crowded on a cylindrical apparently lateral spadix 6-8 cm. long; petals 0; sepals 0; stamens 6; leaves linear; rhizomes thick, aromatic; plants of swampy ground*Acorus* in 24. ARACEAE
 - 7. Flowers not as above.
 - 8. Ovary superior.
 - 9. Stamens 6; leaves cordate; flowers blue or white, 2-lipped; fruit 1-seeded 29. PONTEDERIACEAE

9. Stamens 4, or rarely 2; flowers greenish; corolla 4-lobed; calyx of 4 persistent sepals144. PLANTAGINACEAE
8. Ovary inferior; flowers irregular; stamens 1 or 2.....36. ORCHIDACEAE
3. Flowers not sessile in dense heads or spikes.
10. Scapes with more than 1 flower.
11. Leaves terete or nearly so.
12. Flowers green, small, numerous, in elongated, bractless, spike-like racemes; perianth 6-parted19. JUNCAGINACEAE
12. Flowers pink, not in racemes.
13. Flowers in umbels; perianth 6-parted; stamens 6; plants with onion flavor and odor*Allium* in 31. LILIACEAE
13. Flowers in cymes; petals 5; sepals 2; plants inodorous*Talinum* in 57. PORTULACACEAE
11. Leaves not terete.
14. Corolla irregular, 2-lipped, often spurred; stamens 2 or 1; fruit a capsule.
15. Ovary superior; leaves absent, or dissected and bladder-bearing..... 138. LENTIBULARIACEAE
15. Ovary inferior; leaves entire, parallel-veined36. ORCHIDACEAE
14. Corolla regular.
16. Flowers or branches of the inflorescence in several or many whorls; achenes numerous, flattened; petals 3, white; leaves oval, cordate, hastate, or sagittate20. ALISMACEAE
16. Flowers not whorled; fruit a capsule.
17. Leaves evidently parallel-veined, narrow; petals 3, or perianth 6-parted.
18. Leaves 2-ranked (equitant); flowers usually blue, sometimes white, rarely reddish brown; stamens 3; ovary inferior.... 34. IRIDACEAE
18. Leaves not 2-ranked.
19. Flowers 4 or fewer, yellow or white; leaves sometimes pubescent; ovary inferior.....33. AMARYLLIDACEAE
19. Flowers numerous, or if few, orange or pink; leaves glabrous; ovary superior (or $\frac{1}{2}$ inferior) 31. LILIACEAE
17. Leaves net-veined; petals 5 or 4.
20. Flowers in an umbel, or 1-3 on slender pedicels; petals 5; stamens 5; calyx 5-lobed.....121. PRIMULACEAE
20. Flowers in cymes, panicles or racemes.
21. Corolla of 4 petals; sepals 4; stamens 6....71. CRUCIFERAE
21. Corolla of 5 petals; sepals 5.
22. Styles 2; anthers opening longitudinally; leaves not evergreen; fruit 1-loculed.....77. SAXIFRAGACEAE
22. Style 1; anthers opening by terminal pores; leaves evergreen; fruit a 5-loculed capsule....120. ERICACEAE
10. Scapes 1-flowered.
23. Leaves toothed or lobed; petals separate, or absent.
24. Fruit an achene; flowers yellow, bluish or white; petals sometimes absent, the sepals then petal-like; juice watery...62. RANUNCULACEAE
24. Fruit a capsule; leaves toothed or with toothed lobes; petals present.
25. Plants with red juice; leaves thickish; petals 4-15 (usually 8), white; flowers regular; capsule acute.....*Sanguinaria* in 69. PAPAVERACEAE
25. Plants with colorless juice; leaves thin; petals 5; flowers irregular, blue, yellow, or white; capsule obtuse.....108. VIOLACEAE
23. Leaves entire.
26. Leaves reniform, cordate, or ovate; fruit a capsule.
27. Leaves pubescent beneath, reniform; flowers brownish purple; calyx 3-lobed; petals none; stamens 12; ovary inferior; woodland plants*Asarum* in 49. ARISTOLOCHACEAE

- 27. Leaves glabrous; flowers blue or white.
 - 28. Petals, sepals, stamens each 5; staminodia present; stigmas 4; plants of bogs and springy places.....76. PARNASSIACEAE
 - 28. Perianth 6-parted; staminodia none; stamens 3; stigmas 3; plants of muddy shores.....*Heteranthera* in 29. PONTEDERIACEAE
- 26. Leaves not as above.
 - 29. Flowers on a spadix surrounded by a spathe; fruit a berry.....24. ARACEAE
 - 29. Flowers not on a spadix; spathe none; fruit not a berry.
 - 30. Leaves orbicular, peltate; flowers 10-25 cm in diameter, pale yellow; petals and stamens numerous*Nelumbo* in 63. NELUMBONACEAE
 - 30. Leaves not peltate; flowers smaller.
 - 31. Flowers irregular; ovary inferior; stamens 1 or 236. ORCHIDACEAE
 - 31. Flowers regular.
 - 32. Leaves equitant; flowers blue or white; ovary inferior; stamens 334. IRIDACEAE
 - 32. Leaves not equitant; ovary superior; stamens 631. LILIACEAE

Section 4. Mostly Monocotyledonous Herbs (Except Grasses, Sedges and Rushes) with Leafy Stems

- 1. Flowers in dense heads or spikes.
 - 2. Leaves cordate; flowers blue, 2-lipped; stamens 6.....*Pontederia* in 29. PONTEDERIACEAE
 - 2. Leaves not cordate.
 - 3. Plants growing in wet places; flowers greenish.
 - 4. Spikes cylindrical, the upper part staminate, the lower pistillate; plants 2-3 m. tall15. TYPHACEAE
 - 4. Heads spherical; plants not so tall16. SPARGANIACEAE
 - 3. Plants of dry ground; flowers not green.
 - 5. Leaves spiny- or bristly-margined; plants with watery juice*Eryngium* in 119. UMBELLIFERAE
 - 5. Leaves smooth-margined; plants with milky juice*Tragopogon* in 152. COMPOSITAE
- 1. Flowers not in dense heads.
 - 5. Ovary or ovaries superior.
 - 6. Carpels nearly separate; stamens 319. JUNCAGINACEAE
 - 6. Ovary compound.
 - 7. Flowers irregular, blue, enclosed or subtended by a small spathe; petals 3, unequal*Commelina* in 28. COMMELINACEAE
 - 7. Flowers regular; stamens 6.
 - 8. Flowers blue or purple; filaments pubescent; juice mucilaginous*Tradescantia* in 28. COMMELINACEAE
 - 8. Flowers not blue (sometimes lavender); filaments glabrous or nearly so.....31. LILIACEAE
 - 5. Ovary inferior, compound.
 - 9. Stamens 3; flowers regular; leaves equitant34. IRIDACEAE
 - 9. Stamens 1 or 2; flowers irregular; leaves not equitant36. ORCHIDACEAE

Section 5. Dicotyledonous Herbs (except Trillium) With Opposite or Whorled Entire Leaves

- 1. Flowers sessile in dense heads on a common receptacle surrounded or subtended by an involucre of bracts; fruit an achene. [*Pycnanthemum* (Labiatae), with flowers in dense head-like clusters, might also be sought here].
- 2. Stem with small prickles; chaff of the receptacle (among the flowers) with long rigid spine-like tips; stamens 4, distinct148. DIPSACACEAE

2. Stem not prickly; chaff of the receptacle not as above, sometimes absent; stamens 5, united by their anthers (syngenesious)152. COMPOSITAE
1. Flowers not sessile in dense heads on a common receptacle surrounded or subtended by an involucre of bracts.
3. Corolla of separate petals (or apparently so), or corolla absent (the calyx sometimes petal-like).
4. Leaves with black or pellucid dots, opposite, entire; flowers yellow or pink.
5. Styles 2-6106. HYPERICACEAE
5. Style 1121. PRIMULACEAE
4. Leaves not punctate.
6. Leaves with stipules; petals minute or absent; stigmas 2-4.
7. Petals 2 or 3; capsule several-seeded, the seeds reticulated; leaves oblanceolate or obovate; small plants of wet ground.....59. ELATINACEAE
7. Petals none; fruit a 1-seeded utricle55. ILLECEBRACEAE
6. Leaves without stipules.
8. Plants with milky juice; capsule deeply 3-lobed; upper leaves usually whorled; flowers small, white or greenish94. EUPHORBACEAE
8. Plants with colorless juice.
9. Flowers solitary; stamens 6; ovary superior, 3-loculedgenera in 31. LILIACEAE
9. Flowers not as above.
10. Flowers irregular, in spikes or racemes; sepals 5, three of them small, and two larger and colored like the 3 petals; fruit flattened.....93. POLYGALACEAE
10. Flowers regular, not in spikes or racemes.
11. Leaves in whorls.
12. Flowers axillary; leaves in fives or sixes; petals none; sepals 5; fruit a small 3-valved capsule; plants annual, prostrate 56. AIZOACEAE
12. Flowers in cymes or panicles; petals 5; plants perennial.
13. Leaves (at least the lower) in threes; flowers in cymes; petals entire; fruit a follicle*Sedum* in 75. CRASSULACEAE
13. Leaves mostly in fours, acuminate; inflorescence paniculate; petals lacinate; fruit a capsule*Silene* in 58. CARYOPHYLLACEAE
11. Leaves not whorled (or if so, not thick and succulent).
14. Calyx and corolla absent; flowers small, green, solitary, axillary; leaves spatulate or linear; styles 2, filiform; fruit notched; small plants of wet soil.....95. CALLITRICHACEAE
14. Calyx present; corolla present or absent.
15. Sepals separate.
16. Petals none; flowers crowded into an interrupted spike; calyx woolly; bracts scarious; leaves lanceolate, sessile52. AMARANTHACEAE
16. Petals usually present; inflorescence not as above.
17. Sepals 2; stem-leaves a single pair; petals pink or white; stamens 5; style 3-cleft.....*Claytonia* in 57. PORTULACACEAE
17. Sepals 5; leaves more than 1 pair.
18. Sepals equal or nearly so.
19. Petals white (sometimes absent); leaves with ordinary flat blades; stems usually soft.....58. CARYOPHYLLACEAE
19. Petals yellow; leaves small, scale-like or subulate, appressed or nearly erect.....*Sarothra* in 106. HYPERICACEAE
18. Sepals unequal, the 2 outer much narrower than the 3 inner ones; petals yellow, greenish, or

- purplish; stems rigid and almost woody.....107. CISTACEAE
15. Sepals united at least below.
20. Flowers surrounded by a calyx-like involucre, the calyx blue or pink, corolla-like; stamens 3-5, exserted.....54. NYCTAGINACEAE
20. Flowers not surrounded by an involucre; calyx green.
21. Petals and stamens hypogynous58. CARYOPHYLLACEAE
21. Stamens inserted on the calyx.
22. Stigma capitate; style 1; petals present (absent in *Peplis*); fruit a capsule.....113. LYTHRACEAE
22. Stigmas 2, sessile or nearly so; petals none; fruit a utricle.....*Scleranthus* in 55. ILLECEBRACEAE
3. Corolla sympetalous (petals united, at least below).
23. Corolla irregular (flowers zygomorphic).
24. Fruit of 4 small nutlets; ovary 4-lobed; stem 4-angled; leaves usually glandular-punctate; plant usually with mint odor.....135. LABIATAE
24. Fruit a capsule; ovary not 4-lobed; plants without mint odor.
25. Seeds few, borne on hooks in the elastically dehiscent capsule.....142. ACANTHACEAE
25. Seeds numerous, not borne on hooks; capsule not elastically dehiscent.
26. Ovary 1-loculed with 2 parietal placentae; corolla 3-5 cm. long, gibbous, campanulate, 5-lobed and somewhat 2-lipped; capsule 10-15 cm. long, the beak longer than the body; odoriferous glandular annuals141. MARTYNIACEAE
26. Ovary 2-loculed; placentae axial.....137. SCROPHULARIACEAE
23. Corolla regular or nearly so (flowers actinomorphic).
27. Leaves in whorls.
28. Flowers yellow; fruit a capsule121. PRIMULACEAE
28. Flowers white or greenish.
29. Flowers in umbels; corolla with 5 reflexed lobes; fruit a many-seeded follicle; seeds with a tuft of silky hairs; plants with milky juice.....129. ASCLEPIADACEAE
29. Flowers axillary or cymose; corolla 4- (or 3-)lobed; fruit of 2 united indehiscent 1-seeded nutlets; sap watery.....145. RUBIACEAE
27. Leaves not whorled.
30. Leaves evergreen, opposite; stems trailing; flowers axillary; plants glabrous.
31. Leaf-base narrowed; corolla blue, 5-lobed, 1.5-3 cm. long; calyx 5-parted; stamens 5; stigma annular, its apex penicillate.....*Vinca* in 128. APOCYNACEAE
31. Leaf-base rounded or cordate; corolla white or pink, usually 4-lobed, 1-1.5 cm. long; calyx 4-toothed; stamens 4; stigmas 4; fruit a red or white double drupe.....*Mitchella* in 145. RUBIACEAE
30. Leaves rarely evergreen; plants not as above in all respects .
32. Leaves with stipules, or the petioles connected by a (sometimes bristle-bearing) stipular membrane or line.
33. Ovary inferior145. RUBIACEAE
33. Ovary superior126. LOGANIACEAE
32. Leaves without stipules.
34. Ovaries 2, or if 1, deeply lobed; fruit usually of 2 follicles; seeds with a tuft of silky hairs; plants usually with milky juice.
35. Flowers in cymes, or solitary.....128. APOCYNACEAE
35. Flowers in umbels129. ASCLEPIADACEAE
34. Ovary 1; fruit a capsule or drupe; plants with watery juice.

36. Corolla about as long as the calyx; fruit a 3-seeded drupe
*Triosteum* in 146. CAPRIFOLIACEAE
36. Corolla much longer than the calyx; fruit dehiscent, usually
 more than 3-seeded.
37. Stamens opposite the corolla-lobes; corolla-tube short or
 none; flowers bright yellow, or solitary in the axils....
121. PRIMULACEAE
37. Stamens alternate with the lobes of the corolla; flowers not
 yellow.
38. Corolla-tube long and slender.
39. Stamens 5; stigmas 3; pistil 3-carpellate; capsule
 3-loculed, 3-seeded
*Phlox* in 131. POLEMONIACEAE
39. Stamens 4; stigma simple or 2-lobed, the apex of
 the style recurved; pistil 2-carpellate; capsule
 6-20-seeded.....*Ruellia* in 142. ACANTHACEAE
38. Corolla-tube short or none; capsule 1-loculed, many-
 seeded; plants glabrous or nearly so.....
 126. GENTIANACEAE

Section 6. Dicotyledonous Herbs With Toothed or Lobed Opposite or Whorled Leaves

1. Flowers sessile in dense heads on a common receptacle surrounded by an involucre of
 bracts.
2. Stem with small prickles; chaff of the receptacle (among the flowers) with long
 rigid spine-like tips; stamens 4, distinct148. DIPSACACEAE
2. Stem not prickly; chaff of the receptacle not as above, sometimes absent; stamens 5,
 united by their anthers (syngenesious)152. COMPOSITAE
1. Flowers not sessile in dense heads on a common receptacle surrounded or subtended
 by an involucre of bracts.
3. Corolla of separate petals, or sometimes absent.
4. Leaves deeply lobed.
5. Plants glabrous; leaves 2, peltate; flower solitary; petals 6-9, white
*Podophyllum* in 66. BERBERIDACEAE
5. Plants (at least the stem) pubescent; leaves 2 or more, not peltate; flowers
 usually more than 1.
6. Petals present; stamens 10; styles 5; fruit of 5 carpels.....85. GERANIACEAE
6. Petals none, but the sepals colored and petal-like; stamens more than 10;
 fruit of numerous achenes.....62. RANUNCULACEAE
4. Leaves merely toothed.
7. Plants with milky juice (or if with watery juice, the pubescence stellate); the
 fruit deeply 3-lobed; corolla none, but the flowers surrounded by an often
 corolla-like involucre94. EUPHORBACEAE
7. Plants with watery juice; fruit not 3-lobed.
8. Flowers green, without petals; fruit 1-seeded.
9. Plants scurfy with minute whitish scales; stipules none
*Atriplex* in 51. CHENOPODIACEAE
9. Plants glabrous, or pubescent with slender, sometimes stinging hairs, never
 scurfy or scaly; leaves stipulate.....46. URTICACEAE
8. Flowers with white or colored petals; fruit usually with more than 1 seed.
10. Petals large (1 cm. or more in length), pink or purplish; leaves 3-4-
 ribbed; plants bristly-hairy114. MELASTOMACEAE
10. Petals small (less than 1 cm. in length); leaves not ribbed; plants not
 bristly-hairy.
11. Ovary inferior; seeds with a tuft of soft hairs, or else the fruit with
 short, hooked hairs.....115. ONAGRACEAE
11. Ovary superior; seeds without hairs; fruit never bristly.....
77. SAXIFRAGACEAE

- 3. Corolla sympetalous, the petals united, at least below.
 - 12. Leaves evergreen, small, oval or obovate, crenate above the middle; stems slender, trailing; flowers in pairs, nodding, pink, fragrant, about 1 cm. long....
..... *Linnæa* in 146. CAPRIFOLIACEAE
 - 12. Leaves not evergreen; plants not as above.
 - 13. Fruit of 2 or 4 nutlets; stems usually 4-angled.
 - 14. Ovary not lobed, the style terminal on it; plants lacking a mint odor; corolla usually nearly regular.....134. VERBENACEAE
 - 14. Ovary deeply 4-lobed, the style arising between the lobes; plants usually with a mint odor; corolla usually bilabiate, rarely nearly regular.....
..... 135. LABIATAE
 - 13. Fruit of only 1 nutlet, or else a capsule with many seeds.
 - 15. Flowers reflexed and becoming appressed to the stem in fruit; fruit a single nutlet in the bottom of the calyx; calyx-teeth hooked at the tip; corolla purplish; leaves slender-petioled.....141. PHRYMACEAE
 - 15. Flowers not reflexed and appressed to the stem; calyx-teeth not hooked.
 - 16. Ovary inferior; stamens 3147. VALERIANACEAE
 - 16. Ovary superior; stamens usually 2, or 4, rarely 5.....
..... 137. SCROPHULARIACEAE

Section 7. Dicotyledonous Herbs (except *Smilax*) With Alternate Leaves

- 1. Flowers sessile in dense heads on a common receptacle surrounded by an involucre of bracts152. COMPOSITAE
- 1. Flowers not sessile in dense heads on a common receptacle surrounded or subtended by an involucre of bracts.
 - 2. Stem-leaves reduced to minute scales; corolla irregular, spurred; plants small, growing in wet soil138. LENTIBULARIACEAE
 - 2. Stem-leaves not all reduced to scales.
 - 3. Leaves with stipules, these sometimes united to form a sheath (sometimes fugacious).
 - 4. Stipules united and forming a membranous sheath at the nodes; fruit an achene50. POLYGONACEAE
 - 4. Stipules not sheathing; fruit a several-seeded capsule or pod.
 - 5. Petals none; fruit a small 3-loculed capsule.....94. EUPHORBIACEAE
 - 5. Petals present; plants pubescent; fruit a 1-loculed pod.
 - 6. Leaves sessile or nearly so; flowers yellow, papilionaceous
.....*Crotalaria* in 84. LEGUMINOSAE
 - 6. Leaves petioled; flowers greenish white.....*Hybanthus* in 108. VIOLACEAE
 - 3. Leaves without stipules.
 - 7. Petals separate, or none; calyx sometimes petal-like.
 - 8. Plants with milky juice; stem umbellately branched above; uppermost leaves whorled; involucre with white, petal-like appendages 94. EUPHORBIACEAE
 - 8. Plants without milky juice; stems and leaves not as above.
 - 9. Calyx and corolla absent; flowers in spikes; leaves cordate, petioled.....
.....37. SAURURACEAE
 - 9. Calyx present; corolla present or absent.
 - 10. Flowers small, green.
 - 11. Flowers in umbels; perianth 6-parted; fruit a berry
.....*Smilax* in 31. LILIACEAE
 - 11. Flowers not in umbels; perianth not 6-parted; fruit not a berry.
 - 12. Plants perennial, pubescent; fruit a capsule, with more than 1 seed; leaves small and narrow107. CISTACEAE
 - 12. Plants annual, glabrous or pubescent; fruit an achene, or a 1-seeded capsule.
 - 13. Flowers all in loose cymose axillary clusters; style 1, not branched; plants pubescent
.....*Parietaria* in 46. URTICACEAE

13. Flowers all or mostly in spikes or terminal cymes or panicles, or else all in dense, sessile, axillary clusters; styles 2 or 3, or 1 and branched.
14. Flowers subtended by scarious bracts, the sepals sharp-pointed; leaves not linear or with spiny tips; plants never white-mealy52. AMARANTHACEAE
14. Flowers not subtended by scarious bracts; sepals not awn-pointed; leaves linear and with spiny tips, or the plants whitish-mealy at least about the inflorescence or the lower surface of the leaves 51. CHENOPODIACEAE
10. Flowers not green; petals present, or the calyx colored and petal-like.
15. Leaves cordate, velvety-pubescent; petals yellow; carpels 12-15, pubescent, dehiscent at the apex.....
.....*Abutilon* in 105. MALVACEAE
15. Leaves not cordate, or if so, not velvety-pubescent.
16. Sepals 257. PORTULACACEAE
16. Sepals more than 2 (rarely cohering in pairs).
17. Flowers borne on the lower part of the stem near the ground; calyx S-shaped; petals none; leaves petioled, cordate or halberd-shaped.....
.....*Aristolochia* in 49. ARISTOLOCHIACEAE
17. Flowers borne on the upper part of the stem; calyx never curved.
18. Ovary inferior.
19. Petals yellow or purplish; fruit a several-seeded capsule115. ONAGRACEAE
19. Petals none, the sepals whitish and petal-like; fruit 1-seeded, indehiscent; plants glabrous, glaucous 47. SANTALACEAE
18. Ovary superior.
20. Petals none, the 5 sepals petal-like; flowers in racemes; fruit a juicy dark purple berry.....
..... 53. PHYTOLACCACEAE
20. Petals 4-6; fruit a capsule or pod.
21. Flowers regular; anthers opening longitudinally.
22. Style 1, or stigma sessile.
23. Petals and stamens hypogynous.
24. Sepals, petals, and stamens each 5; fruit a 5-loculed capsule ..
..... 87. LINACEAE
24. Sepals and petals each 4; stamens 6, four long and two short; fruit a 1- or 2-loculed capsule 71. CRUCIFERAE
23. Petals and stamens inserted on the calyx; branches usually more or less angled113. LYTHRACEAE
22. Styles 2; petals 5; sepals 5, reflexed; stamens 10; leaves chiefly basal
..... 77. SAXIFRAGACEAE
21. Flowers irregular; anthers opening by terminal pores93. POLYGALACEAE
7. Petals united (the corolla sympetalous).
25. Corolla regular (actinomorphic).
26. Flowers 4-5 cm. long, white; calyx enclosed or subtended by a pair of broad bracts; leaves often more or less cordate at base; fruit a capsule; plants with milky juice130. CONVULVACEAE

- 26. Flowers smaller; calyx not enclosed by a pair of bracts.
- 27. Plants with milky juice; fruit of 1 or 2 large pods, the seeds with a tuft of silky hairs.
- 28. Flowers in umbels; filaments united into a tube enclosing the pistil129. ASCLEPIADACEAE
- 28. Flowers in cymes, purplish blue; stamens free*Amsonia* in 128. APOCYNACEAE
- 27. Plants with watery juice; flowers not in umbels; seeds lacking a tuft of hairs.
- 29. Fruit of 4 (or sometimes fewer) nutlets; plants rough-hairy, often bristly, or glabrous and with blue flowers....133. BORAGINACEAE
- 29. Fruit a capsule or berry; plants never rough-hairy.
- 30. Flowers blue; styles 2; fruit a capsule.....132. HYDROPHYLLACEAE
- 30. Flowers not blue; style 1.
- 31. Flowers white or pink or yellow; fruit a capsule; calyx not enlarged in fruit.....121. PRIMULACEAE
- 31. Flowers yellowish or whitish, often with a dark center; fruit a berry, enclosed by the 5-lobed, 10-ribbed, often 5-10-angled, reticulated, inflated calyx.....*Physalis* in 136. SOLANACEAE
- 25. Corolla irregular (zygomorphic).
- 32. Corolla spurred; stamens 4, inserted on the corolla; plants with watery juice*Linaria* in 137. SCROPHULARIACEAE
- 32. Corolla somewhat 2-lipped, the tube split along the upper side; stamens 5, free from the corolla, united by their anthers; plants with milky juice151. LOBELIACEAE

Section 8. Dicotyledonous Herbs With Toothed or Lobed Alternate Leaves

- 1. Flowers sessile, small, in dense heads on a common receptacle surrounded or subtended by an involucre of bracts; fruit an achene.....152. COMPOSITAE
- 1. Flowers not as above.
- 2. Fruit and ovary covered with hooked bristles; corolla minute, greenish yellow; leaves deeply lobed; flowers in small compact head-like umbels.....*Sanicula* in 119. UMBELLIFERAE
- 2. Fruit and ovary never with hooked prickles.
- 3. Leaves conspicuously lobed.
- 4. Stems and leaves prickly; petals 5, united; fruit a berry.....*Solanum* in 136. SOLANACEAE
- 4. Stems and leaves not prickly.
- 5. Corolla of united petals; fruit a capsule.
- 6. Flowers in spikes or panicles, or solitary in the axils; corolla irregular 137. SCROPHULARIACEAE
- 6. Flowers in scorpioid cymes or racemes; corolla regular.....132. HYDROPHYLLACEAE
- 5. Corolla of separate petals, or petals absent.
- 7. Calyx-lobes 3; flowers small, sessile, axillary, greenish, apetalous; upper leaves toothed, the lower ones deeply pinnately lobed; plants of wet habitats; fruit sharply angled.....*Proserpinaca* in 116. HALORAGIDACEAE
- 7. Calyx-lobes or sepals more than 3.
- 8. Sepals and petals each 4.
- 9. Ovary superior; stamens 6; capsule 2-valved71. CRUCIFERAE
- 9. Ovary inferior; stamens 8; capsule 4-valved115. ONAGRACEAE
- 8. Sepals 5 or 6.
- 10. Petals none; flowers small, green or greenish; fruit an achene or utricle.
- 11. Leaves stipulate; sepals 6; stamens 6; fruit an achene 50. POLYGONACEAE

- 11. Leaves without stipules; sepals 5; stamens 5; fruit a utricle 51. CHENOPODIACEAE
- 10. Petals usually present.
 - 12. Flowers regular; leaves stipulate.
 - 13. Stamens 10 (rarely 5), free or nearly so; ovary 5-lobed, each lobe becoming a 1-seeded nutlet.....85. GERANIACEAE
 - 13. Stamens more than 10.
 - 14. Stamens free, perigynous; anthers 2-loculed; fruit an achene83. ROSACEAE
 - 14. Stamens monadelphous; anthers 1-loculed; fruit a capsule, or of 5 or more carpels arranged in a ring 105. MALVACEAE
 - 12. Flowers irregular.
 - 15. Leaves with stipules; stamens 5; fruit a capsule 108. VIOLACEAE
 - 15. Leaves without stipules; stamens many; fruit an achene, follicle, or berry62. RANUNCULACEAE
- 3. Leaves not lobed, merely toothed, or sinuate.
 - 16. Petals more or less united (corolla sympetalous); fruit a capsule or berry.
 - 17. Ovary inferior; corolla blue or red (rarely white).
 - 18. Corolla split down one side, irregular; stamens united by their anthers 151. LOBELIACEAE
 - 18. Corolla not split, regular; stamens free150. CAMPANULACEAE
 - 17. Ovary superior; flowers not red or blue.
 - 19. Stamens 5.
 - 20. Calyx spurred, petal-like; flowers axillary; leaves extipulate; plants smooth and succulent88. BALSAMINACEAE
 - 20. Calyx not spurred or petal-like.
 - 21. Flowers in spikes or racemes; fruit a smooth capsule
.....*Verbascum* in 137. SCROPHULARIACEAE
 - 21. Flowers axillary or in cymes; fruit a berry or a spiny capsule 136. SOLANACEAE
 - 19. Stamens 4 or 2.
 - 22. Low branching odoriferous glandular annuals with cordate oblique leaves; calyx 5-cleft; corolla 5-lobed; capsule 8-15 cm. long, the curved beak longer than the body.....141. MARTYNIACEAE
 - 22. Erect perennials; sepals 4; corolla campanulate, 2-3-lobed; stamens 2; capsule short, emarginate
.....*Synthyris* in 137. SCROPHULARIACEAE
 - 16. Petals separate or none.
 - 23. Petals none.
 - 24. Plants with stinging hairs; leaves petioled, serrate, stipulate; flowers in axillary cymes, unisexual; sepals 5; stamen 1; style 1; fruit an achene
.....*Laportea* in 46. URTICACEAE
 - 24. Plants without stinging hairs.
 - 25. Styles 5 or 6; stamens twice as many as the sepals; flowers perfect, in 1-sided spikes or cymes; stipules none; fruit many-seeded, dehiscent
.....*Penthorum* in 75. CRASSULACEAE
 - 25. Styles 1-3.
 - 26. Fruit a 3-lobed capsule; stigmas fringed; leaves with small stipules
.....*Acalypha* in 92. EUPHORBIACEAE
 - 26. Fruit a 1-seeded utricle; stipules none.....51. CHENOPODIACEAE
 - 23. Petals present.
 - 27. Ovary inferior; stamens usually twice as many (rarely the same number) as the petals and calyx-lobes; fruit a capsule, rarely indehiscent115. ONAGRACEAE
 - 27. Ovary superior.
 - 28. Corolla irregular.

- 29. One of the petals spurred.
 - 30. Stipules present; ovary 1-loculed.....108. VIOLACEAE
 - 30. Stipules none; ovary 5-loculed; plants smooth and succulent.....88. BALSAMINACEAE
- 29. Flowers not spurred; stipules none; ovary 2-loculed.....93. POLYGALACEAE
- 28. Corolla regular or nearly so, not spurred.
 - 31. Sepals and petals each 4; stamens 6, four long and two short; fruit a pod; stipules none.....71. CRUCIFERAE
 - 31. Sepals and petals each 5.
 - 32. Sepals separate; petals yellow; fruit achenes.....62. RANUNCULACEAE
 - 32. Sepals united, at least below; fruit not an achene.
 - 33. Leaves mostly basal, more or less hairy, the blades roundish, cordate at the base; flowers paniculate.....*Heuchera* in 77. SAXIFRAGACEAE
 - 33. Leaves mostly on the stem.
 - 34. Stipules none; leaves thickish; plants glabrous; stamens free.....75. CRASSULACEAE
 - 34. Stipules present; leaves not at all succulent; plants usually more or less pubescent, often with stellate hairs; stamens monadelphous.....105. MALVACEAE

Section 9. Parasitic or Saprophytic Herbs; Stems not Climbing or Twining

- 1. Flowers regular.
 - 2. Ovary superior; stamens 6-12; plant perennial, waxy-white or reddish, drying black.....*Monotropa* in 120. ERICACEAE
 - 2. Ovary inferior; plants annual.....35. BURMANNIACEAE
- 1. Flowers irregular.
 - 3. Ovary inferior; petals and sepals each 3, distinct.....36. ORCHIDACEAE
 - 3. Ovary superior; corolla 2-lipped.....139. OROBANCHACEAE

Section 10. Plants Twining or Climbing; or Cacti

- 1. Cactus plants, with conspicuously jointed stems, the internodes flattened, succulent, bristly or spiny; leaves none, or reduced to bristles; flowers perfect, regular, solitary, showy; sepals, petals, and stamens numerous.....110. CACTACEAE
- 1. Not cactus plants; stems twining or climbing; plants sometimes with tendrils.
 - 2. Plants with tendrils.
 - 3. Leaves entire.
 - 4. Flowers in umbels; perianth 6-parted; stamens 6; stigmas thick, almost sessile; fruit a berry; leaves with 3 or more principal veins from the base.....*Smilax* in 31. LILIACEAE
 - 4. Flowers in slender axillary and terminal racemes; calyx 5-parted; stamens 8; styles 3; fruit an obtusely triangular achene enclosed in the indurated calyx; leaves with 1 main vein.....*Brunnichia* in 50. POLYGONACEAE
 - 3. Leaves lobed or toothed; flowers not in umbels.
 - 5. Stipules present; petals separate; flowers solitary, perfect, greenish yellow.....109. PASSIFLORACEAE
 - 5. Stipules none; petals united; flowers unisexual, mostly in racemes or corymbs.....149. CUCURBITACEAE
 - 2. Plants without tendrils.
 - 6. Leaves somewhat peltate, the petiole attached on the underside of the blade near the margin, the blades usually angled or lobed; fruit juicy, 1-seeded; flowers small, in axillary panicles.....67. MENISPERMACEAE
 - 6. Leaves not peltate.
 - 7. Leaves opposite or whorled.
 - 8. Leaves entire.
 - 9. Plants with milky juice; petals 5, united; fruit a follicle; seeds with silky hairs.

10. Stamens distinct; flowers cymose128. APOCYNACEAE
 10. Filaments united into a tube enclosing the pistil, the anthers adnate to the stigma, and the pollen cohering in masses
 129. ASCLEPIADACEAE
9. Plants with watery juice; seeds without hairs.
 11. Sepals 4, petal-like; petals 0; stamens numerous; style persistent on the achene, often pubescent*Clematis* in 62. RANUNCULUS
 11. Perianth 6-parted; stamens 6; flowers dioecious; fruit a 3-angled capsule32. DIOSCOREACEAE
8. Leaves toothed or lobed.
 12. Leaves triangular-hastate; flowers pink, in small heads.....
*Mikania* in 152. COMPOSITAE
 12. Leaves not triangular-hastate; flowers green, dioecious, in catkins or panicles45. CANNABINACEAE
7. Leaves alternate, or reduced to inconspicuous scales.
 13. Plants with chlorophyll, not parasitic; leaves not reduced to scales.
 14. Leaves with sheathing stipules; corolla none; calyx 5-lobed; flowers perfect; fruit an achene.....50. POLYGONACEAE
 14. Leaves without sheathing stipules.
 15. Flowers dioecious; perianth 6-parted; stamens 6.
 16. Flowers in drooping racemes or panicles; styles 3, distinct; fruit a 3-angled or -winged capsule.....32. DIOSCOREACEAE
 16. Flowers in umbels; stigmas thick, almost sessile; fruit a small bluish black berry*Smilax* in 31. LILIACEAE
 15. Flowers perfect; corolla sympetalous; stamens 5.
 17. Corolla funnellform; fruit a capsule; plants often with milky juice 130. CONVULVULACEAE
 17. Corolla rotate, purple or blue (or white); anthers yellow, connivent around the style, opening by apical pores; berries red; juice watery*Solanum dulcamara* in 136. SOLANACEAE
13. Plants bright yellow or orange, parasitic on other plants and lacking chlorophyll; leaves reduced to scales; fruit a capsule.....
*Cuscuta* in 130. CONVULVULACEAE

Section 11. Aquatic Plants, Floating on or Submerged in Water

1. Plants very small, free-floating, thalloid, without stems and leaves.....25. LEMNACEAE
 1. Plants larger, normally with leaves and usually with stems.
 2. Leaves entire or finely toothed.
 3. Blades deeply cordate at the base; flowers large, solitary.....64. NYMPHAEACEAE
 3. Blades not deeply cordate, or peltate.
 4. Floating leaves spatulate; leaves opposite, small; flowers minute, monoecious, sessile, 1-3 in the axils; stamen 1; styles 2, filiform; fruit 4-lobed, notched at the apex.....93. CALLITRICHACEAE
 4. Leaves never spatulate.
 5. Plants acaulescent; leaves long, linear; fertile flowers on long, slender scapes; fruit many-seeded.....*Vallisneria* in 21. HYDROCHARITACEAE
 5. Plants with stems.
 6. Leaves alternate or imperfectly opposite.
 7. Flowers green, in spikes; sepals 4; stamens 4; carpels usually 4; stipules present, membranous; fruit 1-seeded..18. POTAMOGETONACEAE
 7. Flowers not green.
 8. Flowers blue, white, or yellow, solitary; stipules none; fruit many-seeded.....*Heteranthera* in 29. PONTEDERIACEAE
 8. Flowers rose-pink, in spike-like racemes; stipules united to form a cylindrical, membranous sheath; fruit 1-seeded species of.....
*Polygonum* in 50. POLYGONACEAE
6. Leaves opposite or whorled.

- 9. Perianth 3- or 6-parted; fruit several-seeded; leaves 5-15 mm. long, minutely spinulose-toothed.....*Anacharis* in 21. HYDROCHARITACEAE
- 9. Perianth none; fruit 1-seeded.
 - 10. Leaves spinulose-toothed; carpel 117. NAIADACEAE
 - 10. Leaves entire; carpels 2-5.....18. POTAMOGETONACEAE
- 2. Leaves, or most of them, deeply lobed or divided.
 - 11. Leaves finely dissected (or sometimes root-like), often bearing small bladders; flowers (in our species) yellow, bilabiate; fruit a capsule.....138. LENTIBULARIACEAE
 - 11. Leaves not bladder-bearing, all or most of them finely dissected.
 - 12. Flowers white or yellow, solitary.
 - 13. Floating leaves peltate, narrowly elliptical, 1.5-2 cm. long; submerged leaves opposite or verticillate, divided; petals 3; sepals 3; carpels 3*Cabomba* in 63. NELUMBONACEAE
 - 13. Floating leaves, if any, not peltate.
 - 14. Leaves alternate; petals 5; sepals 5; carpels more than 3*Ranunculus* in 62. RANUNCULACEAE
 - 14. Leaves opposite, the upper lanceolate, serrate; heads solitary, radiate; rays 6-10, yellow; achenes 1-1.5 cm. long, with 3-6 slender awns*Megalodonta* in 152. COMPOSITAE
 - 12. Flowers small, green or whitish, not solitary.
 - 15. Flowers green, minute; leaves alternate or whorled.
 - 16. Flowers in spikes; blades of the upper leaves sometimes merely pectinate; fruit 4-lobed.....116. HALORAGIDACEAE
 - 16. Flowers not in spikes; leaves all dissected into rather rigid divisions; fruit 1-seeded65. CERATOPHYLLACEAE
 - 15. Flowers whitish, whorled at the nodes of the erect, hollow, inflated, almost leafless flowering stem; corolla 5-lobed; sepals 5, linear; stamens 5, included; fruit a many-seeded capsule.....*Hottonia* in 121. PRIMULACEAE

**Section 12. Trees or Shrubs (Including Woody Climbers)
With Opposite or Whorled Leaves**

- 1. Leaves compound.
 - 2. Leaflets 3 or 2.
 - 3. Stems climbing or trailing.
 - 4. Leaflets 2, ovate, cordate, acuminate, entire, dark green; tendrils branched; cymes 2-4-flowered; corolla red, 4-5 cm. long; stamens 4; capsules linear, 10-20 cm. long; seeds winged, elliptical; cross-section of wood showing a cross.....*Bignonia* in 140. BIGNONIACEAE
 - 4. Leaflets 3, coarsely toothed; tendrils none; flowers dioecious, white, numerous in panicles; stamens numerous; achenes pubescent, plumose.....*Clematis* in 62. RANUNCULACEAE
 - 3. Stems not climbing or trailing.
 - 5. Leaflets coarsely toothed; flowers greenish, dioecious; fruit a pair of samaras*Acer negundo* in 100. ACERACEAE
 - 5. Leaflets finely serrate; flowers whitish, perfect; fruit an inflated, 3-lobed capsule99. STAPHYLEACEAE
 - 2. Leaflets 5-11 (rarely 3-5).
 - 6. Leaves palmately compound, the leaflets serrate, straight-veined; flowers irregular, in large panicles, most of them sterile; capsule leathery, smooth or spiny, usually with a single large glossy seed.....101. HIPPOCASTANACEAE
 - 6. Leaves pinnately compound.
 - 7. Plants climbing or trailing; leaflets 9-11, serrate, 3-6 cm. long; flowers perfect, the corolla red, 5-lobed, somewhat 2-lipped, 6-9 cm. long; capsules cylindrical, 8-12 cm. long.....*Campsis* in 140. BIGNONIACEAE
 - 7. Erect trees or shrubs.

8. Branches with a large pith; fruit a drupe; flowers regular, perfect, numerous, small, whitish, cymose; stamens 5; ovary inferior.....
.....*Sambucus* in 146. CAPRIFOLIACEAE
8. Branches with a small pith; fruit a samara; flowers small, greenish, dioecious, appearing before the leaves.
9. Leaflets 3-5 (rarely 7-9), at least some of them usually coarsely toothed; samaras in pairs; stamens 4-6.....*Acer negundo* in 100. ACERACEAE
9. Leaflets 5-11, entire to shallowly serrate; samaras single; stamens 2.....
.....*Fraxinus* in 125. OLEACEAE
1. Leaves simple.
10. Margins toothed or lobed.
11. Margins toothed, not lobed; shrubs.
12. Young branchlets more or less quadrangular; leaves serrulate; flowers perfect, axillary, greenish or purplish; petals 4-6; calyx 4-5-cleft; stamens 4-5, inserted on the disk; fruit deeply 3-5-lobed.....
.....*Euonymus* in 96. CELASTRACEAE
12. Branchlets terete or nearly so.
13. Leaves evergreen, small, oval, crenate above the middle; stems slender, trailing; flowers in pairs, nodding, pink, fragrant, about 1 cm. long.....
.....*Linnaca* in 146. CAPRIFOLIACEAE
13. Leaves otherwise.
14. Margins dentate or sharply serrate; ovary inferior.
15. Principal lateral veins 1-5 pairs; corolla of 4 separate petals; stamens more than 5; capsule many-seeded.....
..... 79. HYDRANGEACEAE
15. Principal lateral veins 5-10 pairs; corolla sympetalous, 5-lobed or 2-lipped, the 5 stamens inserted on the tube; fruit a 1-seeded drupe or a many-seeded capsule.....146. CAPRIFOLIACEAE
14. Margins crenate; ovary superior; stamens 4-5, inserted with the petals and opposite them; fruit a drupe.....
.....*Rhamnus* in 102. RHAMNACEAE
11. Margins lobed and often toothed.
16. Lobes acute, toothed.
17. Trees; styles 2; fruit a pair of samaras.....100. ACERACEAE
17. Shrubs; style 3-lobed; fruit a 1-seeded drupe.....
.....*Viburnum* in 146. CAPRIFOLIACEAE
16. Lobes obtuse, entire; shrubs; stamens 5, inserted on the pink sympetalous corolla; fruit a 2-seeded drupe.....
.....*Symphoricarpos* in 146. CAPRIFOLIACEAE
10. Margins entire, or merely undulate or slightly crenulate or denticulate.
18. Plants parasitic on the branches of trees; leaves thick, leathery; fruit a berry.....
..... 48. LORANTIACEAE
18. Not parasitic.
19. Leaves beneath, and branchlets covered with minute silvery scales; flowers small, axillary, dioecious; calyx 4-parted; corolla 0; stamens 8; fruit a drupe.....
..... 112. ELAEAGNACEAE
19. Leaves not silvery.
20. Leaves with small black dots; low shrubs; flowers yellow, cymose; sepals and petals each 4 or 5; stamens numerous; fruit a capsule.....
..... 106. HYPERICACEAE
20. Leaves not black dotted.
21. Leaves large (15-50 cm. long), ovate or cordate.
22. Leaves usually in whorls of 3; flowers whitish, marked with yellow and purple; anther-bearing stamens 2; capsules cylindrical.....*Catalpa* in 140. BIGNONIACEAE
22. Leaves opposite; flowers purple; anther-bearing stamens 4; capsules ovoid.....*Paulownia* in 140. BIGNONIACEAE
21. Leaves usually smaller.

23. Twining shrubs; upper leaves connate-perfoliate; flowers perfect; corolla irregular, sympetalous, the 5 stamens inserted on its tube; ovary inferior; fruit a few-seeded berry.....
.....*Lonicera* in 146. CAPRIFOLIACEAE
23. Erect shrubs or small trees.
24. Leaves slightly crenate near the middle, lanceolate, acuminate at each end; flowers dioecious or polygamous, apetalous, or petals small and deciduous; stamens 2-4; drupe with 1, or rarely 2 seeds.....*Forestiera* in 125. OLEACEAE
24. Leaves entire; ovary inferior.
25. Leaves oval, short-petioled, not acuminate; flowers in axillary or terminal clusters; corolla and calyx usually 5-lobed; stamens usually 5.....146. CAPRIFOLIACEAE
25. Leaves with petioles usually 1 cm. or more in length; calyx and corolla each 4-lobed; stamens 4.
26. Leaves glabrous, or sparsely pubescent along the mid-vein, at least the upper ones usually in whorls of three; flowers in globose heads.....
.....*Cephalanthus* in 146. RUBIACEAE
26. Leaves pubescent, at least on the lower surface, never whorled; flowers in cymes.....117. CORNACEAE

Section 13. Trees or Shrubs With Alternate, Compound Leaves

1. Leaves once compound, i.e., not decompound.
2. Leaflets 3.
3. Prickles present.
4. Stipules adnate to the petioles; flowers rose; carpels enclosed in a hypanthium ("hip") which becomes red and succulent in fruit; achenes bony.....
.....*Rosa* in 83. ROSACEAE
4. Stipules not adnate to the petioles; flowers white; fruit of several or many fleshy drupelets inserted on a convex receptacle.....*Rubus* in 83. ROSACEAE
3. Prickles none.
5. Leaflets silky-pubescent; stipules present; flowers yellow, perfect; achenes densely pubescent.....*Potentilla* in 83. ROSACEAE
5. Leaflets not silky-pubescent, either glabrous or only short-pubescent; stipules absent; flowers greenish, polygamous or dioecious.
6. Leaflets sessile, pellucid-punctate; fruit a finely pubescent, suborbicular samara, 1.5-3 cm. in diameter.....*Ptelea* in 91. RUTACEAE
6. Leaflets, at least the terminal one, petiolulate; fruit a drupe.....
.....98. ANACARDIACEAE
2. Leaflets more than 3.
7. Leaves palmately compound.
8. Stems prickly; tendrils none; stamens numerous.....*Rubus* in 83. ROSACEAE
8. Stems not prickly; tendrils present; stamens 5.....*Parthenocissus* in 103. VITACEAE
7. Leaves pinnately compound.
9. Leaflets entire or undulate, or remotely denticulate.
10. Leaflets 3-7, silky-pubescent, revolute-margined; flowers yellow; fruit an achene; shrub 30-100 cm. tall.....*Potentilla* in 83. ROSACEAE
10. Leaflets 5-51.
11. Leaflets with pellucid dots; flowers greenish yellow in small axillary cymes, appearing before the leaves; branches often with sharp stout stipular prickles; fruit ellipsoid, 4-6 mm. long, 1-seeded, spicy flavored.....*Zanthoxylum* in 91. RUTACEAE
11. Leaflets without pellucid dots.
12. Fruit a pod; flowers often papilionaceous.....84. LEGUMINOSAE
12. Fruit a drupe; flowers never papilionaceous.....98. ANACARDIACEAE
9. Leaflets more or less toothed.

13. Leaflets 11-41, entire except for two or more coarse teeth at the base, lanceolate or ovate-lanceolate, 7-15 cm. long; leaves 20-90 cm. long, ill-scented; flowers small, greenish, polygamous, in erect panicles 10-30 cm. long; samaras 3-4 cm. long, twisted, with the compressed seed in the middle.....92. SIMARUBACEAE
13. Leaflets with numerous teeth.
14. Stipules none; flowers greenish.
15. Trees; staminate flowers in catkins; fruit a nut....40. JUGLANDACEAE
15. Shrubs; flowers in panicles; fruit a drupe.....98. ANACARDIACEAE
14. Stipules present (sometimes soon disappearing); flowers not green or in catkins83. ROSACEAE
1. Leaves 2-3-compound.
16. Petioles and midribs often with small prickles; leaflets ovate, acute, serrate to entire; flowers small, white, in umbels; drupes numerous, small, black, ovoid; shrub or small tree with prickly branches.....*Aralia spinosa* in 118. ARALIACEAE
16. Petioles and midribs never spiny; fruit a legume.
17. Leaflets 12-28, obtuse, 2-3.5 cm. long, remotely denticulate; trees, usually with spines on the trunk and branches.....*Gleditsia* in 84. LEGUMINOSAE
17. Leaflets 30-60, acute, 4-8 cm. long, entire; trees without spines
-*Gymnocladus* in 84. LEGUMINOSAE

**Section 14. Trees or Shrubs (Including Woody Climbers)
With Alternate Simple Entire Leaves**

1. Branches or stems more or less prickly or spiny.
2. Leaves usually with a pair of tendrils at the base of the petiole.....
-*Smilax* in 31. LILIACEAE
2. Tendrils absent.
3. Leaves ovate or ovate-lanceolate, acuminate; twigs with sharp spines; flowers small, greenish, dioecious; fruit yellow, as large as a grapefruit; trees with milky juice
-*Maclura* in 44. MORACEAE
3. Leaves oblanceolate or lanceolate, often fascicled on short lateral branchlets.
4. Trailing or climbing shrub with arching or spreading light gray angular branches; flowers greenish purple; berries red, many-seeded.....
-*Lycium* in 136. SOLANACEAE
4. Erect shrub or small tree; flowers white; drupe black, 1-seeded.....
-122. SAPOTACEAE
1. Plants without spines or prickles.
5. Plants prostrate or climbing.
6. Stems prostrate; tendrils none.....120. ERICACEAE
6. Stems climbing or twining.
7. Tendrils usually present at base of petioles; flowers in umbels, greenish; fruit a berry.....
-*Smilax* in 31. LILIACEAE
7. Tendrils none; flowers axillary; leaves cordate; fruit a capsule.....
-49. ARISTOLOCHIACEAE
5. Plants erect; trees or shrubs.
8. Leaves cordate, palmately veined, acute; pods 6-8 cm. long; shrub or small tree
-*Cercis* in 84. LEGUMINOSAE
8. Leaves not cordate.
9. Leaves bristle-tipped.....
-*Quercus* in 42. FAGACEAE
9. Leaves not bristle-tipped.
10. Stipules usually present.
11. Flowers large, greenish or yellowish, solitary; trees.....
-60. MAGNOLIACEAE
11. Flowers not as above.
12. Flowers in catkins; fruit a capsule.....38. SALICACEAE
12. Flowers axillary; fruit a drupe.....102. RHAMNACEAE
10. Stipules none.

- 13. Leaves somewhat palmately veined with 3 principal veins from near the base, often with one or more lateral lobes; leaves and bark spicy-aromatic.....*Sassafras* in 68. LAURACEAE
- 13. Leaves pinnately veined or 1-veined.
 - 14. Pith of the twigs chambered, or divided by woody plates; trees with imperfect flowers.
 - 15. Leaves crowded towards the ends of the branches; twigs soon glabrous; drupe ovoid or ellipsoid, 1-seeded; flowers 5-merous*Nyssa* in 117. CORNACEAE
 - 15. Leaves not crowded; young twigs pubescent; berry large, globose, 4-12-seeded, reddish yellow and sweet when ripe, astringent when green.....123. EBENACEAE
 - 14. Pith continuous; flowers perfect.
 - 16. Leaves large, 15-40 cm. long at maturity, oblanceolate; buds naked, reddish-pubescent; flowers axillary, dark purple or green, 2-4 cm. in diameter; sepals 3; petals 6; stamens numerous, in a globose mass surrounding the pistils..... 61. ANNONACEAE
 - 16. Leaves smaller.
 - 17. Leaves evergreen.....120. ERICACEAE
 - 17. Leaves deciduous.
 - 18. Base of petiole hollow, covering the lateral buds; terminal bud absent; leaves oval; bark tough and fibrous; flowers pale yellow, appearing before the leaves; fruit an ellipsoid drupe*Dirca* in 111. THYMELEACEAE
 - 18. Petioles otherwise; terminal bud present.
 - 19. Leaves glabrous or more or less pubescent, but not strigilose beneath.
 - 20. Leaves minutely resinous-dotted beneath, elliptical-ovate, ciliolate; flowers in axillary drooping racemes; corolla ellipsoid, greenish or pink.....*Gaylussacia* in 120. ERICACEAE
 - 20. Leaves not resinous-dotted.
 - 21. Petioles usually 1 cm. or more in length; ovary superior.
 - 22. Bark spicy-aromatic; buds scaly; drupe red, 1 cm. long at maturity*Lindera* in 68. LAURACEAE
 - 22. Bark not aromatic; winter-buds naked; drupe 6-8 mm. in diameter, dark purple when ripe*Rhamnus* in 102. RHAMNACEAE
 - 21. Petioles shorter; buds scaly; ovary inferior; fruit a several-seeded berry*Vaccinium* in 120. ERICACEAE
 - 19. Leaves strigilose and pale green beneath; lateral veins running parallel to the margins, the upper ones ending in the apex; petals 4; sepals 4; stamens 4; flowers white, cymose; fruit a bluish black drupe 6-8 mm. in diameter*Cornus alternifolia* in 117. CORNACEAE

Section 15. Trees and Shrubs With Alternate, Simple, Lobed Leaves

- 1. Leaves palmately veined and lobed.
 - 2. Plants climbing by tendrils.....103. VITACEAE
 - 2. Plants not climbing; tendrils none.
 - 3. Some of the leaves usually 3-lobed, not serrate, aromatic.....*Sassafras* in 68. LAURACEAE

- 3. Leaves usually serrate or sinuate-dentate as well as lobed.
- 4. Trees.
 - 5. Leaf-lobes not serrate or sinuate; blades white-tomentose beneath at first; flowers and fruits in catkins.....*Populus* in 38. SALICACEAE
 - 5. Leaf-lobes serrate or sinuate-toothed.
 - 6. Flowers and fruits in dense, globose heads.
 - 7. Leaf-lobes serrate; leaves glabrous or pubescent, never white-tomentose; 2-year old branchlets often corky-ridged.....*Liquidambar* in 81. HAMAMELIDACEAE
 - 7. Leaf-lobes sinuate-toothed; blades white-tomentose beneath when young, becoming nearly glabrous at maturity; branchlets terete; bark exfoliating.....82. PLATANACEAE
 - 6. Flowers in catkins; pistillate flowers ripening into a succulent multiple fruit (a mulberry); leaf-lobes serrate-dentate.....*Morus* in 44. MORACEAE
- 4. Shrubs.
 - 8. Stamens 5; ovary inferior; fruit a berry; branches sometimes spiny or prickly80. GROSSULARIACEAE
 - 8. Stamens numerous; carpels 2-5, superior, separate, or united at the base, becoming follicles; branches never spiny; bark becoming shreddy.....*Physocarpus* in 83. ROSACEAE
- 1. Leaves pinnately veined.
 - 9. Lobes of the leaves serrate or crenate.
 - 10. Fruit of 2-5 follicles; bark shreddy; flowers in corymbs; branches never spiny*Physocarpus* in 83. ROSACEAE
 - 10. Fruit a pome; branches often spiny.
 - 11. Flowers in cymes; styles united below the middle; pome large, the carpels papery or leathery; branches (but not the twigs) sometimes with rather blunt spines.....*Malus* in 83. ROSACEAE
 - 11. Flowers in corymbs; styles free; pomes small, the carpels bony; branches (and twigs) often with sharp spines.....*Crataegus* in 83. ROSACEAE
 - 9. Lobes of the leaves not serrate.
 - 12. Leaves with a truncate apex and two broad lateral lobes; buds covered by the membranous stipules; flowers large.....*Liriodendron* in 60. MAGNOLIACEAE
 - 12. Leaves not truncate at apex; flowers small.
 - 13. Leaves pinnatifid with many rounded lobes on each side of the midvein; monoecious shrub with fragrant foliage; flowers in erect catkins; fruit an ovoid nutlet surrounded by subulate bracts.....39. MYRICACEAE
 - 13. Leaves with few lobes.
 - 14. Leaves with three principal veins from the base, aromatic; flowers yellow, 6-8 mm. broad, in racemes 3-5 cm. long....*Sassafras* in 68. LAURACEAE
 - 14. Leaves with 1 principal vein from the base, not aromatic; flowers greenish, the staminate in catkins; fruit an acorn....*Quercus* in 42. FAGACEAE

Section 16. Trees and Shrubs With Alternate, Simple Leaves, the Blades Toothed but Not Lobed

- 1. Base of blade symmetrical or nearly so.
 - 2. Flowers, at least the staminate (except *Fagus*) in catkins.
 - 3. Fruit a small several-seeded capsule, the seeds with a tuft of silky hairs; both staminate and pistillate flowers in catkins; stigmas 2, often 2-lobed (sometimes 3); dioecious shrubs or trees38. SALICACEAE
 - 3. Fruit not a capsule; seeds without a tuft of silky hairs; styles 2 or 3.
 - 4. Fruit a 1-loculed, 1-seeded nut; plants monoecious.
 - 5. Styles 342. FAGACEAE
 - 5. Style 2-cleft, or stigmas 241. BETULACEAE
 - 4. Fruit a juicy multiple fruit; plants often with milky juice; styles 2.....44. MORACEAE
 - 2. Flowers never in catkins.
 - 6. Leaves with 1 principal vein from the base.

- 7. Leaves with 15-25 pairs of nearly straight, conspicuous lateral veins; margins sharply double-serrate; fruit a samara.....43. ULMACEAE
- 7. Leaves with fewer, less conspicuous veins; fruit not a samara.
- 8. Stamens fewer than 15.
- 9. Anthers opening by apical pores; pith of the branches solid.....120. ERICACEAE
- 9. Anthers opening lengthwise; flowers white or greenish.
- 10. Pith chambered, or separated by woody plates.
- 11. Leaves stellate-pubescent beneath; flowers perfect, white, nodding, on slender pedicels; calyx 4-toothed; petals 4, united below; fruit dry, bony within, 1-seeded, 4-winged.....*Halesia* in 124. STYRACACEAE
- 11. Leaves not stellate-pubescent.
- 12. Flowers greenish, dioecious; fruit a drupe.....*Nyssa* in 117. CORNACEAE
- 12. Flowers white, perfect; fruit a 2-valved, ellipsoid, 2-loculed, several-seeded capsule tipped with the 2 styles.....78. ESCALLONIAACEAE
- 10. Pith solid.
- 13. Stems climbing, twining, or trailing; leaves elliptical, finely serrate, glabrous; flowers in terminal racemes; capsules subglobose, yellow, with crimson seeds.....*Celastrus* in 96. CELASTRACEAE
- 13. Stems erect.
- 14. Flowers solitary or clustered in the axils; fruit a small, berry-like drupe with 4-8 bony nutlets.....97. AQUIFOLIACEAE
- 14. Flowers in small dense panicles or corymbs; fruit a 3-loculed capsule102. RHAMNACEAE
- 8. Stamens 15 or more; fruit a drupe, pome, or follicle.....83. ROSACEAE
- 6. Leaves with 3 or more principal veins from the base.
- 15. Leaves cordate, slender-petioled, abruptly acuminate, sharply serrate; trees 104. TILIACEAE
- 15. Leaves not cordate.
- 16. Low shrubs; pith continuous; flowers white; fruit a capsule; leaves ovate or elliptic-lanceolate, short-petioled, finely toothed.....*Ceanothus* in 102. RHAMNACEAE
- 16. Trees or shrubs; pith of branches chambered; flowers greenish, apetalous; fruit a red drupe; leaves ovate-lanceolate or lanceolate, acuminate, scabrous*Celtis* in 43. ULMACEAE
- 1. Base of blade noticeably asymmetrical.
- 17. Leaves sinuately or obtusely toothed, obovate or oval; flowers appearing in autumn when the leaves are falling; petals 4, yellow, linear; calyx 4-parted; stamens 8, short; styles 2; fruit a capsule.....*Hamamelis* in 81. HAMAMELIDACEAE
- 17. Leaves serrate; flowers appearing in spring; fruit not a capsule.
- 18. Leaves cordate, glabrous, or the lower surface pubescent or with tufts of hairs in the axils of the veins; flowers appearing after the leaves, in drooping cymes, small, fragrant, the peduncle united with the membranous bract; fruit small, globose, indehiscent.....104. TILIACEAE
- 18. Leaves scabrous or hispidulous; flowers apetalous, appearing with or before the leaves.
- 19. Flowers in catkins; leaf-buds acute.....*Ostrya* in 41. BETULACEAE
- 19. Flowers not in catkins; leaf-buds obtuse.....43. ULMACEAE

Section 17. Flowers on Leafless (or Almost Leafless) Twigs

- 1. Leaf-buds and leaf-scars opposite; flowers dioecious, polygamous, or monoecious; styles or stigmas 2; fruit of samaras.
- 2. Bud-scales scurfy brown or black; bundle-scars forming a crescent-shaped line; calyx small, 4-cleft or obsolete; stamens usually 2; fruit a single samara.....*Fraxinus* in 125. OLEACEAE

2. Bud-scales not scurfy, paler; bundle-scars not forming a curved line; calyx usually 5-lobed; stamens 4-10, usually 8; fruit a pair of samaras.....100. ACERACEAE
1. Leaf-buds and leaf-scars alternate.
3. Flowers (at least the staminate) in catkins, apetalous.
4. Dioecious; ovary several-ovuled, 1-loculed; stigmas 2, often 2-lobed.....38. SALICACEAE
4. Monoecious.
5. Styles or stigmas 3 (or 4).....42. FAGACEAE
5. Style 2-cleft, or stigmas 241. BETULACEAE
3. Flowers not in catkins.
6. Branches with sharp stipular prickles; plants dioecious; sepals 0; petals 4-5, greenish yellow; stamens 4 or 5; pistils 2-5; leaves pinnate.....*Zanthoxylum* in 91. RUTACEAE
6. Branches not prickly; leaves simple.
7. Flowers white (or pink), perfect; petals 5; sepals 5; stamens 15-25.
8. Style 1*Prunus* in 83. ROSACEAE
8. Styles 5*Amelanchier* in 83. ROSACEAE
7. Flowers not white.
9. Corolla papilionaceous, red-purple; flowers perfect, in umbel-like clusters; stamens 10; fruit a legume.....*Cercis* in 84. LEGUMINOSAE
9. Corolla not papilionaceous; fruit not a legume.
10. Corolla present, of 4 linear yellow petals; calyx 4-parted; stamens 8, short; styles 2; fruit a capsule; flowers appearing in autumn when the leaves are falling.....*Hamamelis* in 81. HAMAMELIDACEAE
10. Corolla none; flowers greenish, purplish, or yellowish, appearing in spring.
11. Flowers greenish or purplish; calyx 4-9-cleft; stamens 4-9, inserted on the calyx; styles 2; trees with serrate leaves.....43. ULMACEAE
11. Flowers yellowish or yellow; leaves entire.
12. Calyx 6-parted; stamens 9, hypogynous; anthers opening by valves; flowers fragrant, in small, sessile clusters; twigs with spicy odor and flavor.....*Lindera* in 68. LAURACEAE
12. Calyx tubular, corolla-like, obscurely 4-toothed.....111. THYMELEACEAE

Section 18. Ferns and Fern-Allies

1. Plants attached to the substratum by roots, either growing on land or submerged in water, but not free-floating.
2. Leaves not quadrifoliolate or clover-like.
3. Leaves narrow, sessile, 1-veined, subulate or linear or oval, simple, not "fern-like."
4. Leaves not whorled; stem solid, not conspicuously jointed.
5. Stems elongated, leafy.
6. Cones terete (or in some species the sporangia borne in the axils of ordinary leaves); spores of only one kind, small; leaves without a ligule 1. LYCOPODIACEAE
6. Cones more or less 4-angled; spores of two kinds, large (megaspores), and small (microspores), borne in different sporangia in the same cone; ligule present2. SELAGINELLACEAE
5. Stem short, thick, corm-like; leaves rush-like, in a basal tuft; plants aquatic or growing in wet soil.....3. ISOETACEAE
4. Leaves whorled, united to form toothed sheaths at the conspicuous nodes on grooved, usually hollow stems; sporangia in a terminal cone.....4. EQUISETACEAE
3. Leaves usually broad and "fern-like" in most species, petiolate, often compound, with numerous or several free (rarely netted) veins.
7. Small delicate ferns with filmy translucent leaves usually consisting of a single layer of cells; sporangia sessile on a filiform receptacle within a tubular or urceolate indusium.....5. HYMENOPHYLLACEAE

- 7. Larger ferns with the leaves membranous to coriaceous, consisting of several layers of cells; sporangia not as above.
- 8. Sporangia large, sessile, opening by a transverse slit, borne in a stalked terminal spike or loose panicle, the sterile blade appearing lateral; vernation erect or inclined.....6. OPHIOGLOSSACEAE
- 8. Sporangia small, stalked, borne in clusters (sori) on the back of ordinary or modified foliar leaves, or in pod-like divisions of modified leaves; vernation usually coiled.
 - 9. Sporangia covering some or all divisions of the fertile leaves, densely crowded, short-stalked, globose, opening by a longitudinal slit into two valves; annulus none; veins free.....7. OSMUNDACEAE
 - 9. Sporangia in sori on the back or margin of ordinary or modified leaves, long-stalked, opening by a nearly complete vertical ring (annulus)....8. POLYPODIACEAE
- 2. Leaves quadrifoliolate, clover-like, long-petioled; sporocarps ovoid, borne at the base of the petioles and containing both megaspores and microspores; plants perennial with slender rhizomes.....9. MARSILEACEAE
- 1. Plants not attached by roots, minute (5-25 mm. broad), free-floating; leaves imbricated, 2-lobed; sporocarps in pairs beneath the stem.....10. SALVINIACEAE

Section 19. Gymnosperms (except Hudsonia)

- 1. Leaves glabrous.
 - 2. Leaves (and cone-scales) spirally arranged, i.e., fascicled or alternate, never opposite or whorled.
 - 3. Fruit berry-like, red, 1-seeded, the seed nearly enclosed by the pulpy aril; microsporophylls with 3-8 pollen-sacs; cotyledons 2; leaves linear, evergreen.....11. TAXACEAE
 - 3. Fruit a woody cone, or 1-3-seeded, bluish, berry-like.
 - 4. Seeds winged; microsporophylls with 2 pollen-sacs; cone-scales and bracts mostly distinct; branchlets not deciduous.....12. PINACEAE
 - 4. Seeds wingless; microsporophylls with 3-8 pollen sacs; cone-scales without distinct bracts; lateral branchlets (in our species) deciduous, the leaves light green, flattened, 2-ranked; bark fibrous.....13. TAXODIACEAE
 - 2. Leaves and cone-scales opposite or whorled, the leaves small, scale-like or subulate.....14. CUPRESSACEAE
- 1. Leaves pubescent, subulate, numerous, 1-2 mm. long; low shrubs 10-20 cm. tall; flowers yellow; capsule ovoid, 3-angled, glabrous, 1-2-seeded.....*Hudsonia* in 107. CISTACEAE

KEYS TO THE GENERA AND SPECIES

Division I. Pteridophyta. Ferns and Fern-allies

1. LYCOPODIACEAE Michx.—Clubmoss Family

1. LYCOPODIUM L.—Clubmoss

1. Sporangia borne in the axils of foliar leaves, not in distinct terminal cones.
2. Leaves linear-oblongate, glossy, widest above the middle, erose-denticulate toward the apex; cool moist woods, rare; Cook Co., *Vasey*; Coles Co., *E. L. Stover* *L. lucidulum* Michx.
2. Leaves lanceolate-linear, widest at the base, nearly or quite entire; cool woods, rare; Lake, La Salle, and Ogle counties *L. porophilum* Lloyd & Underw.
1. Sporangia borne in terminal cones; sporophylls similar to the foliar leaves; Evanston, Sept. 20, 1890, *L. N. Johnson* *L. inundatum* L.

2. SELAGINELLACEAE Underw.

1. SELAGINELLA Beauv.—Selaginella

1. Leaves numerous, uniformly imbricated, many-ranked, subulate, short-awned; dry sandstone rocks, local; n. Ill., extending southward to Henderson and La Salle counties. Rock Selaginella *S. rupestris* (L.) Spring
1. Leaves of two kinds, 4-ranked, spreading in two planes, ovate, acute or cuspidate; moist soil, local. [*S. apus* (L.) Spring]* *S. apoda* (L.) Fern.

3. ISOETACEAE Underw.—Quillwort Family

1. ISOETES L.—Quillwort

1. Leaf-bases blackish; megaspores 280-440 μ in diameter, nearly smooth, or with low tubercles; microspores finely spinulose, ashy-gray; wet meadows or shallow ponds, chiefly in the western part of the state, rare, or perhaps now extinct in Ill. *I. melanopoda* Gay & Dur.
1. Leaf-bases not blackish; megaspores 400-600 μ in diameter, honeycomb-reticulate; microspores smooth or nearly so; ponds, rare. St. Clair Co. *I. engelmanni* A. Br.

4. EQUISETACEAE Michx.—Horsetail Family

1. EQUISETUM L.

1. Stems perennial, evergreen, all alike, stiff and harsh, usually simple; stomata in regular rows in the grooves; cones usually apiculate.
2. Stems tall, 16-50-angled, hollow; teeth of the sheaths deciduous.

* Synonyms appear in brackets.

3. Sheaths about as long as broad, short-cylindrical, appressed, ashy-gray, with a black band near the base; internodes rough-tuberculate; moist sandy soil, common. [*E. robustum* A. Br; *E. hyemale* of Am. auth., not L.; *E. hyemale* var. *affine* (Engelm.) A. A. Eaton] Tall Scouring-rush*E. prealtum* Raf.
3. Sheaths slightly longer than broad, dilated upward and somewhat funnelform, green, and usually with a narrow black rim; internodes smooth; sandy soil, common. Smooth Scouring-rush
.....*E. laevigatum* A. Br.
2. Stems low, slender, usually 5-10-angled; teeth of the sheaths persistent.
 4. Stems 15-30 cm. tall, 2-4 mm. thick, 5-10-grooved; central cavity one-third the diameter of the stem; sheaths 5-12-toothed; cones 8-10 mm. long; moist sandy soil in the n. half of the state. [*E. nelsoni* (A. A. Eaton) Schaffner] Variegated Scouring-rush
.....*E. variegatum* Schleich.
 4. Stems 5-15 cm. tall, 1-2 mm. thick, 6-angled and -grooved, tufted, slender, flexuous, solid; sheaths mostly 3-toothed; cones 3-5 mm. long; moist ground, Lake Co.*E. scirpoides* Michx.
1. Stems annual, flexible; stomata scattered; cones blunt.
 5. Stems all alike, green, usually branched at maturity.
 6. Stems 10-30-angled; central cavity one-half or more the diameter of the stem; sheaths tight; along ditches or in marshes. [*E. limosum* L.] Water Horsetail*E. fluviatile* L.
 6. Stems 5-10-angled; central cavity about one-sixth the diameter of the stem; sheaths loose; wet soil, not common. Peoria, Woodford, and Tazewell counties. Marsh Horsetail*E. palustre* L.
 5. Stems of two kinds, the sterile green and branched, the fertile whitish or brownish, appearing in early spring and soon withering; moist sandy soil, common, particularly on railroad embankments. Field Horsetail....
.....*E. arvense* L.

5. OPHIOGLOSSACEAE Presl—Adder's-tongue Family

1. Sterile blade simple, entire; venation reticulate; sporangia in two rows in a simple slender spike1. *Ophioglossum*
1. Sterile blade pinnately divided; venation free; sporangia in a panicle....2. *Botrychium*

1. OPHIOGLOSSUM L.—Adder's-Tongue

1. Sterile blades usually 2-5, oval, apiculate, the principal veins 13 or more, forming broad areolae containing numerous included veinlets; spores pitted; hillsides, banks, thickets, chiefly on limestone, rare. Cave-in-Rock, Hardin Co., *E. J. Palmer* 15469*O. engelmanni* Prantl
1. Sterile blades usually solitary, or sometimes 2, oval, obtuse, the principal veins 7-11, forming narrow areolae containing few included veinlets; spores reticulate; meadows, open woods, swamps, moist thickets, rare. Jackson and Union counties. [*O. vulgatum* of Am. auth., not L.; *O. arenarium* E. G. Britt.]*O. pusillum* Raf.

2. BOTRYCHIUM Sw.—Grape Fern

1. Sterile blade stalked, attached near the base of the plant; lateral veins of the leaf-segments forked; epidermal cells with straight walls.
2. Leaf-segments incised; woods, local*B. dissectum* Spreng.
2. Leaf-segments merely crenate or serrulate.
 3. Blades thin; segments acutish; woods, rare, s. Ill.; also Lee Co.....*B. obliquum* Muhl.
 3. Blades thick, somewhat coriaceous; segments obtuse; woods, rare, n. Ill. [*B. ternatum* var. *intermedium* D. C. Eaton; *B. silaifolium* of auth., not Presl]*B. multifidum* (S. G. Gmel.) Rupr.
1. Sterile blade nearly or quite sessile, attached near the middle of the plant, thin, membranous, the segments acute, incised; lateral veins of the leaf-segments unbranched; epidermal cells with flexuous walls; moist woods, common*B. virginianum* (L.) Sw.

6. HYMENOPHYLLACEAE Gaud.—Filmy Fern Family

1. TRICHOMANES L.—Filmy Fern

T. boschianum Sturm. On sandstone near a spring, Jackson Hollow, Pope Co., Aug. 2, 1923, *Mary M. Steagall* 37 (Univ. Ill. herb.).

7. OSMUNDACEAE R. Br.—Royal Fern Family

1. OSMUNDA L.

1. Leaves 2-pinnate, some of them fertile at the apex and forming an erect terminal panicle; swampy ground or wet woods. Royal Fern*O. regalis* L.
1. Leaves 1-pinnate.
 2. Leaves of two kinds, the fertile and sterile ones separate; sterile leaves 1-pinnate, longer than the fertile; each pinna with a tuft of tomentum at base; swampy ground n.e. Ill. Cinnamon Fern.....*O. cinnamomea* L.
 2. Leaves fertile at the tip, or wholly sterile, or some of the larger ones with some of the middle pinnae fertile; pinnae lacking tufts of tomentum; moist ground in woods. Interrupted Fern*O. claytoniana* L.

8. POLYPODIACEAE R. Br.—Fern Family

1. Sporangia enclosed in globose or necklace-like brownish portions of the contracted and modified fertile leaves; fertile and sterile leaves dissimilar.
2. Sterile leaves 1-pinnatifid, the veins reticulate; fertile leaves 2-pinnate; rhizome horizontal, the leaves therefore solitary.....1. *Onoclea*
2. Sterile leaves 2-pinnatifid, the veins free; fertile leaves 1-pinnate; rhizome short, erect, the leaves therefore tufted.....2. *Pteretis*
1. Sporangia on the margin or back of ordinary foliar or modified leaves.
 3. Indusium inferior or partly so (often evanescent).
 4. Sori marginal, in minute cup-like inferior indusia at the ends of the veins; leaves bipinnate, delicate, fragrant, sparsely glandular-pubescent beneath.....3. *Dennstaedtia*

- 4. Sori dorsal.
 - 5. Indusium wholly inferior, roundish at first, soon splitting.....4. *Woodsia*
 - 5. Indusium partly inferior, delicate, hood-like, attached by its base at one side.....5. *Cystopteris*
- 3. Indusium superior or none.
 - 6. Sori dorsal, i.e., on the back of the leaves away from the margin, or if apparently near the margin not covered by the revolute edge of the leaf-segments.
 - 7. Sori orbicular or nearly so.
 - 8. Indusium peltate or reniform, conspicuous, but often soon deciduous.
 - 9. Indusium peltate; leaves (in our species) 1-pinnate, the stipe and rachis scaly, the pinnules spinulose-serrate, auriculate at the base of the upper side.....6. *Polystichum*
 - 9. Indusium reniform, attached at its sinus; leaves 1-3-pinnately compound.....7. *Dryopteris*
 - 8. Indusium none.
 - 10. Leaves 2-3-pinnatifid, not jointed to the rhizome; sori small, on the backs of the veins.....8. *Phegopteris*
 - 10. Leaves pinnately lobed, jointed to and arising from roundish knobs on the chaffy rhizome; sori large.....9. *Polypodium*
 - 7. Sori elongated, oval to oblong or linear, straight or curved, two or more times as long as wide.
 - 11. Leaves simple, entire, 5-30 cm. long, lanceolate, tapering from a truncate or cordate or even hastate base, rooting at the tip and thus giving rise to new plants; veins forking and anastomosing.....10. *Camptosorus*
 - 11. Leaves pinnate or pinnatifid.
 - 12. Leaves evergreen, coriaceous, small (5-40 cm. long); petioles firm, slender, wiry, brown or black.....11. *Asplenium*
 - 12. Leaves not evergreen, herbaceous; petioles soft, stoutish, stramineous (when dry).
 - 13. Sori in chain-like rows parallel to the midveins; veins united to form a series of narrow areolae along the midrib, elsewhere free.....14. *Woodwardia*
 - 13. Sori and venation otherwise.
 - 14. Pinnae pinnate, the segments coarsely and irregularly toothed or incised.....12. *Athyrium*
 - 14. Pinnae pinnatifid or merely undulate, or entire.....13. *Diplazium*
 - 6. Sori marginal, i.e., borne at the edges of the lobes or segments of the leaves, either in definite sori or in a continuous line and covered by the revolute leaf-margin.
 - 15. Leaves pedate, the petioles forked at the summit, dark brown or black, smooth, glossy; pinnules flabellate; sori several, distinct.....17. *Adiantum*
 - 15. Leaves pinnate, the petioles simple; sori apparently continuous along the margin of the pinnule.
 - 16. Petioles slender, less than 2 mm. thick; leaves small, ovate-lanceolate; rhizome erect, or short-horizontal, copiously scaly.
 - 17. Leaves glabrous.
 - 18. Leaves dimorphous, delicate, membranous; pinnules of the sterile leaves cuneate at the sessile or nearly sessile base.....14. *Cryptogramma*
 - 18. Leaves uniform or nearly so, coriaceous; pinnules short-petiolulate at the rounded or truncate base.....15. *Pellaea*
 - 17. Leaves pubescent, uniform; pinnules cuneate at the sessile or nearly sessile base.....18. *Cheilanthes*
 - 16. Petioles coarse, 2-10 mm. thick; leaves large, coarse, triangular, 1-3-pinnate, 30-100 cm. long; rhizomes horizontal, black, not scaly.....19. *Pteridium*

1. ONOCLEA L.

O. sensibilis L. Sensitive Fern. Moist woods, or edges of meadows, common.

2. PTERETIS Raf.

P. nodulosa (Michx.) Nieuwl. Ostrich Fern. Wet ground, not common; n. Ill., southwd. to Peoria Co. [*Onoclea nodulosa* Michx.; *Matteuccia struthiopteris* and *Onoclea struthiopteris* of Am. auth.]

3. CYSTOPTERIS Bernh.—Bladder Fern

1. Leaves narrowly lanceolate, 30-120 cm. long when mature; axils of some of the upper pinnae usually bearing small bulblets on the lower surface; basal pair of pinnae the largest; on moist cliffs in shaded ravines
.....*C. bulbifera* (L.) Bernh.
1. Leaves broadly lanceolate, acute, 20-40 cm. long, the basal pair of pinnae usually slightly shortened; bulblets none; moist soil in woods, common.....
.....*C. fragilis* (L.) Bernh.

4. WOODSIA R. Br.

1. Leaves 20-50 cm. long, minutely glandular; petiole not jointed; indusium ample, with few broad spreading jagged lobes; cliffs, not common. Cliff Fern*W. obtusa* (Spreng.) Torr.
1. Leaves 5-15 cm. long, rusty-chaffy beneath; petiole jointed a short distance above its base; indusium inconspicuous, the divisions filiform; cliffs, rare. Ogle Co. Rock Woodsia*W. ilvensis* (L.) R. Br.

5. DENNSTAETIA Bernh.

(*Dicksonia* L'Hér.)

D. punctilobula (Michx.) Moore. Hay-scented Fern. Sandstone cliffs in wooded ravines, rare. Wabash Co., *Schneck*.

6. POLYSTICHUM Roth

P. acrostichoides (Michx.) Schott. Christmas Fern. Common in wooded ravines.

7. DRYOPTERIS Adans.

(*Aspidium* Sw.; *Thelypteris* Schmidel)

1. Leaves membranous, not evergreen; vascular bundles of the petiole 2, free or united; rhizomes slender, almost without scales.
2. Lowest pinnae reduced in length, widely spaced, deflexed, the blade therefore conspicuously narrowed at the base; margins of the pinnules flat; indusium glandular; veins mostly simple; vascular bundles usually united; woods and thickets, rare. New York Fern
.....*D. noveboracensis* (L.) Gray
2. Lowest pinnae only slightly reduced; margins of the pinnules revolute; indusium glandless; veins forked; vascular bundles 2, distinct; marshes, common. Marsh Fern*D. thelypteris* (L.) Gray

1. Leaves of firm texture, often evergreen; vascular bundles of the petiole 5 or more; rhizome stout, conspicuously scaly.
3. Leaves 1-pinnate, or nearly 2-pinnate.
 4. Sori along the margins of the obscurely crenate or entire pinnules; leaves coriaceous; sandstone cliffs and wooded ravines, not uncommon. Marginal Wood Fern*D. marginalis* (L.) Gray
 4. Sori near the midvein; pinnules toothed.
 5. Leaf-blades 20-40 cm. wide, ovate in outline, scarcely narrowed below; pinnae broadest near the middle; rich woods in ravines; rare; known from Fulton, McLean, Grundy, and La Salle counties. Goldie's Fern*D. goldiana* (Hook.) Gray
 5. Leaf-blades narrower, elliptical in outline, narrowed at the base; lower pinnae broadest at the base; swampy woods, n. Ill., rare; known from Lake, Kankakee, La Salle, and Ogle counties. Crested Wood Fern*D. cristata* (L.) Gray
3. Leaves 2-3-pinnate, the pinnules spinulose-toothed.
 6. Pinnae at right angles to the rachis; inner pinnules of the basal row equalling or shorter than the next outer ones; leaves (at least the rachis) usually with a few small scattered stipitate glands; indusium with marginal glands; moist woods, locally throughout Ill. except the e. and centr. counties. Common Wood Fern
.....*D. intermedia* (Muhl.) Gray
 6. Pinnae oblique to the rachis; inner pinnules of the basal row longer than the next outer ones; leaves and indusia not glandular; woods, rare. Oregon, Ogle Co., *M. B. Waite* in 1883; Peoria, *Brendel*; Antioch, Lake Co., *G. N. Jones* 16507. Spinulose Wood Fern
.....*D. spinulosa* (O. F. Muell.) Watt

8. PHEGOPTERIS (Presl) Fée

1. Leaves glabrous, ternate, the three divisions petioled; rachis not winged; wooded ravines, rare; Ogle Co.; St. Clair Co. Oak Fern [*Dryopteris linnaeana* C. Chr.; *D. disjuncta* (Ledeb.) Morton]
.....*P. dryopteris* (L.) Fée
1. Leaves twice pinnatifid, pubescent or glandular beneath, the pinnae all sessile, adnate to the rachis.
 2. Rachis terete and wingless above the lowest pair of pinnae, these separated from the next pair above; blades mostly longer than broad, short-pubescent, especially on the veins; moist ravines, cliffs, and woods, rare; Starved Rock, La Salle Co., *Agnes Chase* in 1901; "South Illinois," without definite locality, *Vasey*. Long Beech Fern [*Dryopteris phegopteris* (L.) C. Chr.; *Thelypteris phegopteris* (L.) Slosson; *P. polypodioides* Fée]*P. connectilis* (Michx.) Watt
 2. Rachis winged above the lowest pair of pinnae by their adnate bases; blades about as wide as long, or wider, the lower surface finely glandular, and often slightly pubescent; rich woods and ravines, not uncommon. Broad Beech Fern*P. hexagonoptera* (Michx.) Fée

9. POLYPODIUM L.—Polypody

1. Leaves glabrous; rocky ledges, locally abundant. [*P. vulgare* of auth., not L.]
*P. virginianum* L.
1. Leaves scaly beneath; on trees, rarely on rocks; Jackson Co., and southw.
 [*Acrostichum polypodioides* L., ex p.; *P. polypodioides* (L.) Watt, var.
michauxianum Weatherby]*P. ceteracinum* Michx.

10. CAMPTOSORUS Link

C. rhizophyllus (L.) Link. Walking Fern. Moist rocky ledges, not rare.

11. ASPLENIUM L.—Spleenwort

1. Rachis green, flat.
2. Leaves pinnatifid, or pinnate below, lanceolate, tapering to a long narrow tip, the segments obtuse, crenate; sandstone cliffs, rare, s. Ill. Pinnatifid Spleenwort*A. pinnatifidum* Nutt.
2. Leaves 2-3-pinnate, rhombic in outline, the segments cuneate, finely toothed at apex; usually on calcareous cliffs; s. Ill., without definite locality, *Brendel*. [*A. ruta-muraria* of Am. auth., not L.] Rue Spleenwort*A. cryptolepis* Fern.
1. Rachis black or brown, terete.
3. Leaves pinnatifid, the apex caudate, the segments lanceolate, sessile, variable in size, more or less auricled at base; on a rocky, wooded hillside along the Mississippi River near McClure, Alexander Co., E. J. Palmer in 1919. [*Asplenium platyneuron* × *Camptosorus rhizophyllus*; × *Asplenosorus ebenoides* (R. R. Scott) Wherry] Scott's Spleenwort.....
× *A. ebenoides* R. R. Scott
3. Leaves pinnate, with 15-40 pairs of leaflets.
4. Leaflets auriculate on upper side near base, serrate; rocky woods, not common. Ebony Spleenwort*A. platyneuron* (L.) Oakes
4. Leaflets crenate, oval, obtuse, not auriculate; sandstone cliffs, s. Ill., rare. Maidenhair Spleenwort*A. trichomanes* L.

12. ATHYRIUM Roth

A. angustum (Willd.) Presl. Lady Fern. Woods, local. [*A. filix-femina* ex p. of Am. auth., not L.]

13. DIPLAZIUM Sw.

(*Asplenium* ex p. of auth.)

1. Pinnae entire or crenulate, the veins running into the sinuses; moist woods, common. [*A. angustifolium* Michx.] Glade Fern
*D. pycnocarpon* (Spreng.) Broun
1. Pinnae deeply pinnatifid, the veins or veinlets running into the teeth; woods, not infrequent. Silvery Spleenwort*D. acrostichoides* (Sw.) Butters

14. WOODWARDIA Sm.

(Anchistea Presl)

W. virginica (L.) Sm. Chain Fern. In an old tamarack bog 3 miles e. of Antioch, Lake Co., G. D. Fuller & G. N. Jones in 1944.

15. CRYPTOGRAMMA R. Br.

C. stelleri (S. G. Gmel.) Prantl. Rock-brake. On damp, usually calcareous rocks, rare; n. Ill.

16. PELLAEA Link—Cliff-brake

1. Stipes and rachises glabrous or nearly so; leaves 5-25 cm. long, pale bluish green; chiefly calcareous rocks, rare*P. glabella* Mett.

1. Stipes and rachises with numerous jointed hairs; leaves 10-50 cm. long, grayish green; dry, calcareous rocks, not common*P. atropurpurea* (L.) Link

17. ADIANTUM L.—Maidenhair Fern

A. pedatum L. Moist woods, common throughout Ill.

18. CHEILANTHES Sw.—Lip Fern

1. Leaves tomentose, 5-10 cm. long; indusia continuous; among rocks, not common; chiefly in the w. and s. parts of the state; known from Jo Daviess, Carroll, Jersey, Jackson, and Johnson counties*C. feei* Moore

1. Leaves hirsute and glandular, (5-)10-20 cm. long; indusia discontinuous; on rocks, St. Clair Co. and southw.*C. lanosa* (Michx.) D. C. Eaton

19. PTERIDIUM Scop.

P. latiusculum (Desv.) Hieron. Bracken or Brake Fern. Open woods, common. [*Pteris aquilina* and *Pteridium aquilinum* of auth., not L.]

9. MARSILEACEAE R. Br.

1. MARSILEA L.

M. quadrifolia L. European Marsilea. Ponds, etc., introd. from e. U.S.; native of Europe. In strip-mine ponds near Oakwood, Vermilion Co., G. N. Jones 13052.

10. SALVINIACEAE Reichenb.

1. AZOLLA Lam.

A. mexicana Presl. Mosquito Fern. Floating on still water, not common; w. and s. Ill. [*A. caroliniana* of auth., not Willd.]

Division II. Spermatophyta. Seed Plants

Subdivision I. GYMNOSPERMAE. Gymnosperms

11. TAXACEAE Lindl.—Yew Family

1. TAXUS L.—Yew

T. canadensis Marsh. Canada Yew. Ground-hemlock. Wooded hillsides near streams, rare; n. Ill.; known from Jo Daviess, Winnebago, Carroll, Ogle, Lee, La Salle, and Kankakee counties.

12. PINACEAE Lindl.—Pine Family

1. Leaves in fascicles or clusters.

2. Leaves evergreen, in fascicles of 2-5, surrounded at the base by a sheath; cones maturing the second year.....1. *Pinus*

2. Leaves deciduous, in clusters of 25-50 on short lateral spurs; cones maturing the first year2. *Larix*

1. Leaves scattered along the branchlets, evergreen; cones maturing the first year; branchlets roughened by the persistent, leaf-bases; leaves obtuse, flattened, short-petioled, soon deciduous from the twigs when dry.....3. *Tsuga*

1. PINUS L.—Pine

1. Leaves five in each fascicle, slender, bluish green, 6-12 cm. long; each leaf with one vascular bundle; cones cylindrical, often curved, pendent, 10-15 cm. long; n. Ill.; known from Lake, Jo Daviess, Carroll, Ogle, Lake, and La Salle counties. White Pine*P. strobus* L.

1. Leaves two or three in a fascicle; each leaf with two vascular bundles.

2. Leaves 2-4 cm. long, rigid, twisted, spreading; cone-scales spineless; n. Ill., in Lake, Cook, and Ogle counties. Jack Pine*P. banksiana* Lamb.

2. Leaves 7-12 cm. long, straight; cone-scales with a sharp prickle about 1 mm. long; s. Ill., in Union, Jackson, and Randolph counties. Short-leaf Pine*P. echinata* Mill.

2. LARIX Adans.—Larch

L. laricina (DuRoi) K. Koch. Tamatack or American Larch. Bogs in Lake and McHenry counties.

3. TSUGA Carr.—Hemlock

T. canadensis (L.) Carr. Sandstone bluffs, western Indiana (Parke Co.), and in Wisconsin, but not yet discovered in Illinois.

13. TAXODIACEAE Neger

1. TAXODIUM Rich.—Bald Cypress

T. distichum (L.) Rich. Swampy ground in s. Ill., extending northw. to Lawrence and Marion counties.

14. CUPRESSACEAE Neger

1. Branchlets flattened in one plane; leaves all scale-like; cones woody.....1. *Thuja*
 1. Branchlets not flattened; some or all of the leaves usually subulate; cones berry-like
 or drupe-like, bluish, glaucous.....2. *Juniperus*

1. THUJA L.

T. occidentalis L. Arbor-vitae or Northern White Cedar. Ne. Ill., rare. In Ill., chiefly on cliffs and bluffs of St. Peter sandstone; also in tamarack bogs. Known from La Salle, Kane, Cook, and Lake counties; also Peoria, *Brendel* in 1853, but now extinct there.

2. JUNIPERUS L.—Juniper

1. Leaves all subulate, sharp-pointed, mostly in threes, 7-15 mm. long; low shrub with spreading or decumbent branches; sand dunes near Lake Michigan. [*J. communis* var. *depressa* Pursh; *J. communis* of auth., not L.; *J. sibirica* of auth., not Burgsd.] Low Juniper*J. canadensis* Burgsd.
 1. Leaves of two kinds, scale-like on the mature branchlets, subulate on the young growth, mostly opposite.
 2. Tree 10-25 m. tall; cones on straight peduncles; locally abundant on bluffs and wooded slopes. [*J. virginiana* var. *crebra* Fern. & Grisc.] Eastern Red Cedar*J. virginiana* L.
 2. Prostrate shrub; cones on recurved peduncles; sand dunes near Waukegan and Lake Bluff, Lake Co., the most southerly stations for this species. [*J. sibirica* of auth., not L.] Trailing Juniper
*J. horizontalis* Moench

Subdivision II. ANGIOSPERMAE. Flowering Plants

Class I. Monocotyledoneae Juss.

15. TYPHACEAE J. St. Hil.—Cat-tail Family

1. TYPHA L.—Cat-tail

1. Staminate and pistillate parts of the spike usually contiguous, the latter becoming 2-3 cm. in diameter at maturity; pollen-grains in fours; stigma spatulate; marshes and margins of ponds, common. June-July. Common Cat-tail*T. latifolia* L.
 1. Staminate and pistillate parts of the spike separated by a short interval, the pistillate part only 1-2 cm. in diameter at maturity; pollen-grains simple; stigma linear; marshes, less common than the preceding species. Narrow-leaved Cat-tail*T. angustifolia* L.

16. SPARGANIACEAE Agardh—Bur-reed Family

1. SPARGANIUM L.—Bur-reed

1. Achenes obpyramidal, truncate at the summit, sessile; stigmas usually 2; ditches and margins of ponds. June-July. Giant Bur-reed
*S. eurycarpum* Engelm.

1. Achenes fusiform, stipitate; stigma 1.
2. Pistillate heads all strictly axillary, 2-2.5 cm. in diameter at maturity; beak of the mature achene 2-3 mm. long; leaves 6-12 mm. wide.
3. Inflorescence branched; stigmas 2-4 mm. long; ditches
.....*S. audrocladum* (Engelm.) Morong
3. Inflorescence usually simple; stigmas 1-2 mm. long; ditches
.....*S. americanum* Nutt.
2. Pistillate heads usually supra-axillary; leaves 3-7 mm. wide.
4. Fruiting heads 2-2.5 cm. in diameter at maturity; beak of the mature achene 4 mm. long; ditches and ponds, not common
.....*S. chlorocarpum* Rydb.
4. Fruiting heads 1.5 cm. in diameter at maturity; beak of the mature achene 1-2 mm. long; ditches and ponds, not common
.....*S. acaule* (Beebe) Rydb.

17. NAIADACEAE Lindl.—Naiad Family

1. NAIAS L.—Naiad

1. Fruit glossy, with 30-50 longitudinal lines; style 1-2 mm. long; leaves with 20-30 minute teeth on each margin; ponds and slow streams, widely distributed, but not common. June-Aug.*N. flexilis* (Willd.) R. & S.
1. Fruit dull, with 10-20 rows of distinct reticulations; style 0.2-0.6 mm. long; leaves with 40-50 minute teeth on each margin; ponds and shallow lakes, rare; Peoria and Macoupin counties. July-Sept.
.....*N. guadalupensis* (Spreng.) Morong

18. POTAMOGETONACEAE Engler—Pondweed Family

1. Flowers perfect, in spikes; leaves alternate, or the upper sometimes opposite.....
.....1. *Potamogeton*
1. Flowers unisexual, axillary; leaves opposite, filiform, 1-veined, entire...2. *Zannichellia*

1. POTAMOGETON L.—Pondweed

1. Leaves uniform, all submerged.
2. Leaves linear to filiform.
3. Stipules free from the petioles and blades.
4. Leaves 9-35-veined; fruits 3.5-5 mm. long; lakes, n.e. Ill. [*P. compressus* Am. auth., not L.; *P. zosterifolius* Am. auth., not Schum.]*P. zosteriformis* Fern.
4. Leaves 1-7-veined; fruits 1.5-3 mm. long.
5. Leaves 5-7-veined, with a pair of basal glands; stagnant water, not common. [*P. mucronatus* Schrad.]*P. friesii* Rupr.
5. Leaves 1-3-veined.
6. Blades usually without basal glands; fruiting spikes subcapitate, 2-8 mm. long; ponds, ditches, and streams, chiefly in the n. half of Ill.*P. foliosus* Raf.
6. Blades usually with a pair of small translucent glands at the base; lakes, etc. [*P. panormitanus* Biv.]*P. pusillus* L.

3. Stipules adnate to the base of the leaves.
 7. Leaves filiform, less than 0.6 mm. wide, entire; lakes, rare
.....*P. pectinatus* L.
 7. Leaves linear, 2-ranked, 3-6 mm. wide, the margin microscopically serrulate; lakes, rare *P. robbinsii* Oakes
2. Leaves lanceolate to oval or ovate, 1.5-6 cm. wide.
 8. Leaves perfoliate.
 9. Leaves slightly clasping at base, cucullate at the apex, mostly 8-30 cm. long; fruits 4-5 mm. long; lakes, n.e. Ill.
..... *P. praelongus* Wulfen
 9. Leaves mostly 2-8 cm. long, strongly clasping at the base, the apex flat, not cucullate; fruits 2.5-4 mm. long; lakes, n.e. Ill., rare
.....*P. richardsonii* (A. Benn.) Rydb.
 8. Leaves not perfoliate.
 10. Leaves oval or lanceolate, the margin often crisped; fruit merely apiculate; lakes, local*P. lucens* L.
 10. Leaves linear-ob lanceolate, serrulate throughout; beak of fruit 2-3 mm. long; ponds and streams, not common; known from Cook, Tazewell, and Vermilion counties; native of Eur.*P. crispus* L.
1. Leaves of two kinds, broader floating ones, and narrower submerged ones.
 11. Submerged leaves lanceolate to elliptical, more than 5 mm. wide.
 12. Stem usually black-spotted; principal floating leaves somewhat cordate at base; fruit 3-3.5 mm. long; shallow water, n.e. Ill., rare*P. pulcher* Tuckerm.
 12. Stem not black-spotted; leaves tapering at the base, or rounded.
 13. Floating leaves with 30 or more principal veins; lakes and ditches, local*P. amplifolius* Tuckerm.
 13. Floating leaves with fewer veins.
 14. Mature spikes 4-6 cm. long.
 15. Submerged leaves sessile, the apex mucronate; fruit distinctly 3-keeled; lakes, local
.....*P. angustifolius* Bercht. & Presl
 15. Submerged leaves petioled, the apex acuminate.
 16. Floating leaves elliptical, not mucronate, 4-9 cm. broad; submerged leaves lanceolate; style prominent on the fruit; streams and ponds in the northern half of the state; first collected near Oquawka, Henderson Co., by H. N. Patterson
.....*P. illinoensis* Morong
 16. Floating leaves oval, mucronate, 1-3 cm. wide; submerged leaves narrowly lanceolate; fruit tipped by the nearly sessile stigma; ponds, ditches, and streams, not uncommon [*P. nodosus* Poir. (?)]
.....*P. americanus* C. & S.
 14. Mature spikes 1-2 cm. long; floating leaves oval, 1-3 cm. wide; submerged leaves lanceolate, acuminate or cuspidate;

- ponds or slow streams, chiefly in the eastern part of the state, rare*P. gramineus* L.
11. Submerged leaves linear or filiform, not more than 5 mm. wide.
17. Submerged leaves linear, 2-5 mm. wide, conspicuously reticulate along the midvein; ponds and lakes, not common*P. epiphydrus* Raf.
17. Submerged leaves filiform, 1-2 mm. wide.
18. Spikes of 2 kinds: one emersed, cylindrical, many-flowered, the other submerged, globose, few-flowered; ditches and slow streams, not uncommon, chiefly in w. and s. Ill. [*P. hybridus* of Michx. and Am. auth.]*P. diversifolius* Raf.
18. Spikes all alike, cylindrical.
19. Blades of the floating leaves less than 1.5 cm. long, equalling or longer than the petioles; spikes less than 1 cm. long; lakes, not common*P. vaseyi* Robbins
19. Blades of the floating leaves 2.5 cm. or more in length, mostly shorter than the petioles; spikes 1.5 cm. or more in length; lakes, ponds, and ditches, not uncommon*P. natans* L.

2. ZANNICHELLIA L.—Horned Pondweed

Z. palustris L. Ditches and ponds, not common. Peoria and Henderson counties.

19. JUNCAGINACEAE Lindl.—Arrow-grass Family

1. Flowers numerous, greenish, in a long spike-like raceme; leaves all basal. 1. *Triglochin*
1. Flowers few, white, in a loose raceme. 2. *Scheuchzeria*

1. TRIGLOCHIN L.—Arrow-grass

1. Carpels usually 6, in fruit ellipsoid, 3-6 mm. long; sandy or marly swales, or in swamps or along ditches, n. Ill., not common. June-July.*T. maritima* L.
1. Carpels 3, in fruit clavate, 7-8 mm. long; calcareous soil, rare, Peoria, Kane, and Lake counties. July-Sept.*T. palustris* L.

2. SCHEUCHZERIA L.

S. americana (Fern.) n. comb. Bogs, rare, n. Ill. June-July. [*S. palustris* of Am. auth., not L.; *S. palustris* var. *americana* Fern., in *Rhodora* 25:177. 1923]. On the basis of shape and size of follicles, our plants appear specifically distinct from the European *S. palustris* L.

20. ALISMACEAE DC.—Water-plantain Family

1. Flowers numerous, small, perfect, in a compound panicle; leaves oval or ovate; stamens usually 6; carpels flattened, arranged in a ring on a small flat receptacle. 1. *Alisma*
1. Flowers in whorls, fewer; stamens 9-many; carpels in a head on a convex receptacle.
2. Leaves cordate or ovate, with 5-7 veins from the base; flowers perfect, 3-9 or more in each whorl; plants annual. 2. *Echinodorus*
2. Leaves sagittate or lanceolate, more than 7-veined; plants perennial.

- 3. Fruiting pedicels thickened, spreading or recurved; sepals suborbicular, surrounding the mature fruit; lower flowers perfect, the upper staminate with 9-15 stamens3. *Lophotocarpus*
- 3. Fruiting pedicels not thickened, ascending; sepals spreading or reflexed in fruit; lower flowers pistillate, the upper staminate with numerous stamens.....4. *Sagittaria*

1. ALISMA L.—Water-plantain

A. subcordatum Raf. Ditches and margins of ponds, common. July-Aug. [*A. plantago-aquatica* Am. auth., not L.]

2. ECHINODORUS Rich.

- 1. Scape erect, 10-30 cm. tall; stamens 12; style longer than the ovary; achenes with a straight beak; shores of ponds, rare. June-July. [*E. rostratus* Engelm.]*E. cordifolius* (L.) Griseb.
- 1. Scape prostrate, proliferous; stamens about 21; style shorter than the ovary; beak of the achene incurved; swamps. June-July*E. radicans* (Nutt.) Engelm.

3. LOPHOTOCARPUS T. Durand

L. calycinus (Engelm.) J. G. Sm. Shallow water, rare. Peoria, *Brendel*. July-Sept.

4. SAGITTARIA L.—Arrowhead

- 1. Leaves sagittate; stamens with glabrous filaments.
- 2. Bracts of the inflorescence ovate, obtusish; beak of the achene horizontal; shallow water; July-Sept. Common Arrowhead*S. latifolia* Willd.
- 2. Bracts lanceolate, acuminate; beak erect.
- 3. Achenes 2 mm. long, with thin, unequal wings on both margins, the beak 0.5 mm. long; shallow water. July-Sept.*S. cuneata* Sheld.
- 3. Achenes 2.5-3 mm. long, with thick, equal wings; beak 1-2 mm. long; muddy shores, or in ditches, common. July-Sept.*S. brevirostra* Mack. & Bush
- 1. Leaves linear, lanceolate, or oval; filaments more or less glandular-pubescent.
- 4. Achenes 3 mm. long, the beak 1.5 mm. long; pedicels very short, the pistillate flowers nearly sessile; ditches or muddy shores; June-Sept.*S. rigida* Pursh
- 4. Achenes 2 mm. long, the beak less than 1 mm. long; pedicels of the pistillate flowers equalling those of the staminate; shallow water. June-Sept.*S. graminea* Michx.

21. HYDROCHARITACEAE Aschers.—Frogbit Family

- 1. Leaves cordate, petioled1. *Limnobium*
- 1. Leaves neither cordate nor petioled.
- 2. Leaves basal, ribbon-like, elongated, floating.....2. *Vallisneria*
- 2. Leaves small, whorled or opposite, sessile, pellucid, 1-veined; stems elongated, leafy, floating3. *Anacharis*

1. LIMNOBIUM Rich.—Frogbit

L. spongia (Bosc) Steud. Shallow water and mud, rare. Union Co. June-Aug.

2. VALLISNERIA L.—Eelgrass

V. americana Michx. Wild Celery. Ponds and slow streams, mostly in the n. half of the state. July-Aug. [*V. spiralis* sensu auth., not L.]

3. ANACHARIS Bab. & Planch.—Waterweed

(*Elodea* sensu Michx., non Juss.)

1. Leaves elliptical or oblong, obtuse, 1.2-4 mm. wide; slow streams, widely distributed. July-Aug. *A. canadensis* (Michx.) Planch.

1. Leaves linear, acute, 0.7-1.8 mm. wide; ponds and slow streams. July-Aug. *A. occidentalis* (Pursh) Vict.

22. GRAMINEAE Juss.—Grass Family

KEY TO THE TRIBES

1. Plants woody; stems perennial Tribe 1. *Bambusaceae*

1. Plants herbaceous; stems annual.

2. Spikelets 2-many-flowered (except *Hordeum* and some *Chlorideae*).

3. Inflorescence a panicle, this sometimes contracted and spike-like.

4. Lemmas longer than the glumes, awnless or with a straight apical awn.....

..... Tribe 2. *Festuceae*

4. Lemmas usually shorter than the glumes, usually with a bent awn arising from the back Tribe 4. *Aveneae*

3. Inflorescence of solitary, racemose, or digitate spikes or racemes, the spikelets sessile or nearly so.

5. Spikelets solitary, or in clusters of 2-6, arranged alternately on opposite sides of the axis; spike solitary, terminal..... Tribe 3. *Hordeae*

5. Spikelets in one-sided spikes or racemes, the spikes or racemes solitary or several Tribe 6. *Chlorideae*

2. Spikelets with only one perfect flower.

6. Inflorescence not monoecious; flowers all perfect, or perfect and staminate or neutral.

7. Glumes present; stamens 3 or 1.

8. Glumes 2.

9. Spikelets in pairs, one sessile and fertile, the other pedicelled and staminate or neuter, or rarely absent or reduced to a pedicel; rachilla articulated below the glumes..... Tribe 10. *Andropogoneae*

9. Spikelets not in pairs; rachilla disarticulating above the glumes..... Tribe 5. *Agrostideae*

8. Glumes apparently more than 2 (except *Paspalum*).

10. Glumes apparently 4, the second and third being sterile lemmas present below the fertile floret..... Tribe 7. *Phalarideae*

10. Glumes apparently 3, the third being a sterile lemma, the two real glumes very unequal Tribe 9. *Paniccae*

7. Glumes obsolete or minute..... Tribe 8. *Oryzcae*

6. Inflorescence monoecious, the staminate and pistillate flowers in different parts of the same spike, or in different inflorescences, the staminate above the pistillate ones..... Tribe 11. *Tripsaccae*

Tribe 1. BAMBUSEAE.—Bamboo Tribe

One genus 1. *Arundinaria*

Tribe 2. FESTUCEAE.—Fescue Tribe

- 1. Plants 2-4 m. tall; rachilla plumose; panicles large.....11. *Phragmites*
- 1. Plants less tall; rachilla not plumose.
 - 2. Lemmas prominently 3-nerved.
 - 3. Lemmas more or less villous on the nerves.
 - 4. Stem-nodes glabrous; palet not ciliate.....13. *Triodia*
 - 4. Stem-nodes pubescent; palet conspicuously ciliate.....14. *Triplasis*
 - 3. Lemmas glabrous, or merely scabrous on the nerves.
 - 5. Lemmas less than 5 mm. long.....7. *Eragrostis*
 - 5. Lemmas about 8 mm. long; the upper 2-4 lemmas empty.....8. *Diarrhena*
 - 2. Lemmas 5-many-nerved, (the nerves sometimes indistinct).
 - 6. Spikelets with sterile lemmas above or below the fertile florets.
 - 7. Sterile lemmas above the fertile florets.....12. *Melica*
 - 7. Sterile lemmas below the fertile florets.....9. *Uniola*
 - 6. Spikelets without sterile lemmas.
 - 8. Lemmas awned.
 - 9. Lemmas bifid at apex, awned just below the apex or behind the teeth.....
 - 2. *Bromus*
 - 9. Lemmas entire, with an apical point or awn.....3. *Festuca*
 - 8. Lemmas awnless.
 - 10. Spikelets nodding, as broad as long, on capillary pedicels in open panicles; lemmas papery, imbricated, scarious-margined, cordate at the base, the apex obtuse or acutish.....6. *Briza*
 - 10. Spikelets not as above in all respects.
 - 11. Spikelets strongly flattened, crowded in 1-sided clusters at the ends of long branches; keels of the glumes and lemmas hispid-ciliate.....
 - 10. *Dactylis*
 - 11. Spikelets neither strongly flattened, nor in 1-sided clusters.
 - 12. Lemmas with cobwebby hairs at base.....5. *Poa*
 - 12. Lemmas without cobwebby hairs.
 - 13. Nerves of the lemma parallel and prominent; lemma obtuse, scarious at apex; tall perennials with flat leaves....4. *Glyceria*
 - 13. Nerves of the lemma converging at the apex (sometimes indistinct).
 - 14. Lemmas 8-11 mm. long; spikelets large.....2. *Bromus*
 - 14. Lemmas less than 8 mm. long.
 - 15. Lemmas keeled on the back, the apex obtuse or acute.....5. *Poa*
 - 15. Lemmas convex on the back or subcarinate, acute or awn-tipped (obtusish in *F. obtusa*).....3. *Festuca*

Tribe 3. HORDEAE.—Barley Tribe

- 1. Spikelets solitary at each joint of the rachis.
 - 2. Spikelets placed edgewise to the rachis; first glume of the lateral spikelets absent.....21. *Lolium*
 - 2. Spikelets placed flatwise to the rachis; glumes 2.
 - 3. Glumes 1-nerved; spikelets with 2 perfect flowers17. *Secale*
 - 3. Glumes 3-several-nerved.
 - 4. Glumes lanceolate or linear15. *Agropyron*
 - 4. Glumes ovate16. *Triticum*
- 1. Spikelets 2-6 at each joint of the rachis.
 - 5. Spikelets 3 at each joint, 1-flowered, the lateral pair usually aborted; glumes awn-like20. *Hordeum*

5. Spikelets usually in pairs, 2-6-flowered.
 6. Spike loosely flowered, the spikelets widely spreading; glumes obsolete or bristle-like19. *Hystrix*
 6. Spike densely flowered, the spikelets ascending; glumes well-developed
18. *Elymus*

Tribe 4. AVENEAE.—Oat Tribe

1. Spikelets more than 5 mm. long.
 2. Lemmas awned from the back.
 3. Spikelets more than 1 cm. long; plants annual.....25. *Avena*
 3. Spikelets less than 1 cm. in length; lower floret long-awned, the upper one usually awnless; plants perennial26. *Arrhenatherum*
 2. Lemma awned from between the apical teeth.....27. *Danthonia*
 1. Spikelets not more than 5 mm. long.
 4. Spikelets disarticulating above the glumes.
 5. Inflorescence contracted, spike-like; glumes unequal; plants of dry habitats.....
22. *Koeleria*
 5. Inflorescence a spreading panicle; lemma awned from the middle or below; plants of moist habitats.....24. *Deschampsia*
 4. Spikelets disarticulating below the glumes.
 6. Florets awnless, all perfect; glumes exceeded by the upper floret.....23. *Sphenopholis*
 6. Lower spikelet perfect, awnless, the upper staminate and bearing a hooked awn; glumes longer than the florets28. *Holcus*

Tribe 5. AGROSTIDAE.—Timothy Tribe

1. Lemma of more delicate texture than the glumes, not at all indurated.
 2. Inflorescence dense, spike-like; glumes keeled.
 3. Lemma awnless.
 4. Glumes short-awned; leaves flat.....35. *Phleum*
 4. Glumes awnless.
 5. Tall perennials; florets bearing a tuft of hairs at base.....30. *Ammophila*
 5. Low annuals; florets without hairs at base.....38. *Heleochoa*
 3. Lemma awned; glumes awnless.....34. *Alopecurus*
 2. Inflorescence an open or somewhat spike-like panicle; glumes not keeled.
 6. Grain permanently enclosed in the lemma and palet; pericarp adherent to the grain.
 7. Palet 1-nerved, 1-keeled; stamen 1; tall perennials with flat leaves and nodding panicles33. *Cinna*
 7. Palet 2-nerved and 2-keeled; stamens 3.
 8. Lemma with long hairs at the base.
 9. Lemma and palet membranous; rachilla prolonged beyond the palet, bristle-like29. *Calamagrostis*
 9. Lemma and palet chartaceous; rachilla not prolonged beyond the palet31. *Calamovilfa*
 8. Lemma without a tuft of hairs at the base.
 10. Lemma with a terminal awn, or mucronate at apex.....36. *Muhlenbergia*
 10. Lemma awnless or with a dorsal awn.....32. *Agrostis*
 6. Grain not permanently enclosed in the lemma and palet, readily separating from the pericarp.....37. *Sporobolus*
 1. Lemma indurated when mature, closely enveloping the grain.
 11. Lemma awnless.....40. *Milium*
 11. Lemma awned.
 12. Lemma 3-awned43. *Aristida*

- 12. Lemma 1-awned.
 - 13. Awn twisted or bent42. *Stipa*
 - 13. Awn not twisted or bent.
 - 14. Lemma broad, the awn deciduous.....41. *Oryzopsis*
 - 14. Lemma narrow, the tip awned or mucronate.
 - 15. Rachilla not prolonged behind the palet.....36. *Muhlenbergia*
 - 15. Rachilla prolonged into a bristle behind the palet....39. *Brachyelytrum*

Tribe 6. CHLORIDEAE.—Gramma Tribe

- 1. Spikelets with more than 1 perfect floret; plants annual.
 - 2. Spikes numerous, slender, racemose.....47. *Leptochloa*
 - 2. Spikes few, digitate.
 - 3. Rachilla prolonged beyond the spikelets.....45. *Dactyloctenium*
 - 3. Rachilla not prolonged.....44. *Eleusine*
- 1. Spikelets with only one perfect floret.
 - 4. Spikelets with one or more modified florets above the perfect one.
 - 5. Spikes digitate.....51. *Chloris*
 - 5. Spikes racemose52. *Bouteloua*
 - 4. Spikelets without additional modified florets.
 - 6. Spikelets falling entire, the rachilla articulated below the glumes.
 - 7. Spikelets narrow; glumes unequal.....50. *Spartina*
 - 7. Spikelets globose; glumes equal.....49. *Beckmannia*
 - 6. Spikelets with the rachilla articulated above the glumes, these therefore persistent.
 - 8. Spikes digitate46. *Cynodon*
 - 8. Spikes racemose48. *Schedonnardus*

Tribe 7. PHALARIDEAE.—Canary Grass Tribe

- 1. First and second lemmas oval.
 - 2. Glumes nearly equal; lower florets staminate; spikelets brown, glossy...53. *Hierochloa*
 - 2. Glumes very unequal; lower florets consisting of sterile lemmas...54. *Anthoxanthum*
- 1. First and second lemmas bristle-like.....55. *Phalaris*

Tribe 8. ORYZEAE.—Rice Tribe

- 1. Spikelets perfect; stamens 1-3.....56. *Lersia*
- 1. Spikelets unisexual; stamens 657. *Zizania*

Tribe 9. PANICEAE.—Millet Tribe

- 1. Spikelets with an involucre of bristles or spine-bearing valves.
 - 2. Spikelets subtended by bristles; inflorescence a dense, spike-like panicle...63. *Setaria*
 - 2. Spikelets in a spiny involucre64. *Cenchrus*
- 1. Spikelets not involucreate.
 - 3. Glumes awned or awn-pointed62. *Echinochloa*
 - 3. Glumes not awned.
 - 4. Glumes 260. *Paspalum*
 - 4. Glumes 3.
 - 5. Spikelets in slender, 1-sided racemes.....58. *Digitaria*
 - 5. Spikelets in panicles.
 - 6. Margins of lemma hyaline, flat; ligule a scale59. *Leptoloma*
 - 6. Margins of lemma not hyaline, more or less inrolled; ligule of hairs.....61. *Panicum*

Tribe 10. ANDROPOGONEAE.—Sorghum Tribe

1. Spikelets in slender racemes, these single or 2 or 3 together, not panicked.....
.....65. *Andropogon*
1. Spikelets in open or contracted panicles.
2. Panicle densely woolly; spikelets all perfect.....66. *Erianthus*
2. Panicle not woolly.
3. Pedicelled spikelets staminate or neutral; panicle open; awns deciduous.....
.....67. *Sorghum*
3. Pedicelled spikelets reduced to a hairy pedicel; panicle narrow; awns persistent
.....68. *Sorghastrum*

Tribe 11. TRIPSACEAE.—Corn Tribe

1. Pistillate and staminate spikelets in different parts of the same inflorescence, the pistillate below.....69. *Tripsacum*
1. Pistillate spikelets in thick, axillary, solitary spikes ("cobs"); staminate spikelets in terminal paniculate spikes, forming the "tassel"70. *Zea*

1. ARUNDINARIA Michx.—Cane

A. gigantea (Walt.) Chapm. River banks and swamps, s. Ill., forming "cane-brakes." [*A. macrosperma* Michx.]

2. BROMUS L.—Brome Grass

1. Plants perennial.
2. Spikelets awnless or nearly so, 2-3.5 cm. long, nearly terete; panicle erect, 10-20 cm. long, the branches spreading; plants with rhizomes; fields and roadsides, introd. from Eur. May-June. Hungarian Brome Grass
.....*B. inermis* Leys.
2. Spikelets conspicuously awned; native species.
3. Lemmas pubescent on the margins and sometimes near the base, otherwise glabrous; second glume 3-nerved; first glume 1-nerved; hillsides and open woods. June-Aug.*B. ciliatus* L.
3. Lemmas evenly pubescent.
4. Panicle 10-30 cm. long; second glume 3-nerved; first glume 1-nerved.
5. Sheaths (except the lower one or two) shorter than the internodes; blades scarcely auriculate at base; meadows, woods, and banks. June-Aug. Canada Brome*B. purgans* L.
5. Sheaths longer than the internodes; blades somewhat auriculate at base; meadows and open woods, not common; known from Jo Daviess, Kane, Stark, and Wabash counties. July-Sept. [*B. altissimus* sensu Pursh, non Gilib.; *B. incanus* (Shear) Hitchc.]
.....*B. latiglumis* (Shear) Hitchc.
4. Panicle 7-10 cm. long; second glume 5-7-nerved; first glume 3-nerved; dry ground. June-July*B. kalmii* Gray
1. Plants annual; weedy species, adventive from Europe.
6. Lemmas awnless or nearly so, scarious-margined, glabrous or scaberulous, nearly as broad as long; spikelets broadly oval, 1.5-2.5 cm. long; fields and waste places; introd. from Eur. June-July
.....*B. brizaeformis* F. & M.

- 6. Lemmas awned, much longer than broad.
- 7. First glume 3-nerved; second glume 5-7-nerved; lemmas broad, obtuse.
- 8. Panicle open, the branches ascending or drooping.
- 9. Sheaths glabrous; awns shorter than the lemmas; fields and waste places; introd. from Eur. May-July. Cheat*B. secalinus* L.
- 9. Sheaths retrosely pilose.
- 10. Awns straight, 7-9 mm. long; fields and waste places; adv. from Eur. May-July*B. commutatus* Schrad.
- 10. Awns flexuose, divergent at maturity, 9-12 mm. long; waste places; adv. from Eur. May-July*B. japonicus* Thunb.
- 8. Panicle small, dense, erect or nearly so, 5-10 cm. long; sheaths pubescent.
- 11. Lemmas glabrous, 7 mm. long; roadsides and waste places; adv. from Eur. June-Aug.*B. racemosus* L.
- 11. Lemmas pubescent, 9-10 mm. long; roadsides, waste places, and fields, common; adv. from Eur. May-July. [*B. hordeaceus* sensu auth., non L.]*B. mollis* L.
- 7. First glume 1-nerved; second glume 3-nerved; sheaths pubescent; awns longer than the acuminate lemmas.
- 12. Awns 10-17 mm. long; lemmas pubescent; panicle dense; roadsides and fields; adv. from Eur. May-July*B. tectorum* L.
- 12. Awns 2-3 cm. long; lemmas scabrous; panicle loose; waste places; adv. from Eur. May-July. [*B. villosus* Forsk., not Scop.]
.....*B. sterilis* L.

3. FESTUCA L.—Fescue Grass

- 1. Lemmas awnless or merely mucronate; leaves flat, 3-7 mm. wide.
- 2. Panicle narrow, erect; lemma 5-7 mm. long; meadows, roadsides, and waste places; nat. from Eur. June-July. Meadow Fescue*F. elatior* L.
- 2. Panicle open; lemmas 4-5 mm. long.
- 3. Panicle-branches elongate, slender, spreading, spikelet-bearing toward the ends or above the middle; woods, local. May-July. Nodding Fescue. [*F. nutans* Spreng., not Moench]*F. obtusa* Spreng.
- 3. Panicle more compact, the few shorter branches spikelet-bearing from near the middle, the spikelets somewhat aggregate; woods, rather rare. June. [*F. shortii* Kunth]*F. paradoxa* Desv.
- 1. Awn of lemma 1-7 mm. long; leaves involute, not more than 1 mm. wide.
- 4. Perennial, tufted; spikelets 4-5-flowered; stamens 3; fields and waste places; nat. from Eur. May-June. Sheep Fescue*F. ovina* L.
- 4. Annual, not tufted; spikelets 5-13-flowered; stamen 1; sandy soil. May-June. Slender Fescue. [*F. tenella* Willd.]*F. octoflora* Walt.

4. GLYCERIA R. Br.—Manna Grass
(*Panicularia* Heist.)

- 1. Spikelets linear, nearly terete, 1-2 cm. long; panicles narrow, erect.
- 2. Spikelets 1-1.5 cm. long, distinctly pedicelled; in shallow water, or at the edges of streams or ponds, n. half. of Ill., not common
.....*G. borealis* (Nash) Batch.

2. Spikelets 1.5-2 cm. long, subsessile; in shallow water or wet soil. May-Aug. [*G. fluitans* of auth., not R. Br.]*G. septentrionalis* Hitchc.
1. Spikelets ovate, more or less compressed, not more than 6 mm. long; panicles usually nodding.
3. Lemmas broadly ovate, obscurely nerved; spikelets 3-4 mm. wide; wet ground in the n. part of the state. June-July*G. canadensis* (Michx.) Trin.
3. Lemmas elliptical, the nerves prominent; spikelets 1-2.5 mm. wide.
4. Spikelets 4-6 mm. long; wet ground, rare. Jo Daviess Co.*G. grandis* S. Wats.
4. Spikelets 2-3 mm. long; wet ground, common, June-July. [*G. nervata* (Willd.) Trin.].....*G. striata* (Lam.) Hitchc.

5. POA L.—Blue Grass. Meadow Grass

1. Perennials; stems (20-) 30-140 cm. tall.
2. Plants with conspicuous horizontal rhizomes.
 3. Stems terete, 30-120 cm. tall; leaves bright green; panicle open, 5-20 cm. long, the ascending or spreading branches in whorls of 3-5; lemmas 3 mm. long, copiously webbed at base; roadsides, lawns, fields and woods, very common. May-June. Kentucky Blue Grass.....*P. pratensis* L.
 3. Stems compressed above, 20-40 cm. tall; leaves bluish green; panicle narrow, 3-8 cm. long; lemmas 2-2.5 mm. long, scarcely webbed; roadsides, cultivated ground, waste places, common; nat. from Eurasia. June-July. Canada Blue Grass*P. compressa* L.
2. Plants without horizontal rhizomes.
 4. Lemmas glabrous, except the webbed base; damp woods, rare, n. Ill. June-Aug. [*P. debilis* Torr., not Thuill.]*P. languida* Hitchc.
 4. Lemmas puberulent or pubescent, at least on the keel.
 5. Lemmas webbed, i.e., with a tuft of soft hairs at base.
 6. Marginal nerves of the lemmas glabrous; woods and thickets, rare. May-June*P. alsodes* Gray
 6. Marginal nerves of the lemmas pubescent.
 7. Intermediate nerves of the lemmas obscure.
 8. Panicle 5-10 cm. long, the lower branches mostly in pairs; wet ground, rare*P. paludigena* Fern. & Wieg.
 8. Panicle 10-30 cm. long, the lower branches mostly fascicled; damp meadows. July-Aug. [*P. triflora* Gilib.]*P. palustris* L.
 7. Intermediate nerves of the lemmas prominent.
 9. Branches of the panicle spikelet-bearing from the middle; spikelets 3-4 mm. long; woods and thickets. May-July.....*P. sylvestris* Gray
 9. Branches of the panicle spikelet-bearing only near the ends; spikelets 5-6 mm. long; meadows, rare, w. Ill. Discovered at Canton by J. Wolf in 1882*P. wolfii* Scribn.

- 5. Lemmas not webbed; nerves of the lemma pubescent; spikelets 6-8 mm. long; moist woods, rare*P. autumnalis* Muhl.
- 1. Low tufted annuals; stems 5-25 cm. tall.
- 10. Lemmas distinctly 3-nerved, the other nerves obscure; lemmas webbed at the base; anthers 0.2-0.3 mm. long; dry ground. May-Aug.
.....*P. chapmaniana* Scribn.
- 10. Lemmas 5-nerved, not webbed at the base; anthers 0.7-1 mm. long; common in waste places, lawns, cultivated ground; nat. from Eurasia. May-Oct.*P. annua* L.

6. BRIZA L.—Quaking Grass

B. maxima L. Fields and waste places, occasional; adv. from Eurasia.

7. ERAGROSTIS Host

- 1. Stems creeping, rooting at the nodes, the flowering branches erect; plants annual.
- 2. Lemmas 1.5-2 mm. long; anthers 0.2-0.3 mm. long; flowers perfect; sandy, gravelly, or muddy shores. July-Oct.*E. hypnoides* (Lam.) BSP.
- 2. Lemmas 3-4 mm. long; anthers 1.5-2 mm. long; plants dioecious; sandy soil, not common*E. reptans* (Michx.) Nees
- 1. Stems erect or ascending, not rooting at the nodes.
- 3. Spikelets 2-7-flowered, 2-4 mm. long.
- 4. Panicle about as long as wide, the branches elongated, capillary; plants branched at the base; dry ground in open woods. July-Sept.
.....*E. capillaris* (L.) Nees
- 4. Panicle much longer than broad, the branches short; plants branched from above the base; sandy soil and roadsides. Aug.-Oct.
.....*E. frankii* C. A. Mey.
- 3. Spikelets 5-35-flowered, 3-15 mm. long.
- 5. Plants perennial, erect, 30-120 cm. tall.
- 6. Panicle-branches spreading at maturity; spikelets 6-12-flowered; lemmas 1.5-2 mm. long; sandy soil. July-Oct. [*E. pectinacea* of auth., not (Michx.) Nees]*E. spectabilis* (Pursh) Steud.
- 6. Panicle-branches erect or ascending; spikelets 4-6-flowered; lemmas 2.5-3 mm. long; sandy soil, chiefly in centr. and w. Ill. [*E. pilifera* Scheele]*E. trichodes* (Nutt.) Wood
- 5. Plants annual, usually 10-50 cm. tall, decumbent at base.
- 7. Keels of glumes and lemmas with minute glands; spikelets 8-35-flowered.
- 8. Spikelets 2.5-3 mm. wide; waste places and cult. ground; nat. from Eur. Stink Grass. June-Sept. [*E. megastachya* Link].....
.....*E. cilianensis* (All.) Link
- 8. Spikelets 1.5-2 mm. wide; waste places and cult. ground; nat. from Eur. [*E. minor* Host]*E. poaeoides* (L.) Beauv.

7. Keels of glumes and lemmas glandless, scaberulous; spikelets usually 3-9-flowered, 1-1.5 mm. wide; fields, waste places, roadsides, and cult. ground, common. July-Sept. [*E. purshii* Schrad.; *E. pilosa* of auth., not (L.) Beauv.] *E. pectinacea* (Michx.) Nees

8. DIARRHENA Beauv.

D. americana Beauv. Woods, locally throughout Ill. June-Sept. [*Diarina festucoides* Raf.; *Korycarpus arundinaceus* Zea ex Lag.; *Diarrhena diandra* (Michx.) Wood; *Diarrhena festucoides* sensu Fern., non Raspail].

9. UNIOLA L.

U. latifolia Michx. Open woods in s. and centr. Ill. June-Oct.

10. DACTYLIS L.

D. glomerata L. Orchard Grass. Fields and roadsides, very common; nat. from Eur. May-June.

11. PHRAGMITES Trin.

P. communis Trin. Common Reed. Wet ground, n. and centr. Ill. Aug-Sept.

12. MELICA L.

1. Glumes nearly equal and almost as long as the 2-flowered spikelet; leaves glabrous above, pubescent beneath; open woods. May-June
 *M. mutica* Walt.
1. Glumes unequal, shorter than the usually 3-flowered spikelet; leaves pubescent above and glabrous or scabrous beneath; rocky woods, more common than the preceding species. May-June *M. nitens* Nutt.

13. TRIODIA R. Br.

(*Tridens* R. & S.)

T. flava (L.) Smyth. Purpletop. Sandy soil and open woods in centr. and s. Ill., and extending northw. to Peoria and Kankakee counties. July-Sept.

14. TRIPLASIS Beauv.—Sand Grass

T. purpurea (Walt.) Chapm. Dry sand, centr, and n. Ill. Aug.-Sept.

15. AGROPYRON Gaertn.—Wheat Grass

1. Lemmas villous; plants with rhizomes; sandy shores of L. Michigan. July-Aug. *A. dasystachyum* (Hook.) Scribn.
1. Lemmas glabrous or merely scabrous.
2. Plants tufted, not stoloniferous; horizontal rhizomes absent; glumes scabrous on nerves and margins.
3. Lemmas awnless or short-awned; spike slender, lax; glumes 10-12 mm. long; dry soil, rare. Cook Co., *Agnes Chase*; Stark Co., *V. H. Chase*. July-Aug. [*A. tenerum* Vasey.] Slender Wheat Grass
 *A. pauciflorum* (Schw.) Hitchc.

3. Lemmas awned, the awn 1-3 cm. long; spike dense; glumes 7-9 mm. long; woods and meadows, rare. Ringwood, *Vasey*. July-Aug. [*A. caninum* sensu auth., non (L.) Beauv.] *A. caninoides* (Ramaley) Beal]*A. subsecundum* (Link) Hitchc.
2. Plants stoloniferous, with horizontal rhizomes; glumes smooth, except on the keel.
 4. Leaves glaucous; spikelets 7-13-flowered, 1.5-2.5 cm. long; along rail-roads, adv. from w. U.S. June-July. Bluestem*A. smithii* Rydb.
 4. Leaves green; spikelets mostly 4-6-flowered, 1-1.5 cm. long; waste ground and fields, common; nat. from Eur. June-July. Quack Grass.*A. repens* (L.) Beauv.

16. TRITICUM L.—Wheat

T. aestivum L. Roadsides and fields, occasionally spontaneous

17. SECALE L.—Rye

S. cereale L. Occasionally spontaneous in fields and waste ground.

18. ELYMUS L. Wild Rye

1. Lemmas awnless; spike erect, dense, 7-25 cm. long; sand dunes along L. Michigan. Cook Co., *Killip* in 1916; also Lake Co., *G. D. Fuller*. June-July. [*E. arenarius* sensu Am. auth., non L.] Dune Grass
.....*E. mollis* Trin.
1. Lemmas awned.
 2. Glumes subulate, obscurely nerved, 12-20 mm. long; spike nodding; woods. June-Aug. [*E. striatus* sensu auth., non Willd.] Slender Wild Rye*E. villosus* Muhl.
 2. Glumes lanceolate, 3 to several-nerved.
 3. Awn of lemma straight, about 1 cm. long; spike usually erect; glumes strongly bowed out at base; roadsides and woods, common and variable. July-Aug.*E. virginicus* L.
 3. Awn of lemma curved when dry, 2-3 cm. long; spike nodding; glumes not bowed out at base; roadsides and edges of woods, common. July-Aug. Nodding Wild Rye*E. canadensis* L.

19. HYSTRIX Moench

H. patula Moench. Bottlebrush Grass. Woods, common. June-July. [*Hystrix hystrix* (L.) Millsp.]

20. HORDEUM L.—Barley

1. Rachis of spike becoming disjointed.
 2. Spikes nodding, 6-16 cm. long; awns 2-6 cm. long; tufted perennials.
 3. Blades 2-4 mm. wide; awns 3-6 cm. long; roadsides and fields, common. June-Aug. Squirrel-tail Grass*H. jubatum* L.
 3. Blades 5-8 mm. wide; awns 2-3.5 cm. long; prairies and roadsides, chiefly w. Ill. June-Aug. *H. pammeli* Scribn. & Ball
.....*H. montanense* Beal

2. Spikes erect, 2-6 cm. long; awns less than 1.5 cm. long; blades 2-4 mm. wide; plants annual; roadsides and fields. May-June. Small Wild Barley *H. pusillum* Nutt.
1. Rachis of spike not disarticulating; blades flat, 5-15 mm. wide; plants annual; cult., and sometimes spontaneous; introd. from Eur. Barley
..... *H. vulgare* L.

21. *LOLIUM* L.—Rye Grass

1. Glume shorter than the spikelet; plants perennial.
2. Lemmas awned; spikelets mostly 10-20-flowered; lawns, roadsides, and fields; introd. from Eur. June-Aug. Italian Rye Grass
..... *L. multiflorum* Lam.
2. Lemmas awnless or short-awned; spikelets mostly 5-10-flowered; meadows, lawns, roadsides; native of Eur. June-Aug. English Rye Grass
..... *L. perenne* L.
1. Glume as long or longer than the spikelet; plants annual; lemmas awned; waste places, introd. from Eur. June-Aug. Darnel *L. temulentum* L.

22. *KOELERIA* Pers.

K. gracilis Pers. June Grass. Sandy soil, local. June-July. [*K. cristata* sensu auth., non (L.) Pers.]

23. *SPHENOPHOLIS* Scribn.—Wedge Grass

1. Panicle narrow, densely-flowered, spike-like, erect or nearly so; prairies and open woods. May-June *S. obtusata* (Michx.) Scribn.
1. Panicle lax, nodding, not spike-like, the branches more or less spreading.
2. Glumes subequal, the second broadly obovate, obtuse; lemmas obtuse, scabrous; woods. May-June *S. nitida* (Spreng.) Scribn.
2. Glumes unequal, the first shorter than the narrowly obovate second one; lemmas acute, glabrous; woods, fields, and roadsides. May-June. [*S. pallens* sensu auth., non (Spreng.) Scribn.] *S. intermedia* Rydb.

24. *DESCHAMPSIA* Beauv.—Hair Grass

D. cespitosa (L.) Beauv. Moist soil along streams in the n. part of the state. June-July.

25. *AVENA* L.—Oat

1. Lemmas bearing stiff brownish hairs, at least at base; awn stout, geniculate, strongly twisted; spikelets mostly 3-flowered; fields and waste places; nat. from Eur. May-July. Wild Oat *A. fatua* L.
1. Lemmas glabrous; awn small, usually straight, or absent; spikelets mostly 2-flowered; commonly cult., occasionally spontaneous. May July. Oat
..... *A. sativa* L.

26. *ARRHENATHERUM* Beauv.

A. elatius (L.) Mert. & Koch. Tall Oat Grass. Fields, roadsides, and waste places; nat. from Eur. June-July.

27. DANTHONIA Lam. & DC.—Oat Grass

D. spicata (L.) Beauv. Thin soil in open woods. June-July.

28. HOLCUS L.
(*Notholcus* Nash)

H. lanatus L. Velvet Grass. Roadsides and fields, occasional; nat. from Eur. June-Aug.

29. CALAMAGROSTIS Adans.—Reed Grass

- 1. Panicle narrow but loose, becoming somewhat open; spikelets 3-3.5 mm. long; blades flat, 4-8 mm. wide; marshy ground. June-July. Blue-joint Grass
.....*C. canadensis* (Michx.) Beauv.
- 1. Panicle contracted, spike-like; spikelets 4-4.5 mm. long; blades involute, scabrous, 2-4 mm. wide; moist ground, n. Ill. June-Aug. Northern Reed Grass
.....*C. inexpansa* Gray

30. AMMOPHILA Host

A. breviligulata Fern. Beach Grass. Sand dunes along L. Michigan. July-Aug. [*A. arenaria* sensu auth., non Link].

31. CALAMOVILFA Hack.

C. longifolia (Hook.) Scribn. Sand dunes along L. Michigan. Aug-Sept.

32. AGROSTIS L.—Bent Grass

- 1. Lemma awned; spikelets 1.5 mm. long; fields and open woods, s. Ill. May-June
.....*A. eliottiana* Schult.
- 1. Lemma awnless; spikelets 2-3 mm. long.
 - 2. Palet evident, about half the length of the lemma; plants perennial, 30-120 cm. tall, with strong, horizontal rhizomes; roadsides and fields, very common. June-Aug. [*A. palustris* sensu auth., non Huds.] Red-top
.....*A. alba* L.
 - 2. Palet lacking or minute.
 - 3. Panicle very diffuse, 15-60 cm. long, the branches scabrous, 5-15 cm. long, spikelet-bearing near the ends; roadsides and fields. May-July. Tickle Grass
.....*A. scabra* Willd.
 - 3. Panicle open but not diffuse, 10-20 cm. long, the branches smooth; woods. Aug.-Oct. Autumn Bent Grass
.....*A. perennans* (Walt.) Tuckerm.

33. CINNA L.

- 1. Spikelets 5 mm. long, the awn 0.5-1 mm. long; panicle rather dense, the branches ascending; moist woods and borders of streams. July-Sept.
.....*C. arundinacea* L.
- 1. Spikelets 3-4 mm. long, the awn 1-2 mm. long; panicle loose, the branches spreading or drooping; moist woods, n. Ill. July-Sept.
.....*C. latifolia* (Trev.) Griseb.

34. ALOPECURUS L.—Foxtail

- 1. Spikelets 5-6 mm, long; plants perennial; fields and meadows; nat. from Eur. June-July. Meadow Foxtail
.....*A. pratensis* L.

1. Spikelets 2-3 mm. long.
 2. Awns scarcely exceeding the glumes; shallow water and wet banks. May-July. [*A. aristulatus* Michx.]*A. aequalis* Sobol
2. Awn bent, exerted from the spikelet 2 mm. or more.
 3. Plants perennial; stems decumbent and rooting at the nodes; anthers 1.5 mm. long; in water and wet ground. June-July. Water Foxtail.....
.....*A. geniculatus* L.
 3. Plants annual; stems tufted, branched at the base; anthers 0.5 mm. long; ditches and fields. [*A. ramosus* Poir.]*A. carolinianus* Walt.

35. PHLEUM L.

P. pratense L. Timothy. Roadsides and fields, very common; nat. from Eur. June-July.

36. MUHLENBERGIA Schreb.

1. Panicles narrow, not diffuse or spreading.
 2. First glume obsolete or nearly so, the second minute, truncate; lemma long-awned; fields and dry woods. July-Oct. Nimble Will
.....*M. schreberi* J. F. Gmel.
2. Glumes at least half the length of the lemma, or longer.
 3. Plants with conspicuous scaly rhizomes.
 4. Lemma awnless or nearly so; anthers 0.5-1 mm. long.
 5. Glumes lanceolate or oval, cuspidate, about half or two-thirds the length of the lemma; rocky woods. July-Oct.
.....*M. sobolifera* (Muhl.) Trin.
 5. Glumes subulate.
 6. Glumes equalling the lemma, or somewhat shorter, awnless or short-awned.
 7. Internodes of the stem glabrous.
 8. Panicles shortly exerted or partly included in the sheath; fields, roadsides, waste places, common. Aug.-Sept.
.....*M. mexicana* (L.) Trin.
 8. Panicles usually well exerted; woods. Aug.-Oct.
.....*M. brachyphylla* Bush
 7. Internodes of the stem puberulent.
 9. Lemma short-pilose at base (on the callus); moist woods and thickets. Aug.-Oct.*M. foliosa* (R. & S.) Trin.
 9. Lemma not pilose at base; woods, chiefly in the s. and centr. parts of the state*M. glabriflora* Scribn.
 6. Glumes much longer than the lemma, awned; panicle dense, somewhat interrupted; wet ground. Aug.-Sept.
.....*M. racemosa* (Michx.) BSP.
 4. Lemma long-awned.
 10. Spikelets 3-4 mm. long; glumes lanceolate, awn-pointed, shorter than the lemma; anthers 1-1.5 mm. long; rocky woods. July-Oct.
.....*M. tenuiflora* (Willd.) BSP.

10. Spikelets 2-2.5 mm. long; glumes subulate-lanceolate, somewhat shorter than or nearly equalling the lemma; anthers 0.3-0.6 mm. long; moist woods. Aug.-Oct. [*M. torreyi* (Kunth) Hitchc.; *M. umbrosa* Scribn.]*M. sylvatica* Torr.
3. Plants without scaly rhizomes; glumes lanceolate, shorter than the awnless lemma; anthers 1-1.5 mm. long; dry ground, n. Ill. July-Sept. [*Sporobolus brevifolius* (Nutt.) Scribn.]
.....*M. cuspidata* (Torr.) Rydb.
1. Panicles open, the slender branches widely spreading.
11. Spikelets 3-4 mm. long, the awns 1-2 cm. long; stems 60-100 cm. tall, tufted; rhizomes none; sandy soil, s. Ill. Sept.-Oct.
.....*M. capillaris* (Lam.) Trin.
11. Spikelets 1.5-2 mm. long, awnless; stems 10-40 cm. tall; plants with creeping scaly rhizomes; sandy soil. June-Sept. [*Sporobolus asperifolius* Nees & Mey.]*M. asperifolia* (Nees & Mey.) Parodi

37. SPOROBOLUS R. Br.—Dropseed

1. Plants perennial; leaf-blades much longer than the sheaths.
2. Spikelets 1.5-2.5 mm. long; panicle either free and spreading at maturity or remaining partly or wholly included in the sheath; leaf-sheaths with a conspicuous tuft of whitish hairs at summit; sandy soil. Aug.-Sept.
.....*S. cryptandrus* (Torr.) Gray
2. Spikelets 4-8 mm. long.
3. Second glume shorter than the lemma; panicle contracted, more or less included in the sheath.
4. Lemma glabrous, glossy; spikelets 5-6 mm. long; dry sandy soil. Sept.-Oct.
.....*S. asper* (Michx.) Kunth
4. Lemma pubescent at base; spikelets 6-8 mm. long; sandy soil, s. Ill. Aug.-Sept. [*S. canovirens* Nash]
.....*S. clandestinus* (Spreng.) Hitchc.
3. Second glume about as long as the glabrous lemma; spikelets 4-6 mm. long; panicle long-exserted at maturity; dry soil. Aug.-Sept.
.....*S. heterolepis* Gray
1. Plants annual; sheaths enclosing the lateral panicles; leaf-blades short, scarcely longer than the sheaths.
5. Lemma pubescent; spikelets 3.5-6 mm. long; dry sandy soil. Sept.-Oct.
.....*S. vaginiflorus* (Torr.) Wood
5. Lemma glabrous; spikelets 2-3 mm. long; dry sandy soil. Sept.-Oct.
.....*S. neglectus* Nash

38. HELEOCHLOA Host

H. schoenoides (L.) Host. Waste places, occasional; introd. from Eur.

39. BRACHYELYTRUM Beauv.

B. erectum (Schreb.) Beauv. Woods. June-Aug.

40. MILIUM L.—Wild Millet

M. effusum L. Moist woods. Kane Co., *Vasey*; Tazewell Co., *Brendel*. May-July.

41. ORYZOPSIS Michx.—Rice Grass

- 1. Leaves narrow, involute; spikelets (excluding the awns) 3-4 mm. long; dry soil, rare*O. pungens* (Torr.) Hitchc.
- 1. Leaves flat, 4-15 mm. wide; spikelets (excluding the awns) 6-8 mm. long.
- 2. Leaves scattered along the stem, the upper surface pubescent; panicle 15-30 cm. long; rocky woods, not common. Aug.-Sept.
.....*O. racemosa* (Sm.) Ricker
- 2. Leaves mostly basal, merely scabrous above; panicle 5-8 cm. long. Cook Co., *Shipman* in 1877*O. asperifolia* Michx.

42. STIPA L.

S. spartea Trin. Porcupine Grass. Sandy soil, locally throughout Ill., except the s. counties. May-June.

43. ARISTIDA L.—Three-awned Grass

- 1. Awns jointed to the lemma.
- 2. Awns united in a spiral column 6-15 mm. or more in length; sandy soil. Aug.-Sept.*A. tuberculosa* Nutt.
- 2. Awn-column about 2 mm. long; sandy soil, not common. Mason Co., *Bebb* in 1861*A. desmantha* Trin. & Rupr.
- 1. Awns distinct, not jointed to the lemma.
- 3. Central awn much longer than the lateral awns, these erect.
- 4. Central awn spirally coiled at base.
- 5. Second glume 7-9 mm. long, equalling or slightly longer than the first; roadsides and fields in centr. and s. Ill. Aug.-Oct.
.....*A. dichotoma* Michx.
- 5. Second glume 10-15 mm. long, much longer than the first.
- 6. Lateral awns 1-2 mm. long, straight, erect; dry ground, not common. Sept.-Oct.*A. curtisii* (Gray) Nash
- 6. Lateral awns 2-7 mm. long, spreading; dry ground, n.w. Ill.
.....*A. basiramea* Engelm.
- 4. Central awn not coiled.
- 7. Lemma 4-5 mm. long; fields and roadsides, chiefly in the s. and w. parts of the state. [*A. gracilis* Ell.]*A. longespica* Poir.
- 7. Lemma 2-3 cm. long; fields and roadsides, in the s. half of the state. Aug.-Sept.*A. ramosissima* Engelm.
- 3. Central awn subequal in length with the lateral ones.
- 8. Glumes 8-11 mm. long; awns not over 2.5 cm. long; sandy soil. Aug.-Sept.*A. purpurascens* Poir.
- 8. Glumes 2-3 cm. long; awns 4-7 cm. long; fields, open woods, and roadsides. Aug.-Oct.*A. oligantha* Michx.

44. ELEUSINE Gaertn.

E. indica (L.) Gaertn. Goose Grass, Waste places, roadsides, and cultivated ground; nat. from Eurasia. July-Oct.

45. DACTYLOCTENIUM Willd.

D. aegypticum (L.) Richt. Crowfoot Grass. Waste ground and fields, not common; nat. from the Old World tropics.

46. CYNODON Rich.

(*Capriola* Adans.)

C. dactylon (L.) Pers. Bermuda Grass. Fields, roadsides, and waste places; nat. from Eur. July-Aug.

47. LEPTOCHLOA Beauv.—Sprangle-top Grass

1. Sheaths pubescent; spikelets 1.5-2 mm. long; sandy soil, s. Ill. Aug.-Sept.
 *L. filiformis* (Lam.) Beauv.
 1. Sheaths glabrous; spikelets 6-10 mm. long; wet meadows and along ditches,
 s. Ill. *L. fascicularis* (Lam.) Gray

48. SCHEDONNARDUS Steud.

S. paniculatus (Nutt.) Trel. Hancock Co., *Mead* in 1845; probably now extinct in Ill. "It was found on the original prairie, especially around salt licks."—Mosher.

49. BECKMANNIA Host—Slough Grass

B. syzigachne (Steud.) Fern. Wet ground, rare; n.e. Ill. "Clyde, Ill., frequent, *Umbach*; the only station of this interesting grass."—Pepoon. [*B. erucaeformis* sensu auth., non Host].

50. SPARTINA Schreb.—Cord Grass

S. pectinata Link. Along ditches, moist ground along roads, in marshes, etc. July-Sept. [*S. michauxiana* Hitchc.]

51. CHLORIS Sw.

C. verticillata Nutt. Windmill Grass. Sandy soil, or along roads, occasional; adv. from w. of the Mississippi R. June-July.

52. BOUTELOUA Lag.—Grama Grass

1. Spikes 1-4, usually curved, of 25 or more densely crowded spikelets.
 2. Rachis of spike projecting beyond the uppermost spikelet in a prominent point; keel of the second glume papillose-hispid; prairie soil, w. and n.w. Ill. July-Sept. *B. hirsuta* Lag.
 2. Rachis not projecting; keel of second glume glabrous or with few hairs, these without papillose bases. Jo Daviess Co., *Pepoon* 173
 *B. gracilis* (HBK.) Lag.
 1. Spikes numerous (12 or more), each with 4-12 spikelets; prairie soil in the n. half of Ill. July-Sept. *B. curtipendula* (Michx.) Torr.

53. HIEROCHLOE R. Br.

(*Savastana* Schrank; *Torresia* Ruiz & Pav.)

H. odorata (L.) Beauv. Sweet Grass. Moist meadows, fields, and roadsides, n.e. Ill. May-June.

54. ANTHOXANTHUM L.

A. odoratum L. Sweet Vernal Grass. Meadows, roadsides, waste places; nat. from Eurasia. May-July.

55. PHALARIS L.—Canary Grass

1. Panicle 8-15 cm. long; spikelets 5-6 mm. long, the glumes not winged; marshes and wet meadows. May-July. Reed Canary Grass
.....*P. arundinacea* L.
1. Panicle ovoid, 1-4 cm. long; spikelets 6-8 mm. long; the glumes winged; roadsides and waste places; nat. from Eur. June-July. Canary Grass
.....*P. canariensis* L.

56. LEERSIA Sw.

(*Homalocenchrus* Mieg.)

1. Spikelets broadly oval, densely imbricate, 3-4 mm. wide; stem terete; moist ground. Aug.-Oct. Catchfly Grass*L. lenticularis* Michx.
1. Spikelets elliptical, 1-2 mm. wide.
 2. Spikelets 3-3.5 mm. long; stamens 1 or 2; leaves nearly smooth; stem compressed; moist woods. July-Sept. White Grass....*L. virginica* Willd.
 2. Spikelets 4-4.5 mm. long; stamens 3; leaves very rough; stem terete; wet ground. Aug.-Sept. Cut Grass*L. oryzoides* (L.) Sw.

57. ZIZANIA L.—Wild Rice

1. Blades 4-10 mm. wide; body of the pistillate lemma 10-17 mm. long; usually in shallow water. July-Sept. [*Z. palustris* sensu auth., non L.]
.....*Z. aquatica* L.
1. Blades 1-5 cm. wide; body of the pistillate lemma 2-3 cm. long; shallow water. July-Sept.*Z. interior* (Fassett) Rydb.

58. DIGITARIA Heist.

(*Syntherisma* Walt.)

1. Rachis of the racemes wingless; spikelets 1.5-1.8 mm. long; lower sheaths pilose, the upper ones glabrous; stems usually erect; sandy soil. Aug.-Sept.
.....*D. filiformis* (L.) Koel.
1. Rachis winged; stems spreading, often rooting at the lower nodes.
 2. Sheaths glabrous; pedicels terete or nearly so; spikelets 2 mm. long; fields, meadows, waste ground, roadsides, common; nat. from Eurasia. Smooth Crab Grass [*Syntherisma linearis* (Krock) Nash]
.....*D. ischaemum* (Schreb.) Muhl.
 2. Sheaths pilose; pedicels 3-angled, scabrous; spikelets 3-3.5 mm. long; a common weed in cult. ground and waste places; nat. from Eur. July-Oct. Common Crab Grass*D. sanguinalis* (L.) Scop.

59. LEPTOLOMA Chase

L. cognatum (Schult.) Chase. Sandy soil. July-Sept.

60. PASPALUM L.

1. Rachis of the spikes dilated, thin, more than 2 mm. broad, with membranous margins.

2. Spikelets pubescent, 1-1.5 mm. long; blades 6-15 mm. wide; muddy banks or in shallow water, s. and w. Ill. Aug.-Oct. [*P. repens* Berg.; *P. mucronatum* Muhl.]*P. fluitans* (Ell.) Kunth
2. Spikelets glabrous, 2 mm. long; blades 2-5 mm. wide; in ditches or along muddy or sandy shores, s. Ill.*P. dissectum* L.
1. Rachis narrow, less than 2 mm. broad; spikelets glabrous.
 3. Spikelets not more than 2 mm. long; plant often with 1—several axillary peduncles from the upper sheath.
 4. Spikelets orbicular; blades sparsely pilose and ciliate; sandy soil, roadsides, etc. July-Sept.*P. stramineum* Nash
 4. Spikelets oval or somewhat obovate; blades softly pubescent on both surfaces; moist sandy soil, throughout Ill., except the n. part. July-Sept. [*P. muhlenbergii* Nash]*P. pubescens* Muhl.
 3. Spikelets 2.8-3 mm. long; plant simple, without axillary peduncles from the upper sheath.
 5. Spikelets orbicular, arranged singly in 2 rows; wet ground, chiefly in the s. half of the state. July-Sept.*P. circulare* Nash
 5. Spikelets oval or slightly obovate, borne in pairs and appearing as if in 3 or 4 rows; ditches, rare, s. Ill. Aug.-Sept. [*P. pubiflorum* var. *glabrum* Vasey; *P. laeviglume* Scribn.]*P. geminum* Nash

61. PANICUM L.

1. Spikelets glabrous.
 2. Spikelets 3 mm. or more in length.
 3. Plants glabrous, perennial, with rhizomes; panicle 15-50 cm. long; spikelets 4-4.5 mm. long-pedicelled; roadsides and fields, common. July-Sept. Switch Grass*P. virgatum* L.
 3. Plants pubescent.
 4. Spikelets 4-5 mm. long; panicles often drooping at maturity; waste places; cult. and occasionally spontaneous; native of the Old World. Broomcorn Millet*P. miliaceum* L.
 4. Spikelets 3-3.8 mm. long, lanceoloid, pointed; panicles erect.
 5. Plants annual; panicles 10-30 cm. long; blades 2-5 mm. wide; sandy soil, common. July-Oct.*P. flexile* (Gatt.) Scribn.
 5. Plants perennial.
 6. Panicle loose, open, 20-50 cm. long; blades 6-10 mm. wide; plants with long scaly rhizomes; along ditches, or in moist soil, or woods, in the s. and w. parts of Ill., extending northw. to Peoria and Henderson counties. July-Sept.*P. anceps* Michx.
 6. Panicle 4-8 cm. long, not much exceeding the leaves, few-flowered; blades 2-5 mm. wide; open woods. May-June*P. depauperatum* Muhl.
2. Spikelets less than 3 mm. long.
 7. Sheaths glabrous.
 8. First glume not more than one fourth the length of the spikelets,

- rounded at the apex; plants annual, mostly glabrous; spikelets 2.5 mm. long; fields and waste places, common. Aug.-Oct.
*P. dichotomiflorum* L.
8. First glume more than one fourth the length of the spikelet; plants perennial.
9. Spikelets 1.5-1.6 mm. long; blades 10-12 cm. long, 8-15 mm. wide, ciliate at base, otherwise glabrous; panicle 8-12 cm. long; stem-nodes densely bearded with reflexed hairs; wet ground, local. June-Aug.*P. microcarpon* Muhl.
9. Spikelets 2-2.5 mm. long.
10. Pedicels about half the length of the spikelets; panicles 10-30 cm. long, the spikelets subsecund; plants in dense turfts; moist ground. July-Oct. Munro Grass
*P. agrostoides* Spreng.
10. Pedicels longer than the spikelets, which are not at all secund; panicles 4-12 cm. long.
11. Sheaths bearing pale glandular spots, the margins glabrous; blades 8-11 mm. wide; spikelets 2.3-2.5 mm. long, pointed; moist woods and thickets, s. Ill. June-July*P. yadkinense* Ashe
11. Sheaths not spotted, the margins pubescent; blades 4-8 mm. wide; spikelets 2 mm. long, not pointed; open woods, more common in s. Ill., but extending northw. to Peoria Co. May-July. [*P. barbdatum* Michx.]
*P. dichotomum* L.
7. Sheaths pubescent.
12. Spikelets lanceoloid, acuminate; panicle diffuse, often half the length of the plant; sheaths copiously villous.
13. Spikelets 2-2.5 mm. long; fields, roadsides, and waste places, common. July-Oct. Witch Grass*P. capillare* L.
13. Spikelets 2.5-3 (-3.3) mm. long; moist sandy soil, occasional; w. Ill. July-Sept.*P. barbipulvinatum* Nash
12. Spikelets elliptical, obtuse, 1.3-2.2 mm. long.
14. Panicles 12-20 cm. wide, delicate, relatively few-flowered; blades 2-6 mm. wide, villous on both sides; roadsides and waste places. July-Oct. [*P. tuckermanni* Fern.]
*P. philadelphicum* Bernh.
14. Panicles narrower; blades about 1 cm. wide, nearly or quite glabrous; plants much branched, with many axillary panicles; moist sandy soil, along roads, in fields, or along streams, s. and centr. Ill., extending northw. to Henry Co. Sept.-Oct.
*P. gattingeri* Nash
1. Spikelets pubescent or puberulent (occasionally only sparsely so).
15. Spikelets 3 mm. or more in length; sheaths more or less pubescent or ciliate.
16. Blades 1.5-4 cm. wide, ciliate, otherwise glabrous or nearly so.
17. Spikelets 3.4-3.8 mm. long; nodes glabrous or puberulent; rocky

- or sandy woods. May-Aug. *P. latifolium* L.
17. Spikelets 4.4-5 mm. long; nodes retrorsely bearded; woods throughout Ill., except the n.e. counties. May-July
..... *P. boscii* Poir.
16. Blades 6-13 mm. wide; spikelets 3-4 mm. long.
18. Sheaths with somewhat appressed or ascending hairs; spikelets 3.5-4 mm. long, sparsely pubescent to nearly glabrous; blades glabrous or nearly so above, puberulent beneath; sandy soil. May-June *P. oligoanthes* Schult.
18. Sheaths with spreading hairs, or nearly glabrous.
19. Spikelets 3-3.5 mm. long, sparsely pubescent to nearly glabrous; blades glabrous or nearly so; sandy soil. May-July. *P. scribnerianum* Nash
19. Spikelets 3.5-4 mm. long, papillose-pilose; blades more or less papillose-hirsute on both surfaces, or glabrous above; dry sandy soil. June-July. *P. leibergii* (Vasey) Scribn.
15. Spikelets less than 3 mm. long.
20. Sheaths glabrous or nearly so, or merely ciliate.
21. Spikelets 2.1-2.9 mm. long.
22. Blades 12-25 mm. wide, cordate at base; spikelets short-pubescent, 2.7-2.9 mm. long; woods, s. Ill. May-June
..... *P. commutatum* Schult.
22. Blades 2-4 mm. wide, not cordate; spikelets sparsely pilose to nearly glabrous, 2.1-2.4 mm. long; wooded slopes and ridges, rare. Starved Rock, G. N. Jones 15728. Perhaps merely a glabrous form of *P. linearifolium* Scribn.
..... *P. wernerii* Scribn.
21. Spikelets 1.3-1.9 mm. long, puberulent or nearly glabrous.
23. Blades usually 1.5-2.5 cm. wide, ciliate toward the base, otherwise glabrous; nodes glabrous or nearly so; panicle 8-25 cm. long, not more than half as wide as long; moist ground, chiefly in s. Ill., but extending northw. to Peoria Co.
..... *P. polyanthes* Schult.
23. Blades usually 6-14 mm. wide; panicle often about as wide as long.
24. Ligule of conspicuous hairs 3-5 mm. long; sandy soil in open woods. June-Sept. *P. lindheimeri* Nash
24. Ligule obsolete or nearly so; sandy soil, in the s. half of Ill. June-July *P. sphaerocarpon* Ell.
20. Sheaths pubescent.
25. Sheaths conspicuously retrorsely pilose; blades 3-7 mm. wide; panicle lax, few-flowered, 5-10 cm. long; spikelets 1.9-2 mm. long; wooded slopes, throughout Ill., except the n. counties. May-July *P. xalapense* HBK.
25. Sheaths not retrorsely pilose.
26. Spikelets 2.7-3 mm. long.

27. Blades 12-30 mm. wide; stems 50-120 cm. tall; panicle 7-15 cm. long; sandy soil. June-Aug.*P. clandestinum* L.
27. Blades 2-6 mm. wide; stems 8-40 cm. tall; panicles 2-8 cm. long.
28. Blades copiously pilose on both surfaces; panicles 2-4 cm. long; dry ground, n.w. Ill., not common.
.....*P. wilcoxianum* Vasey
28. Blades scabrellous above, pilose beneath; panicles 4-8 cm. long, some of them usually more or less concealed among the basal leaves; dry soil. June-July
.....*P. perlongum* Nash
26. Spikelets less than 2.7 mm. long.
29. Sheaths with spreading hairs.
30. Spikelets 2.2-2.7 mm. long.
31. Blades 2-4 mm. wide, 10-30 cm. long; spikelets sparsely pilosulous or nearly glabrous; dry woods, local. May-July. *P. linearifolium* Scribn.
31. Blades 5-10 mm. wide, 6-10 cm. long; ligule 4-5 mm. long; dry sandy soil. June-July
.....*P. villosissimum* Nash
30. Spikelets 1.3-1.9 mm. long; ligule 3-5 mm. long.
32. Upper surface of blades glabrous or with a few long hairs toward the base, the lower surface glabrous or puberulent; moist ground. June-July
.....*P. tennesseense* Ashe
32. Upper surface of blades not glabrous.
33. Upper surface of blades pilose, the hairs 3-5 mm. long.
34. Stems conspicuously villous with horizontal hairs 4-5 mm. long; dry soil, chiefly in the n. half of the state. June-July
.....*P. praecocius* Hitchc. & Chase
34. Stems with shorter hairs.
35. Axis of panicle pilose; the lowest panicle branches often tangled or implicate; wet meadows or swamps in the n. half of the state. June-July
.....*P. implicatum* Scribn.
35. Axis of panicle puberulent; branches ascending, not tangled; sandy soil, n. Ill. June-July*P. meridionale* Ashe
33. Upper surface of blades with somewhat appressed hairs 1-2 mm. long; meadows, common. May-Sept.*P. huachucae* Ashe
29. Sheaths with appressed hairs; ligule 1-1.5 mm. long; blades glabrous or nearly so on the upper surface, puber-

ulent beneath; spikelets 1.8-2 mm. long; sandy or gravelly soil in the n. part of Ill., not common. June-July
*P. tsugetorum* Nash

62. ECHINOCHLOA Beauv.

1. Sheaths glabrous; spikelets awnless or short-awned.
 2. Spikelets acute or short-awned; panicle green, the branches straight; leaves 6-15 mm. wide; fields, roadsides, waste ground, common; nat. from Eurasia. July-Sept. Barnyard Grass*E. crusgalli* (L.) Beauv.
 2. Spikelets obtuse, awnless; panicle dense, usually dark purple or brown, the branches incurved; leaves 1.5-3 cm. wide; waste places and river banks; introd. from s.e. Asia. Japanese Millet. Billion dollar Grass
*E. frumentacea* (Roxb.) Link
1. Sheaths, at least the lower ones, papillose-hirsute; spikelets long-awned, the awns 1-5 cm. long, usually purple; wet ground. Aug.-Oct.
*E. walteri* (Pursh) Heller

63. SETARIA Beauv.

(*Chaetochloa* Scribn.)

1. Plants perennial with short, branched rhizomes; bristles below each spikelet 8-12, yellowish or purplish, upwardly scabrous; waste ground, occasional. [*S. imberbis* R. & S.]*S. geniculata* (Lam.) Beauv.
1. Plants annual.
 2. Bristles 5-15 at the base of each spikelet, upwardly barbed; a common weed in waste ground and along roads; nat. from Eur. June-Sept. [*S. glauca* of auth., not (L.) Beauv.] Yellow Foxtail
*S. lutescens* (Weigel) F. T. Hubb.
 2. Bristles 1-3 at the base of each spikelet.
 3. Spikelets about 2 mm. long.
 4. Bristles 3-6 mm. long, retrorsely barbed; panicle 5-15 cm. long; weed in waste ground; nat. from Eur. July-Sept. Bristly Foxtail
*S. verticillata* (L.) Beauv.
 4. Bristles 7-12 mm. long, upwardly barbed; panicle usually less than 7 cm. long; a common weed throughout Ill.; nat. from Eur. June-Sept. Green Foxtail*S. viridis* (L.) Beauv.
 3. Spikelets 3 mm. long; bristles upwardly barbed; panicle thick, lobed or interrupted, purplish or yellowish; cult. and sometimes spontaneous; introd. from Eurasia. July-Sept. Italian Millet, or Hungarian Grass
*S. italica* (L.) Beauv.

64. CENCHRUS L.—Sandbur

C. longispinus (Hack.) Fern. Sandy soil, cult. ground, and roadsides. July-Sept. [*C. tribuloides* sensu auth., non L.; *C. carolinianus* sensu auth., scarcely Walt.; *C. pauciflorus* sensu auth., non Benth.]

65. ANDROPOGON L.

1. Racemes usually borne singly on the few to many branches, 3-6 cm. long;

- joints of the rachis clavate; sandy or prairie soil and open woods. Aug.-Oct. Little Bluestem *A. scoparius* Michx.
1. Racemes in fascicles of 2-7, the common peduncle enclosed in a bract-like sheath or spathe; joints of the rachis not clavate.
 2. Pedicellate spikelet staminate, as large as the sessile spikelet; racemes 5-13 cm. long, exerted on a naked peduncle, the uppermost sheath inconspicuous, not inflated; rachis straight, the hairs inconspicuous and shorter than the spikelets; stamens 3; prairie soil. July-Sept. [*A. provincialis* Lam.] Big Bluestem *A. furcatus* Muhl.
 2. Pedicellate spikelet reduced to 1 or 2 empty glumes or a mere pedicel; racemes 1.5-4 cm. long, from a broad, conspicuous, usually inflated spathe; rachis flexuous, the hairs as long as or longer than the spikelets; stamen 1; fields and roadsides in the s. half of the state. Sept.-Oct. Broom-sedge *A. virginicus* L.

66. ERIANTHUS Michx.

E. alopecuroides (L.) Ell. Plume Grass. Open woods, s. Ill., rare. Jackson Co., French in 1878; Union Co., Mulcaster in 1935. [*E. divaricatus* (L.) Hitchc.]

67. SORGHUM Pers.

1. Perennial with creeping rhizomes; spikelets readily deciduous at maturity; pedicellate spikelet usually staminate; fields and waste places, escaped from cult.; introd. from Eur. June-Oct. [*Holcus halepensis* L.] Johnson Grass *S. halepense* (L.) Pers.
1. Annual; spikelets persistent at maturity; pedicellate spikelet usually neutral, shorter than the sessile one; waste places, occasionally escaped from cult.; resembling *Zea mays* when not in bloom. [*Holcus sorghum* L.; *Sorghum saccharatum* Moench] Sorghum *S. vulgare* Pers.

68. SORGHASTRUM Nash

S. nutans (L.) Nash. Indian Grass. Prairies, open woods, roadsides. Aug.-Oct.

69. TRIPSACUM L.

T. dactyloides L. Gama Grass. Wet ground, rare, chiefly in the s. half of the state. May-Sept.

70. ZEA L. Maize. Indian Corn

Z. mays L. Cult., and rarely spontaneous. July-Sept.

23. CYPERACEAE J. St. Hil.—Sedge Family

1. Spikelets all alike; flowers of the spikelet, or at least one of them perfect.
2. Glumes of the spikelet 2-ranked; spikelets flattened or subterete.
 3. Perianth bristles none; spikelets in umbellate clusters; stems mostly triangular.
 4. Spikelets several-many-flowered; glumes many 1. *Cyperus*
 4. Spikelets 1-flowered; glumes 2-4 2. *Kyllingia*
 3. Perianth of 6-9 bristles; inflorescence axillary; stem tetete, hollow; achenes beaked 3. *Dulichium*
2. Glumes spirally imbricated.
 5. Spikelets with several to many perfect flowers.

- 6. Base of the style swollen, persistent as a tubercle on the achene.
 - 7. Spikelet solitary; bristles usually present; stems leafless.....4. *Eleocharis*
 - 7. Spikelets several; bristles none; leaves filiform, the sheaths pubescent.....
.....5. *Bulbostylis*
- 6. Base of style deciduous, sometimes enlarged.
 - 8. Flowers with a perianth of 3 stalked sepals, or of 1 or 2 hyaline glumes.
 - 9. Bristles 3; achene and glumes stipitate; plants perennial.....6. *Fuirena*
 - 9. Bristles 0; achene and the solitary minute glume sessile; plants annual
.....7. *Hemicarpha*
 - 8. Flowers without a perianth.
 - 10. Style conspicuously swollen at the base; bristles none.....8. *Fimbristylis*
 - 10. Style not at all or only slightly thickened at base; bristles usually present.
 - 11. Bristles few, short, not exceeding the glume.....9. *Scirpus*
 - 11. Bristles apparently numerous, long, slender, silky.....10. *Eriophorum*
- 5. Spikelets 1-4-flowered, polygamous.
 - 12. Base of the style persistent as a tubercle on the achene; perianth bristles usually present; style 2-cleft.....11. *Rhynchospora*
 - 12. Style wholly deciduous; bristles 0; style 3-cleft.....12. *Cladium*
- 1. Spikelets usually unisexual; plants monoecious, or rarely dioecious.
 - 13. Achenes white, bony, globose, usually supported on a disk, not enclosed in a sac (perigynium); pistillate spikes 1-flowered.....13. *Scleria*
 - 13. Achenes not bony, enclosed in a perigynium.....14. *Carex*

1. CYPERUS L.

- 1. Glumes deciduous from the persistent rachilla of the spikelet.
 - 2. Style 2-cleft; achenes lenticular.
 - 3. Spikelets straw-colored or yellowish; achenes black, glossy, the superficial cells rectangular; wet ground. [*C. flavescens* sensu auth., non L.]*C. poaeformis* Pursh
 - 3. Spikelets green or brown; achenes brown, dull, the superficial cells quadrate.
 - 4. Glumes glossy, subcoriaceous; style scarcely exerted; stamens 3; moist ground, in the n. part of the state, often abundant and forming dense mats*C. rivularis* Kunth
 - 4. Glumes dull, reddish tinged, membranous; style conspicuously exerted; stamens usually 2; marshy ground, or margins of ponds and streams*C. diandrus* L.
 - 2. Style 3-cleft; achenes trigonal.
 - 5. Rachis prominently winged.
 - 6. Glumes straw-colored or pale brown, ovate acute; achenes ovoid; plants perennial with a scaly tuber-bearing rhizome; moist ground. [*C. phymatodes* Muhl.] Chufa or Nut Sedge*C. esculentus* L.
 - 6. Glumes dark brown, lanceolate, mucronate; achenes obovoid; plants annual; along streams and ditches, and in fields
.....*C. erythrorhizos* Muhl.
 - 5. Rachis wingless or only very narrowly winged.
 - 7. Plants perennial; spikelets 8-16 mm. long; stamens 2 or 3.
 - 8. Stem rough; spikelets ascending; glumes 3-4.5 mm. long; achenes 2.5-3 mm. long; sandy soil in the n. part of the state, extending southw. to Mason Co.*C. schweinitzii* Torr.
 - 8. Stem smooth; spikelets spreading; glumes 2-2.5 mm. long; achenes

- 1.5-2 mm. long; sandy soil, rare. Lake, Kankakee, and Sangamon counties*C. bough:onii* Torr.
7. Plants annual; spikelets 4-8 mm. long; stamen 1.
9. Glumes long-acuminate, tapering to the recurved awn; wet sandy soil along streams or ditches; plants fragrant when dry. [*C. inflexus* Muhl.]*C. aristatus* Rottb.
9. Glumes merely acute; wet soil, chiefly in centr. and n. Ill.
.....*C. acuminatus* Torr. & Hook.
1. Spikelets falling wholly away from the axis of the spikes, usually the 2 lower glumes persistent; style 3-cleft; achenes trigonal.
10. Plants perennial, with corm-like bases; spikelets more or less flattened.
11. Spikelets 3-flowered; achenes 3-4 times as long as wide; inflorescence composed of 5 or 6 globose heads; sandy borders of woods, or in old fields, chiefly in s. Ill., but known also from Peoria Co. [*C. wolfii* Wood].....*C. ovularis* (Michx.) Torr.
11. Spikelets 4-25-flowered.
12. Leaves 4-6 mm. wide; achenes linear-oblong, acute; spikelets in large umbels; moist meadows and alluvial soil near streams
.....*C. strigosus* L.
12. Leaves 2-4 mm. wide; achenes obovoid, apiculate; inflorescence consisting of 1-7 globose heads; dry sandy soil [*C. filiculmis* var. *macilentus* Fern.]*C. filiculmis* Vahl
10. Plants annual; spikelets nearly terete.
13. Glumes imbricated; achenes obovoid; wet ground, and sandy shores. [*C. speciosus* of auth, not Vahl; *C. ferax* sensu Britt., not Rich.]*C. ferruginescens* Boeckl.
13. Glumes scarcely overlapping; achenes linear-oblong; wet ground, often on lake shores; Lake, McHenry, and Winnebago counties
.....*C. engelmanni* Steud.

2. KYLLINGIA Rottb.

K. pumila Michx. Moist ground, chiefly along streams and ditches; s. Ill., extending northw. to Champaign Co.

3. DULICHIMUM Rich.

D. arundinaceum (L.) Britt. Wet ground, chiefly along borders of streams and ponds, local.

4. ELEOCHARIS R. Br.—Spike Rush

1. Spikelet linear, scarcely thicker than the stem; glumes of the mature spikelet persistent; plants aquatic, about 1 m. tall.
2. Stems terete, conspicuously nodose; achenes 2-2.5 mm. long (including the style-base); shallow water, n.w. Ill. Wolf Lake, Hill in 1890. [*E. interstincta* sensu auth., non R. & S.]*E. equisetoides* (Ell.) Torr.
2. Stems sharply 4-angled, continuous, not septate; achenes 2.5-4 mm. long, including the beak (1 mm. long); shallow water, not common. Wolf Lake, Hill; St. Clair Co., Brendel. [*E. mutata* sensu auth., non R. & S.]*E. quadrangulata* (Michx.) R. & S.

1. Spikelet usually much thicker than the stem; glumes persistent.
3. Style 2-cleft; achenes lenticular or biconvex.
4. Perennials with rhizomes.
 5. Sheaths loose, hyaline and scarious at the summit; glumes hyaline-margined; wet soil, rare. Wolf Lake, Chicago, Hill
.....*E. olivacea* Torr.
 5. Sheaths close, not hyaline at the summit.
 6. Basal glumes of the spikelets usually 2 or 3 below the thinner fertile glumes.
 7. Tubercle elongate, much longer than broad; achenes narrowly obovoid or pyriform; stems subterete, rather firm; ponds, swamps, and marshes, n. Ill.*E. palustris* (L.) R. & S.
 7. Tubercle depressed-deltoid, umbonate, or broadly ovate, as broad as or broader than long; achenes broadly obovoid or roundish.
 8. Stems firm, nearly terete; fertile glumes ascending, oval, acuminate; marshes, ditches, shores, local throughout Ill.
.....*E. smallii* Britt.
 8. Stems soft, compressed; fertile glumes appressed, obtusish; wet ground, not common; chiefly in the s. half of the state, extending northw. to Menard Co.*E. mamillata* Lindb.
 6. Basal glume solitary, spathiform, usually encircling the base of the spikelet; wet ground*E. calva* Torr.
4. Annuals, with fibrous roots.
 9. Tubercle flattened or saucer-shaped; mature achenes black, 1 mm. long; wet ground. [*E. capitata* R. Br.; *E. caribaea* (Rottb.) Blake; *E. dispar* E. J. Hill]*E. geniculata* (L.) R. & S.
 9. Tubercle conical or deltoid, acute; mature achenes pale brownish.
 10. Tubercle conical, narrower than the top of the achene; wet ground in the n. half of the state.....*E. ovata* (Roth) R. & S.
 10. Tubercle depressed-deltoid, as wide as the top of the achene.
 11. Bristles about equalling the achene, or sometimes rudimentary; muddy shores and along ditches
.....*E. engelmanni* Steud.
 11. Bristles much exceeding the achene; wet ground throughout Ill., not uncommon*E. obtusa* (Willd.) Schult.
3. Style usually 3-cleft; achenes trigonal or turgid.
 12. Tubercle plainly distinguishable from the achene; achenes less than 2 mm. long.
 13. Achenes cancellate and striate.
 14. Spikelet flattened, 3-9-flowered, the glumes 2-3-ranked; bristles 3-4, fugacious; stems very slender, not more than 0.5 mm. in diameter, 5-20 cm. long; wet ground and shallow water
.....*E. acicularis* (L.) R. & S.
 14. Spikelet terete, the glumes many-ranked; bristles 0; stems about 1 mm. in diameter; wet ground; Fulton, Peoria, Stark

- and La Salle counties. Discovered at Canton by J. Wolf
*E. wolfii* Gray
13. Achenes papillose or pitted.
15. Tubercle depressed; achene about 1 mm. long; perennials with rhizomes.
16. Stems filiform, about 0.5 mm. wide, angular; glumes obtuse; wet ground, local. [*E. elliptica* Kunth; *E. capitata* var. *borealis* Svens.]*E. tenuis* (Willd.) Schult.
16. Stems flattened, 1 mm. or more in width; glumes acuminate, often bifid; moist ground throughout Ill. [*E. acuminata* (Muhl.) Nees]*E. compressa* Sulliv.
15. Tubercle conical-subulate; achenes 1.5 mm. long (incl. the tubercle); glumes obtuse; tufted annuals with filiform stems; muddy shores, not common...*E. intermedia* (Muhl.) Schult.
12. Tubercle confluent with the top of the achene, long conical; achenes 2-3 mm. long.
17. Stems flattened, 1-2 mm. wide, 30-60 cm. long; marshes and shores, not common*E. rostellata* Torr.
17. Stems somewhat 3-angled, filiform, less than 1 mm. wide, 5-30 cm. tall; marshes and shores, n.e. Ill. [*Scirpus pauciflora* Lightf.]
*E. pauciflora* (Lightf.) Link

5. BULBOSTYLIS [Kunth] C. B. Clarke

(*Stenophyllus* Raf.)

B. capillaris (L.) C. B. Clarke. Sandy soil, n. Ill., extending southw. to Henderson and Kankakee counties; also apparently in Pope Co. [*Stenophyllus capillaris* (L.) Britt.]

6. FUIRENA Rottb.—Umbrella Sedge

F. pumila Torr. Shores, swamps, and wet meadows, n.e. Ill. [*F. squarrosa* sensu auth., non Michx.]

7. HEMICARPHA Nees & Arn.

1. Spikelets 2-4 mm. long; glumes elliptical, the tips somewhat recurved; wet sandy soil, chiefly in the n. half of the state
*H. micrantha* (Vahl) Britt.
1. Spikelets 4-7 mm. long; glumes broadly ovate, appressed; wet sandy soil, n. Ill.
*H. drummondii* Nees

8. FIMBRISTYLIS Vahl

1. Style 2-cleft; achenes lenticular, about 1 mm. long, brownish; spikelets ovoid or ellipsoid, 5-10 mm. long; moist sandy soil, rare, n. Ill. [*F. puberula* (Michx.) Vahl]*F. caroliniana* (Lam.) Fern.
1. Style 3-cleft; achenes trigonal, about 0.5 mm. long, whitish, the 3 angles ridged; spikelets linear; moist sandy or alluvial soil, local. [*F. autumnalis* sensu auth., non R. & S.]*F. mucronulata* (Michx.) Blake

9. SCIRPUS L.—Bulrush

1. Involucral bract one, appearing like a continuation of the stem, or lacking.
2. Spikelets solitary, rarely two.
 3. Bract 1.5 cm. long, twice the length of the cylindrical or ovoid spikelet; in ponds and slow streams, or on muddy shores, rare. Cook Co.
.....*S. subterminalis* Torr.
 3. Bract shorter than or equalling the spikelet; bogs, n. Ill. Ringwood, McHenry Co., *Vasey* *S. cespitosus* L.
2. Spikelets usually several to many.
 4. Spikelets few, 1-12, appearing lateral.
 5. Stems terete, or obtusely 3-angled; plants annual, tufted; bristles minute or absent, or equalling or exceeding the achene.
 6. Stems subterete with rounded sides; spikelets acutish; involucral bract always erect; achenes glossy, black, plano-convex; wet shores, rare*S. smithii* Gray
 6. Stems obtusely 3-angled with concave sides; spikelets blunt; involucral bract usually divaricate at maturity; achenes dull, unequally biconvex, or lenticular; wet soil, rare. Mason Co., *Vasey* in 1862. [*S. debilis* of Pursh, not Lam.]*S. purshianus* Fern.
 5. Stems sharply 3-angled; plants perennial, with rhizomes.
 7. Bristles longer than the trigonal achenes; glumes yellowish brown, entire, mucronate; swamps*S. torreyi* Olney
 7. Bristles not longer than the plano-convex achenes; glumes reddish brown, awn-tipped; shores and marshy ground throughout Ill.
.....*S. americanus* Pers.
4. Spikelets numerous in small clusters in compound umbels; plants perennial with rhizomes, the terete stems 1-3 m. tall.
 8. Achenes 2 mm. long, nearly as long as the glumes; spikelets ovoid, 5-10 mm. long; marshes and shallow water, throughout Ill., except the s. part*S. validus* Vahl
 8. Achenes 2.5-3 mm. long, shorter than the glumes; spikelets ellipsoid, 1-2 cm. long; shallow water in the n. half of the state. [*S. occidentalis* (Wats.) Chase]*S. acutus* Muhl.
1. Involucral bracts several, foliaceous; stem 3-angled, leafy; plants perennial.
 9. Spikelets 3-15 in an irregular umbel; rays 5-12, elongated, recurved-spreading; spikelets ellipsoid, 1.5-4 cm. long; in the n. half of the state.
.....*S. fluviatilis* (Torr.) Gray
 9. Spikelets numerous, umbellate or capitate.
 10. Bristles downwardly barbed.
 11. Style 2-cleft; achenes plano-convex; bristles usually 4; spikelets 4-9 mm. long; swamps, rare. Lake Co., *Gates* 2770, 3059
.....*S. rubrotinctus* Fern.
 11. Style 3-cleft; achenes trigonal; bristles 6.
 12. Bristles twice the length of the achene; leaves 4-6 mm. wide; spikelets 2.5-3 mm. long, commonly proliferous; wet ground in woods in the s. half of the state*S. polyphyllus* Vahl

12. Bristles scarcely exceeding the achene; leaves 6-16 mm. wide; spikelets 4-8 mm. long, several to many in dense glomerules; along ditches, streams, and lake shores, throughout Ill.
.....*S. atrovirens* Willd.
10. Bristles smooth, 6, flexuous.
13. Bristles scarcely exceeding the glumes; spikelets cylindrical, 6-8 mm. long; leaves 5-10 mm. wide; wet ground in woods, or along ditches, common*S. lineatus* Michx.
13. Bristles at maturity much longer than the glumes; spikelets sessile in glomerules of 3-15; leaves 4-6 mm. wide; wet ground, locally abundant, sometimes covering large areas
..... *S. cyperinus* (L.) Kunth

10. ERIOPHORUM L.—Cotton Sedge

1. Leaves 1-1.5 mm. wide; involucre bract short, erect.
2. Blade of the upper stem-leaf not longer than the sheath; swamps and bogs, Peoria, *Brendel*; Woodford Co., *McDonald* in 1887
.....*E. gracile* Roth
2. Blade of the upper stem-leaf much longer than the sheath; bogs, rare; Beardstown, Cass Co., *Geyer**E. tenellum* Nutt.
1. Leaves broader, 2-6 mm. wide; involucre leaves 2 or more.
3. Glume of the spikelets with several striations or ribs; stamen 1; plants flowering in July and Aug.; not uncommon in Lake Co.
..... *E. virginicum* L.
3. Glume with midvein prominent; stamens 3; plants flowering in May and June.
4. Midvein of glume extending to the apex; upper leaf-sheaths not dark-girdled at the summit; bogs in n. Ill.
.....*E. viridicarinatum* (Engelm.) Fern.
4. Midvein of glume not extending to the tip; upper leaf-sheaths dark-girdled at the summit; bogs, n.e. Ill.*E. angustifolium* Honck.

11. RHYNCHOSPORA Vahl—Beaked-rush

1. Bristles downwardly barbed, or sometimes smooth.
2. Glumes whitish; bristles 9-15; bogs, Lake Co., *Gleason & Shobe* 137; Peoria, *Brendel**R. alba* (L.) Vahl
2. Glumes brown; bristles 6.
3. Leaves filiform, less than 0.5 mm. wide; spikelets 3-6 in a terminal cluster; bogs and springy ground, n. Ill., rare*R. capillacea* Torr.
3. Leaves linear, 4-7 mm. wide; spikelets numerous in clusters or heads; lake shores, and moist ground; Cook Co., *Hill* in 1906; Kankakee Co., *Hill* in 1871, *Sherff* 1656. [*R. glomerata* sensu auth.]
.....*R. capitellata* (Michx.) Vahl
1. Bristles upwardly barbed; leaves flat, 1-4 mm. wide; spikelets ovoid, sessile, in erect cymose clusters; wet sandy soil, Kankakee Co., *Hill* in 1871
.....*R. cymosa* Ell.

12. CLADIUM P. Br.—Twig-rush

(*Mariscus* Zinn)

C. mariscoides (Muhl.) Torr. Bogs, marshes, or wet shores, in Cook, Lake, and McHenry counties.

13. SCLERIA Berg—Nut-rush

1. Spikelets in terminal clusters; achenes supported by a basal disk (hypogynium).
 2. Achenes smooth, ovoid, 3 mm. long, the hypogynium covered with a rough white crust; leaves glabrous, 3-9 mm. wide; moist sandy soil in the n. half of the state, rare*S. triglomerata* Michx.
 2. Achenes papillose, subglobose, 1.5-2 mm. long; leaves puberulent, 1-2 mm. wide; dry ground, s. Ill.; Johnson Co., *Brendel**S. pauciflora* Muhl.
1. Spikelets in an interrupted spike; hypogynium absent; achenes transversely wrinkled and reticulate; leaves glabrous, 1 mm. or less in width; moist meadows, Peoria, *McDonald*; Woodford Co., *McDonald* in 1887; Will Co., *Hill* in 1911*S. verticillata* Muhl.

CAREX L.—Sedge

KEY TO GROUPS

1. Perigynia glabrous.
 2. Stigmas two; achenes lenticular or plano-convex.
 3. Spikes of one kind, bearing both pistillate and staminate flowers; lateral spikes sessile.
 4. Spikes androgynous, i.e., with the staminate flowers at the apex.....GROUP I
 4. Spikes gynecandrous, i.e., with the staminate flowers at the base or middle of the spike.....GROUP II
 3. Spikes usually of two kinds, the terminal commonly staminate, the lower entirely or mostly pistillate.....GROUP III
 2. Stigmas three; achenes trigonal.
 5. Spike solitary, terminal, small, few-flowered, androgynous..... GROUP IV
 5. Spikes two or more.
 6. Beak of the perigynium (if present) small, entire or emarginate, or if bidentulate the short teeth soft and thin.....GROUP V
 6. Beak of the perigynium sharply bidentate.....GROUP VI
1. Perigynia more or less pubescent or puberulent; stigmas 3; achenes trigonal.....GROUP VII

GROUP I

Spikes of one kind, bearing both pistillate and staminate flowers; lateral spikes sessile; stigmas 2; achenes lenticular or plano-convex.

1. Stems arising singly from long creeping rhizomes.
 2. Perigynia 3-5 mm. long, lanceoloid, strongly bidentate at apex; inflorescence nodding; leaves flat, 2-5 mm. wide; marshes and bogs in the n. half of the state*C. sartwellii* Dewey
 2. Perigynia about 2 mm. long, ovoid, the apex entire; inflorescence stiff, erect, subcapitate; leaves narrow, involute; bogs, rare; McHenry and Lake counties*C. chordorrhiza* Ehrh.

1. Stems tufted.
3. Perigynia subulate-lanceolate.
 4. Perigynia 4 mm. long, the beak about the length of the body; swamps and wet meadows*C. stipata* Muhl.
 4. Perigynia 5-7 mm. long.
 5. Perigynium about 5 mm. long, tapering gradually from base to apex; inflorescence 2.5-6 cm. long; leaves 3-6 mm. wide; swampy woods*C. laeviraginata* (Kükenth.) Mack.
 5. Perigynium 6-7 mm. long, abruptly enlarged below into a disc-like base; inflorescence 7-17 cm. long; leaves 5-10 mm. wide; swampy ground*C. cruscoryi* Shuttlw.
3. Perigynia oval, ovate-lanceolate, ovoid or ellipsoid.
6. Spikes usually fewer than 12; inflorescence often capitate.
 7. Leaves 1-4 mm. wide; sheaths close.
 8. Perigynia spongy-thickened at the base.
 9. Perigynium with a minute beak 0.2 mm. or less in length; bogs, n.e. Ill.*C. disperma* Dewey
 9. Perigynium with a distinct beak 0.6-1 mm. long.
 10. Beak entire-margined; glumes acuminate or cuspidate.
 11. Body of the perigynium broadly ovate, deep green, abruptly short-beaked; dry woods, not common*C. retroflexa* Muhl.
 11. Body of the perigynium ovate-lanceolate, light green, tapering to the beak; dry woods, s. Ill.; (fide Mackenzie; no Ill. spec. seen)*C. texensis* (Torr.) Bailey
 10. Beak minutely serrulate along the edges.
 12. Broadest leaves 1-2 mm. wide; perigynium tapering into the beak; stigmas long, slender, usually not twisted; woods and thickets, common*C. rosea* Schk.
 12. Broadest leaves 2-3 mm. wide; perigynium abruptly contracted into the beak; stigmas short, stout, contorted, red; dry woods, common*C. convoluta* Mack.
 8. Perigynia not spongy-thickened at the base.
 13. Heads mostly 1.5-3.5 cm. long; leaves and stems stiff and wiry; perigynia oval, 3-3.5 mm. long, 2.5 mm. wide, the beak 0.5 mm. long, serrulate; sandy soil, often in open woods, in the n. half of Ill. [*C. plana* Mack.]*C. mühlenbergii* Schk.
 13. Heads mostly 8-15 mm. long; leaves and stems soft; perigynia 2.5-3 mm. long.
 14. Perigynia oval, 1-1.5 mm. wide, the serrulate beak 1 mm. long; open woods or along roads, frequent*C. cephalophora* Muhl.
 14. Perigynia ovate, truncate at base, 2 mm. wide, the beak 0.5 mm. long, entire or nearly so; meadows and open woods, not common. Jackson Co., French in 1905*C. leavenworthii* Dewey
7. Leaves 4.5-8 mm. wide; sheaths loose.

15. Stem about 2 mm. in diameter below the head, soft and wing-angled, flattened when pressed and dry.
16. Beak of the perigynium about half the length of the body, which is strongly nerved dorsally; sheaths rugose ventrally; woods and thickets, local*C. conjuncta* Boott
16. Beak about as long as the body of the faintly nerved perigynium; sheaths not rugose; meadows, not common
.....*C. alopecoidea* Tuckerm.
15. Stem 1 mm. in diameter below the head, not winged.
17. Inflorescence elongate, interrupted, 3-9 cm. long; beak of the perigynium shorter than the body; glumes acute; woods and thickets, chiefly in the n. half of the state, common
.....*C. sparganioides* Muhl.
17. Inflorescence short, compact, 1-3 cm. long.
18. Beak of the perigynium equalling the body; glumes acute; woods and thickets*C. cephaloidea* Dewey
18. Beak of the perigynium shorter than the body; glumes cuspidate.
19. Perigynium ovoid; sandy or gravelly ridges and banks
.....*C. gravigida* Bailey
19. Perigynium ellipsoid.
20. Perigynium not deep green at maturity; sandy soil
.....*C. lunelliana* Mack.
20. Perigynium deep green at maturity; dry woods, not common
.....*C. aggregata* Mack.
6. Spikes numerous (10 or more).
21. Beak of the perigynium much shorter than the body; fields and pastures in the n. half of the state*C. brachyglossa* Mack.
21. Beak equalling the body.
22. Glumes awned; leaves 2-5 mm. wide; swampy ground, often along ditches, common throughout Ill.
..... *C. vulpinoidea* Michx.
22. Glumes acute; leaves 1-3 mm. wide.
23. Perigynium 2-2.5 mm. long, glossy, not concealed by the glume; wet meadows; Stark, Peoria, and Fulton counties
.....*C. diandra* Schrank
23. Perigynium 2.5-3.5 mm. long, dull, nearly concealed by the glume; wet meadows, n. Ill.
.....*C. prairea* Dewey

GROUP II

Spikes of one kind, gynecandrous, bearing both pistillate and staminate flowers, the staminate occurring at the base or the middle of the spike; lateral spikes sessile; stigmas two; achenes lenticular or plano-convex; perigynia glabrous.

1. Perigynia not thin- or wing-margined.

2. Perigynia 4-5 mm. long; beak serrulate, bidentate, 1.5-2 mm. long; wet ground
.....*C. bromioides* Schk.

2. Perigynia 2-4 mm. long.
3. Beak of the perigynium entire or emarginate, not more than 0.5 mm. long; perigynium oval, plano-convex; spikes 2 or 3, each 2-5-flowered; tamarack swamp, Lake Villa, Lake Co., *Gleason & Shobe*
.....*C. trisperma* Dewey
3. Beak of the perigynium bidentate, serrulate, 0.5-1 mm. long.
4. Perigynia deltoid; spikes 4-6; anthers 1-2 mm. long; swampy meadows*C. sterilis* Willd.
4. Perigynia ellipsoid; spikes 2-3, widely spreading at maturity; anthers 0.7-0.9 mm. long; damp soil. [*C. scirpoides* Schk., ex p.]
.....*C. interior* Bailey
1. Perigynia thin- or wing-margined.
5. Perigynia 1-2 mm. wide.
6. Leaves 4-8 mm. wide.
7. Perigynia 4-5 mm. long.
8. Tips of the perigynia appressed; inflorescence compact, stiff; meadows and ditches, common. [*C. tribuloides* var. *sangamonensis* Clokey]*C. tribuloides* Wahl.
8. Tips of the perigynia spreading; inflorescence flexuous, nodding; moist ground. [*C. tribuloides* var. *reducta* Bailey]
..... *C. projecta* Mack.
7. Perigynia 3-4 mm. long.
9. Margins of the perigynium abruptly contracted near the base of the beak; meadows and thickets, chiefly in the n. half of the state. [*C. cristata* Schw., non Clairv.]*C. cristatella* Britt.
9. Margins uniform, not at all contracted.
10. Inflorescence moniliform; body of the perigynium suborbicular; woods and roadsides*C. festucacca* Schk.
10. Inflorescence an elongated (2.5-5 cm.) interrupted head; body of the perigynium oval; woods, common. [*C. mirabilis* Dewey, non Host]*C. normalis* Mack.
6. Leaves 0.5-4 mm. wide.
11. Perigynia lanceolate.
12. Perigynia 7-10 mm. long, bidentate at apex, longer than the glumes, appressed, straw-colored, flattened, the translucent margins finely serrulate; wet ground in woods
.....*C. muskingumensis* Schw.
12. Perigynia 4.5-6 mm. long.
13. Plants strongly stoloniferous, the stems arising from an elongated rhizome; sandy soil, rare; Kankakee, *Hill*; Peoria *Brendel**C. siccata* Dewey
13. Plants not stoloniferous, the stems tufted; marshes and wet meadows, common*C. scoparia* Schk.
11. Perigynia oval or lance-ovate to obovate.
14. Perigynia lance-ovate, widest near the middle or base.
15. Perigynia 3-3.5 mm. long; spikes closely aggregated, not clavate at base; marshes and ditches, n. Ill.
.....*C. bebbii* Olney

- 15. Perigynia 3.5-4.5 mm. long; spikes clavate at base, not aggregated, usually in a flexuous, moniliform inflorescence; open woods [*C. straminea* of auth., not Willd.]
.....*C. tenera* Dewey
- 14. Perigynia rhombic-ovate to suborbicular, widest above the middle; open woods, rare [*C. straminea* sensu Mack., non Willd.]*C. absolutescens* Schw.
- 5. Perigynia 2.3-4 mm. wide.
- 16. Glumes aristate; perigynia obovate, 4-5 mm. long; swamps, rare, n.e. Ill.*C. alata* T. & G.
- 16. Glumes acute to obtusish; perigynia oval or ovate.
- 17. Perigynia flat, thin, translucent.
- 18. Perigynia 5.5-6.5 mm. long, 3-4 mm. wide; leaf-sheaths hyaline; dry soil in the n. half of the state*C. bicknellii* Britt.
- 18. Perigynia 4-5 mm. long, 2.5-7 mm. wide; leaf-sheaths green; wet ground in the n. part of Ill., rare*C. suberecta* (Olney) Britt.
- 17. Perigynia thick, coriaceous or subcoriaceous, plano-convex.
- 19. Body of the perigynium ovate, broadest near the base, tapering into the beak; in woods and along ditches, not common
.....*C. molesta* Mack.
- 19. Body of the perigynium broadly ovate to suborbicular, abruptly contracted into the beak; open woods and roadsides
.....*C. brevior* (Dewey) Mack.

GROUP III

Stigmas 2; achenes lenticular; perigynia beakless or short-beaked; spikes normally unisexual, i.e., the terminal spike commonly staminate, the lower spikes entirely or mostly pistillate.

- 1. Perigynia obovoid or subglobose, beakless, yellowish or brownish, plump, nerved, about 2 mm. in length, longer than the obtuse, pale brown glumes; wet ground, n. Ill.*C. aurea* Nutt.
- 1. Perigynia compressed, short-beaked, the beak less than 0.5 mm. long.
- 2. Glumes obtuse, approximately equalling the perigynia.
- 3. Perigynium 2.7-3.2 mm. long, strongly flattened; stems strongly phyllopodic, the dried-up leaves of the previous year persistent; wet ground, n. Ill.*C. stricta* (Kükenth.) Mack.
- 3. Perigynium 2.2-2.7 mm. long; stems aphyllopodic; leaves of the previous year not persistent; swamps*C. stricta* Lam.
- 2. Glumes acuminate or acute, longer than the perigynia; stems aphyllopodic.
- 4. Perigynia 2-2.5 mm. long, turgid; moist ground in woods
.....*C. haydenii* Dewey
- 4. Perigynia 1.5-1.7 mm. long, flattened; moist ground in woods
.....*C. emoryi* Dewey

GROUP IV

Spike solitary, terminal, small, few-flowered, androgynous; perigynia glabrous; stigmas three; achenes trigonal.

1. Perigynia 2.5-3.5 mm. long, beakless, ellipsoid; leaves 0.5-1.5 mm. wide; glumes obtuse; bogs and wet meadows*C. leptalea* Wahl.
1. Perigynia 5-6 mm. long, globose, with a roughened entire beak 3 mm. long; leaves 2-3 mm. wide; glumes aristate, foliaceous; dry woods
.....*C. jamesii* T. & G.

GROUP V

Stigmas three; achenes trigonal; spikes two or more; perigynia glabrous, the beak (if present) small, entire, emarginate, or bidentulate. the short teeth (if present) soft and thin.

1. Leaves 1-3 cm. wide; beak of the perigynium abruptly bent.
2. Perigynia sharply triangular, closely 30-50-nerved.
3. Perigynia 2.5-3.5 mm. long; cauline sheaths blade-bearing, green; open woods, not common*C. platyphylla* Carey
3. Perigynia 4-5 mm. long; cauline sheaths bladeless, red-tinged; woods, rare*C. plantaginea* Lam.
2. Perigynia obtusely triangular, tapering at the base, 3-4 mm. long, finely nerved; woods, not uncommon*C. albursina* Sheldon
1. Leaves usually less than 1 cm. wide.
4. Leaves capillary, 0.5 mm. wide; perigynia 2 mm. long, minutely straight-beaked or beakless; glumes obtuse; rocky soil, or sandy thickets in the n. half of Ill., rare*C. eburnea* Boott
4. Leaves 1-9 mm. wide.
5. Perigynium beakless, or the straight beak not more than 0.5 mm. long.
6. Mature perigynia conspicuously nerved or ribbed.
7. Spikes drooping on slender peduncles.
8. Lateral spikes 3-6, linear-cylindrical, 2-3 mm. thick; perigynia twice the length of the obtuse glumes; leaves 3-7 mm. wide; moist woods and meadows, common*C. gracillima* Schw.
8. Lateral spikes 1-2, ellipsoid, 5-8 mm. thick; perigynia nearly equalling the acute or mucronate glumes; bogs, Peoria and Tazewell counties, *Brendel**C. limosa* L.
7. Spikes ascending or erect.
9. Terminal spike gynecandrous; leaves and base of stem more or less pubescent.
10. Perigynia beakless, 2-3.5 mm. long; leaves 1.5-4 mm. wide.
11. Perigynia 2-2.3 mm. long, ellipsoid, appressed or ascending, somewhat longer than or about equalling the glumes; dry woods and meadows throughout Ill. [*C. triceps* sensu auth., not Michx., or Schrank]
.....*C. hirsutella* Mack.

11. Perigynia 2.5-3.5 mm. long, obovoid, squarrose-spreading, shorter than the glumes; meadows, s. Ill.
.....*C. bushii* Mack.
10. Perigynia 4-6 mm. long, ellipsoid, ascending, the beak short, bidentulate; glumes awned, hyaline-margined; leaves 3-8 mm. wide; roadside ditches and alluvial soil in woods, frequent*C. davisii* Schw. & Torr.
9. Terminal spike staminate.
 12. Perigynia tapering at the base, triangular in cross-section.
 13. Pistillate glumes mucronate or awned; stems phyllopodic; stolons deep-seated; plants of open marly or sandy soil.
 14. Pistillate spikes cylindrical, 3-4.5 mm. thick; sandy soil*C. tetanica* Schk.
 14. Pistillate spikes ellipsoid, 5-8 mm. thick; meadows and prairies*C. meadii* Dewey
 13. Pistillate glumes obtuse; pistillate spikes 3-4 mm. thick; stems aphyllopodic; stolons superficial; woodland plants*C. woodii* Dewey
 12. Perigynia rounded at the base, nearly terete in cross-section.
 15. Pistillate glumes mucronate or awned.
 16. Leaves 5-10 mm. wide; perigynia 2-2.5 mm. long; plants cespitose; alluvial soil, n.e. Ill.
.....*C. haleana* Olney
 16. Leaves 1.5-3 mm. wide; perigynia 3-3.5 mm. long; plants stoloniferous; sandy flats, n.e. Ill., rare
.....*C. crawei* Dewey
 15. Pistillate glumes acute; leaves 3-9 mm. wide; perigynia 2-3.5 mm. long; moist meadows and woods, common*C. granularis* Muhl.
6. Mature perigynia faintly impressed-nerved or nerveless; spikes erect or ascending.
 17. Terminal spike staminate; pistillate glumes mucronate or awned.
 18. Sheaths and lower blades pubescent; perigynia 2.5-3 mm. long; moist ground, rare. "N. Ill.," *Vasey*
.....*C. pallescens* L.
 18. Plants glabrous; perigynia 3.5-5.5 mm. long.
 19. Perigynia 1.5 mm. wide; bract-sheaths with serrulate margins; peduncles of the pistillate spikes scabrous; meadows and ditches, not common*C. conoidica* Schk.
 19. Perigynia 2-2.5 mm. wide; bract-sheaths and peduncles smooth or nearly so.
 20. Pistillate spikes 3-12-flowered; leaves thin, soft, not glaucous.
 21. Perigynia 4.5-5.5 mm. long; awn of the pistillate glumes minutely serrulate; stems brownish at base; leaves 4-8 mm. wide; woods, thickets, and meadows, common*C. grisea* Wahl.

21. Perigynia 3.5-4.5 mm. long; awn of the pistillate glumes smooth; stems reddish at base; leaves 2-4 mm. wide; dry banks and wooded hillsides, rare; Stark Co., *V. H. Chase**C. amphibola* Steud.
20. Pistillate spikes 12-35-flowered; leaves strongly glaucous, thick, firm; awn of the pistillate glumes smooth; open woods, and roadsides, local*C. glaucodea* Tuckerm.
17. Terminal spike gynecandrous.
22. Perigynia elliptical, light green, granular, much shorter than the purplish black cuspidate glumes; leaves 1.5-4 mm. wide; plants stoloniferous, growing in bogs, n. Ill.*C. buxbaumii* Wahl.
22. Perigynia obovate-orbicular, slightly wrinkled, about equalling the reddish brown acute or obtuse glumes; leaves 4-9 mm. wide; plants caespitose, growing in moist woods, thickets, and roadside ditches, common*C. shortiana* Dewey
5. Beak of the perigynium curved, or if straight 0.7-1 mm. long; glumes mucronate or aristate.
23. Beak oblique or abruptly curved, 0.3-0.5 mm. long.
24. Stems purplish tinged at base; lower pistillate spikes on long capillary peduncles; perigynia 2.5-3.2 mm. long; woods, not uncommon. [*C. laxiflora* var. *gracillima* Boott]*C. gracilescens* Steud.
24. Stems brownish at base; lower pistillate spikes short-peduncled; perigynia 3-4 mm. long, woods, common. [*C. laxiflora* var. *blanda* (Dewey) Boott]*C. blanda* Dewey
23. Beak straight, 0.7-1 mm. long; perigynia 40-50-nerved.
25. Sheaths pubescent; perigynia 4-5 mm. long; leaves 3-7 mm. wide; wooded hillsides, rare; near Peoria, *Brendel, McDonald*; Stark Co., *V. H. Chase**C. hitchcockiana* Dewey
25. Sheaths glabrous; perigynia 3-4 mm. long; leaves 2-4.5 mm. wide; dry woods in the n. half of the state*C. oligocarpa* Schk.

GROUP VI

Stigmas three; achenes trigonal; spikes two or more; perigynia glabrous, the beak sharply bidentate.

1. Staminate spike solitary or none; sometimes the terminal spike bearing some pistillate flowers.
2. Mature perigynia 1-2 cm. long.
3. Pistillate spikes globose, the ellipsoid perigynia widely radiate-spreading; beak of the perigynium 1.5-2.5 mm. long; moist woods, common*C. grayii* Carey
3. Pistillate spikes ellipsoid to cylindrical, the ovoid-lanceoloid perigynia ascending; beak of the perigynium 5-10 mm. long.

4. Leaves 3-5 mm. wide; perigynia 10-12 mm. long, the beak smooth, not serrulate; pistillate spikes subglobose-ellipsoid, 2-3.5 cm. long; staminate spike 2-2.5 mm. wide; stems solitary or few from elongate rhizomes; achenes longer than wide, the angles not prominently thickened; wet ground in woods, s. Ill. [*C. halei* sensu Carey, non Dewey]*C. louisianica* Bailey
4. Leaves 5-15 mm. wide; perigynia 13-20 mm. long; pistillate spikes ellipsoid-cylindrical, 2-8 cm. long; staminate spike 3-5 mm. wide; stems cespitose.
 5. Beak of the perigynium serrulate; achenes longer than wide, the angles not thickened; swamps, common*C. lupulina* Muhl.
 5. Beak of the perigynium smooth; achenes as wide as long, the angles prominently thickened; wet ground, local
.....*C. lupuliformis* Sartw.
2. Mature perigynia not more than 1 cm. long.
 6. Leaves involute-filiform; pistillate spikes 1 or 2, sessile, globose, few-flowered; perigynia ovoid, turgid, glossy, 4-7 mm. long, nearly twice the length of the obtuse glumes; bogs, Lake Co. Hill in 1908
.....*C. oligosperma* Michx.
 6. Leaves flat.
 7. Perigynia obovoid, 4-5 mm. long, truncate above and abruptly subulate-beaked; terminal spike often mostly pistillate.
 8. Perigynia shorter than the serrulate, linear-subulate glumes; ditches and swamps, extending northw. to McLean Co.
.....*C. frankii* Kunth
 8. Perigynia much longer than the glumes.
 9. Perigynia squarrose; glumes acute to mucronate; style strongly curved near the ovary; swampy ground and roadside ditches, common*C. squarrosa* L.
 9. Perigynia ascending; glumes obtusish or acutish; style straight throughout; swamps and roadside ditches, chiefly in the s. half of Ill., but extending northw. to Macon Co. [*C. typhina* Michx. *typhina* Schw.]*C. typhina* Michx.
 7. Perigynia lanceoloid, ellipsoid, or ovoid, more or less tapering into the beak.
 10. Glumes with a serrulate awn.
 11. Perigynia lanceoloid, strongly ribbed, soon reflexed.
 12. Teeth of the perigynium erect or slightly spreading, 0.5-1 mm. long; perigynium 4-5 mm. long, the beak shorter than the body; bogs and swamps, Kane and Du Page counties*C. pseudocyperus* L.
 12. Teeth strongly divergent, 1-2 mm. long; perigynium 5-7 mm. long, the beak equalling or exceeding the body; swamps and ditches*C. comosa* Boott
 11. Perigynia ellipsoid or ovoid, often inflated, 5-9 mm. long.

13. Perigynia 15-20-nerved, 1.5-2 mm. thick, the beak 2 mm. long; wet ground, common; chiefly in the n. half of the state*C. hystericina* Muhl.
13. Perigynia 8-10-nerved, 2.5-3 mm. thick, the beak 3-4 mm. long; swamps, wet meadows, and ditches, common.....
.....*C. lurida* Wahl.
10. Glumes not serrulate.
14. Beak of the perigynium 0.5-1 mm. long, minutely bidentate; perigynia ellipsoid, 2-3.5 mm. long; lake shores and river banks, n.e. Ill. [*C. oederi* var. *pumila* (Coss. & Germ.) Fern.].....*C. viridula* Michx.
14. Beak of the perigynium 2-2.5 mm. long, equalling or exceeding the body.
15. Pistillate spikes erect, sessile; perigynia spreading or reflexed, 2-3 times as long as the glumes; beak of the perigynium sparsely serrulate; wet meadows, n.e. Ill.
.....*C. viridula* Michx.
15. Pistillate spikes pendulous on slender peduncles; perigynia spreading-ascending, about as long as the glumes; beak smooth; alluvial soil in the n. half of the state. [*C. longirostris* sensu Torr., non Krock]
.....*C. sprengelii* Dewey
1. Staminate spikes two or more; perigynia ovoid or ovoid-lanceoloid, usually more or less inflated.
16. Teeth of the perigynium short, not more than 0.5 mm. long.
17. Perigynia fusiform or narrowly ellipsoid, short-beaked, the beak not more than 1 mm. long.
18. Perigynia strongly nerved; swamps and ditches
.....*C. lacustris* Willd.
18. Perigynia impressed-nerved; ditches, and wet ground in woods....
.....*C. hyalinolepis* Steud.
17. Perigynia ovoid-lanceoloid, inflated, papery, strongly nerved; beak 2-3.5 mm. long; swampy ground, local*C. retrorsa* Schw.
16. Teeth of the perigynium 0.5-2 mm. long.
19. Perigynium 5-6.5 mm. wide, 7-10 mm. long, the teeth 0.5-1 mm. long; wet ground in woods; Lake Forest, *Vasey*; Cook Co., *Gates*
.....*C. tuckermanni* Dewey
19. Perigynium 2-3.5 mm. wide.
20. Teeth 1-2 mm. long; marshy ground.....*C. laeviconica* Dewey
20. Teeth 0.5-1 mm. long.
21. Lower perigynia reflexed or widely spreading; stems scattered, obtusely angled; plants stoloniferous; leaves 4-12 mm. wide; ditches and shores, n. Ill.
.....*C. rostrata* Stokes
21. Perigynia ascending; stems cespitose, sharply angled; leaves 3-5 mm. wide; swamps, and wet ground in woods, chiefly in the n. half of the state*C. vesicaria* L.

GROUP VII

Perigynia more or less pubescent or puberulent (sometimes only slightly so); stigmas 3; achenes trigonal.

1. Perigynium beakless, or the beak less than 0.4 mm. long.
2. Terminal spike staminate throughout; perigynia 2.5-3 mm. long.
 3. Perigynia ellipsoid, 3-12 in a spike, longer than, or equalling the glumes; leaves 2.5-5 mm. wide; woods and thickets in the n. half of Ill. *C. digitalis* Willd.
 3. Perigynia obovoid, 10-25 in a spike, shorter than the obtuse, purple, hyaline-margined glumes; leaves 2-2.5 mm. wide; dry, rocky soil *C. richardsonii* R. Br.
2. Terminal spike with some pistillate flowers.
 4. Perigynia 3.5-4.5 mm. long; dry woods *C. pedunculata* Muhl.
 4. Perigynia 2-2.5 mm. long.
 5. Stems usually shorter than the leaves; pistillate spikes ellipsoid; perigynia obovoid; woods and roadsides, not common *C. swanii* (Fern.) Mack.
 5. Stems usually longer than the leaves; pistillate spikes cylindrical; perigynia ellipsoid; woods, n.e. Ill. *C. virescens* Muhl.
1. Beak of the perigynium 0.4-2 mm. long; terminal spike (or spikes) wholly staminate.
 6. Mature perigynia 12-18 mm. long; leaves 5-15 mm. wide; moist woods, common *C. grayii* Carey
 6. Perigynia shorter.
 7. Perigynia 9-10 mm. long; leaves 3-8 mm. wide; wet meadows *C. trichocarpa* Muhl.
 7. Perigynia 2.5-5 mm. long.
 8. Some, or all, of the spikes half hidden among the tufted leaf-bases; plants densely tufted, 5-15 cm. tall; pistillate spikes 5-10 mm. long; perigynia plump, stipitate, 2-keeled, 2.5-3.5 mm. long; dry sandy or gravelly soil, chiefly in the n. half of the state *C. umbellata* Schk.
 8. All the spikes near the summit of the stem.
 9. Leaves pubescent; woods, common. [*C. pubescens* sensu Muhl., non Poir.] *C. hirtifolia* Mack.
 9. Leaves glabrous.
 10. Pistillate spikes 3-12 mm. long.
 11. Staminate spike stout, 2-4 mm. thick; body of the perigynium suborbicular, about as long as wide; plants strongly stoloniferous, the stolons slender, reddish, fibrillose, scaly; dry open woods, common, flowering in early spring *C. pennsylvanica* Lam.
 11. Staminate spike 0.5-2 mm. thick; body of the perigynium ellipsoid, longer than wide.

12. Mature leaves 3-5 mm. wide; dry woods, in the n. part of the state, flowering in early spring
.....*C. communis* Bailey
12. Mature leaves 1-2.5 mm. wide; dry woods, flowering in early spring. [*C. varia* of Muhl., not Lumn., or Host]*C. artitecta* Mack.
10. Pistillate spikes 1-7 cm. long.
13. Leaves involute, 1-2 mm. wide; swamps and bogs, n. Ill.
.....*C. lasiocarpa* Ehrh.
13. Leaves flat, 2-6 mm. wide.
14. Perigynia 2.5-3.5 mm. long, the beak 1 mm. long; pistillate spikes 5-8 mm. thick; style straight, jointed with the achene; swamps, chiefly in the n. and centr. parts of the state*C. lanuginosa* Michx.
14. Perigynium 5 mm. long, the beak 1.5 mm. long; pistillate spikes 8-12 mm. thick; style flexuous, continuous with the achene; ditches and moist woods; Macon Co., Clokey 2338 (type collection)
.....*C. subimpressa* Clokey

24. ARACEAE Necker—Arum Family

1. Leaves with 3-11 leaflets; spathe conspicuous, convolute at least below, enveloping the cylindrical or slightly flattened spadix which is flower-bearing near the base; flowers monoecious or dioecious, without perianth; plant cormose.....1. *Arisaema*
1. Leaves simple, or absent at flowering time.
2. Leaves sagittate or cordate, or absent; spadix terminal.
3. Spathe ovoid, fleshy, greenish or yellowish, purple-mottled; spadix globose, covered by the perfect flowers; perianth of 4 hooded sepals; leaves appearing later, large, ovate, cordate; plant with a very fetid odor.....2. *Symplocarpus*
3. Spathe narrow, elongate, convolute, green; spadix cylindrical, bearing staminate flowers above and pistillate below; perianth none; leaves sagittate....3. *Peltandra*
2. Leaves linear, erect, equitant; spathe merely a foliaceous prolongation of the scape; spadix cylindrical, borne laterally on the leaf-like, 3-angled scape; perianth with 6 membranous concave divisions; rhizomes and leaves aromatic.....4. *Acorus*

1. ARISAEMA Mart.

1. Leaflets 3; spadix terete, club-shaped, obtuse, overarched by the green or purpled-striped spathe; moist woods, common. Apr.-May. Jack-in-the-Pulpit. Indian Turnip. [*A. triphyllum* sensu auth., not Schott]
.....*A. atrorubens* (Ait.) Blume
1. Leaflets 7-11; spadix slender, projecting beyond the green spathe; moist woods, common. May-June. Green Dragon. Dragonroot [*Muricauda dracontium* (L.) Small]*A. dracontium* (L.) Schott

2. SYMPLOCARPUS Salisb.—Skunk-cabbage

(*Spathyema* Raf.)

S. foetidus (L.) Nutt. Swamps, local; chiefly in n.e. and centr. Ill., extending southw. to Jasper Co.; apparently absent from the w. and s. counties Feb.-Apr.

3. PELTANDRA Raf.

P. virginica (L.) Kunth. Muddy margins of ditches or ponds, or in shallow water, or swamps, local; extending northw. to Kankakee and Peoria counties. May-June.

4. ACORUS L.—Sweetflag

A. calamus L. Swamps, or wet ground along streams, local. June-Aug.

25. LEMNACEAE Dumort.—Duckweed Family

- 1. Plants with roots.
 - 2. Root solitary, without vascular tissue.....1. *Lemna*
 - 2. Roots several, each with a vascular bundle.....2. *Spirodela*
- 1. Plants without roots, ellipsoid, minute3. *Wolffia*

1. LEMNA L.—Duckweed

- 1. Plants paddle-shaped, 6-10 mm. long, remaining connected, wholly submerged; ponds and ditches, local*L. trisulca* L.
- 1. Plants oval or roundish, 2-5 mm. long, soon separating, floating.
 - 2. Plant-body symmetrical or nearly so.
 - 3. Plant round to oval, indistinctly 3-veined, dark green, biconvex; utricle lenticular; stagnant water and slow streams, local*L. minor* L.
 - 3. Plant elliptical, indistinctly 1-veined, pale green, nearly flat; utricle elongate; stagnant water, rare*L. minima* Phil.
 - 2. Plant-body asymmetrical.
 - 4. Plant obliquely obovate, 3-veined, thick, papillose on the median line; ponds and streams, local*L. perpusilla* Torr.
 - 4. Plant elliptical, often somewhat falcate, obscurely 1-veined, smooth; ponds and swamps, rare. [*L. cyclostasa* of auth.]
.....*L. valdiviana* Phil.

2. SPIRODELA Schleid.

S. polyrhiza (L.) Schleid. Plants roundish-obovate, 3-8 mm. long, floating. Ponds, ditches, slow streams, locally abundant.

3. WOLFFIA Horkel

(*Bruniera* Franch)

- 1. Plants globose or ellipsoid, not flattened, 0.5-1 mm. long, loosely cellular, not punctate, floating somewhat beneath the surface; locally abundant in stagnant water*W. columbiana* Karst.
- 1. Plants flattened on the upper surface, brown-punctate, compactly cellular, floating at the surface of the water.
 - 2. Plants 1-1.5 mm. long, rounded-ovate, strongly gibbous, the upper surface with a central conical papilla; in permanent pools of stagnant water, rare. Wabash Co., *Schneck**W. papulifera* Thompson
 - 2. Plants 0.5-0.8 mm. long, ellipsoid, slight gibbous, symmetrical, the upper surface flat or slightly convex, gradually rising to the acute apex; stagnant water, rare; Sangamon Co., *E. Hall**W. punctata* Griseb.

26. ERIOCAULACEAE Lindl.—Pipewort Family

1. ERIOCAULON L.—Pipewort

E. septangulare With. Borders of ponds and lakes. Pepon says “. . . from East Chicago eastward.” Locally abundant in northern Indiana, but no Illinois specimens seen.

27. XYRIDACEAE Lindl.—Yellow-eyed Grass Family

1. XYRIS L.—Yellow-eyed Grass

X. torta Sm. Moist sandy soil, not common. July-Aug. [*X. flexuosa* of auth., not Muhl.]

28. COMMELINACEAE Reichenb.—Spiderwort Family

1. Petals equal; perfect stamens 6; filaments pubescent.....1. *Tradescantia*
 1. Petals more or less unequal; perfect stamens 3; filaments glabrous.....2. *Commelina*

1. TRADESCANTIA L.—Spiderwort

1. Leaves lanceolate, 1.5-5 cm. broad, not glaucous; margins ciliate; sepals sparsely pilose or glabrous; cymes axillary and terminal; stems 40-80 cm. tall; woods, common in the central and s. part of the state. June-Aug. [*T. pilosa* Lehm.]*T. subaspera* Ker
 1. Leaves linear or linear-lanceolate; cymes terminal.
 2. Leaves glaucous; sepals glabrous, or pilose at the tip; petals 12-16 mm. long; stems usually 40-90 cm. tall; prairies, roadsides, open woods, common. May-Sept. [*T. reflexa* Raf.]*T. canaliculata* Raf.
 2. Leaves not glaucous; petals 16-20 mm. long; stem 10-30 cm. tall.
 3. Sepals and pedicels pubescent with non-glandular hairs; petals blue; meadows, open woods, and thickets, common. May-June.
*T. virginiana* L.
 3. Sepals and pedicels copiously glandular-villous; petals rose; meadows, thickets, roadsides, not common; w. Ill. June*T. bracteata* Small

2. COMMELINA L.—Dayflower

1. Plants perennial, native; stems erect or nearly so, not decumbent and rooting at the nodes; margins of the spathe connate at base; seeds smooth, farinose.
 2. Leaves lanceolate; sheaths ciliate with long, ferruginous hairs; all three petals blue; wet woods, rare, s. Ill. Union Co., *Seymour* in 1880. Aug-Sept.*C. virginica* L.
 2. Leaves linear-lanceolate; sheaths not ferruginous-ciliate; two posterior petals blue, the anterior small, white; sandy soil, chiefly in w. Ill. July-Sept. [*C. virginica* of auth., not L.; *C. crispa* Woot.]*C. erecta* L.
 1. Plants annual, nat. from e. Asia; stems decumbent, often rooting at the lower nodes; margins of spathe not united; two posterior petals blue, the anterior small, white; leaves lanceolate; moist shaded ground, not uncommon. July-Oct.*C. communis* L.

29. PONTEDERIAEAE Dumort—Pickerelweed Family

- 1. Flowers 2-lipped; stamens 6; leaves large, cordate to lanceolate; fruit a 1-seeded utricle1. *Pontederia*
- 1. Flowers regular, salverform; stamens 3; leaves either reniform or linear; fruit a many-seeded capsule2. *Heteranthera*

1. PONTEDERIA L.—Pickerelweed

P. cordata L. Margins of ponds and streams. June-Sept.

2. HETERANTHERA R. & P.

- 1. Leaves reniform; flowers white or pale blue; stamens unequal; shallow water or muddy shores, s. Ill. Aug.-Sept. Mud-plantain
.....*H. reniformis* R. & P.
- 1. Leaves linear, grass-like; flowers yellow; stamens equal; shallow water or muddy shores. July-Sept. [*H. graminea* (Michx.) Vahl; *Zosterella dubia* (Jacq.) Small] Water-stargrass*H. dubia* (Jacq.) MacM.

30. JUNCACEAE Vent.—Rush Family

- 1. Capsule many-seeded, 1- or 3-loculed, with axial or parietal placentae; plants glabrous1. *Juncus*
- 1. Capsule 3-seeded, 1-loculed, with basal placentae; plants often sparsely pilose.....2. *Luzula*

1. JUNCUS L.—Rush

- 1. Inflorescence appearing lateral, the involucrel bract erect, terete, simulating a continuation of the stem; leaves reduced to sheaths.
 - 2. Stamens 3; perianth 2.5-3.5 mm. long; anthers shorter than the filaments; stems densely tufted; ditches and marshy ground. Common Rush
.....*J. effusus* L.
 - 2. Stamens 6; perianth 5-6 mm. long; anthers much longer than the filaments; stems usually arising singly from the rhizome and growing in a row; shores and wet ground, n. Ill. [*J. balticus* sensu auth., non Willd.]*J. litorum* Rydb.
- 1. Inflorescence terminal.
 - 3. Leaves flat (or involute), not septate.
 - 4. Flowers borne singly on the branches of the inflorescence, not in heads.
 - 5. Annual; stem branched, the inflorescence more than half the height of the plant; sandy soil, roadsides, or ditches; June-Oct. Toad Rush*J. bufonius* L.
 - 5. Perennials; inflorescence less than half the length of the plant.
 - 6. Capsule longer than the perianth, reddish or dark brown; leaves nearly terete.
 - 7. Seeds cylindrical, 1 mm. or more in length, with caudate appendages half as long as the body; damp shores, rare. July-Aug. Cook Co., *Bebb**J. vaseyi* Engelm.
 - 7. Seeds ellipsoid, 0.5 mm. long, short-pointed or obtuse; sandy soil, rare, n.e. Ill.*J. greenii* Oakes & Tuckerm.

6. Capsule shorter than or equalling the perianth, greenish or pale brown; leaves flat.
8. Auricles at the summit of the sheaths thin, scarious, hyaline, conspicuously extended beyond the point of insertion; fields, roadsides, open woods, very common. May-Sept. [*J. tenuis* sensu Am. auth., non Willd.] *J. macer* S. F. Gray
8. Auricles not conspicuously extended beyond the point of insertion.
9. Sheaths and auricles membranous, hyaline; perianth erect, 3-4 mm. long; sandy soil. May-Aug. *J. interior* Wieg.
9. Sheaths and auricles cartilaginous, yellowish; perianth spreading, 4-5 mm. long; meadows, common. May-Aug.
..... *J. dudleyi* Wieg.
4. Flowers in heads (glomerules).
10. Heads few (2-20); stamens not persistent; meadows or ditches, not common. June-Sept. *J. marginatus* Rostk.
10. Heads numerous (20-100); stamens persistent, exerted; wet sandy soil in the s. half of the state, not common. [*J. aristulatus* sensu auth., non Michx.] *J. biflorus* Ell.
3. Leaves terete, hollow, more or less septate.
11. Stamens 6; seeds not caudate.
12. Involucral leaf longer than the short-branched inflorescence; filaments longer than the anthers.
13. Heads 7-10 mm. in diameter; flowers 3-4 mm. long, the petals equalling or exceeding the sepals; wet ground, rare, n. Ill. July-Aug. *J. nodosus* L.
13. Heads 1-1.5 cm. in diameter; flowers 4-5 mm. long, the petals much shorter than the sepals; ditches, common. July-Aug. *J. torreyi* Coville
12. Involucral leaf much shorter than the long-branched inflorescence; filaments about as long as the anthers.
14. Branches of the inflorescence widely divergent; sepals acuminate; sandy shores, n.e. Ill. July-Aug. *J. articulatus* L.
14. Branches of the inflorescence erect or closely ascending; sepals obtuse or mucronate; wet soil, n.e. Ill. July-Aug. [*J. alpinus* var. *insignis* Fries] *J. richardsonianus* Schult.
11. Stamens 3.
15. Seeds caudate.
16. Perianth 3-4 mm. long, the segments acuminate; heads 5-50-flowered; wet ground. Aug.-Oct. *J. canadensis* J. Gay
16. Perianth 2-2.5 mm. long, the segments obtuse; heads 3-5-flowered; wet ground. July-Sept.
..... *J. brachycephalus* (Engelm.) Buch.
15. Seeds not caudate; perianth-segments acuminate.
17. Capsule acuminate or subulate, longer than the perianth; heads 2-30, each 15-40-flowered; perianth 2.5-3 mm. long; wet sandy soil. July-Sept. *J. scirpoides* Lam.

- 17. Capsule obtuse or merely acute at the apex, about equalling or shorter than the perianth.
- 18. Capsule about two-thirds the length of the perianth; sepals longer than the petals; wet ground. June-Aug.
.....*J. brachycarpus* Engelm.
- 18. Capsule about equalling the perianth; sepals and petals nearly equal.
- 19. Heads 1-50; branches of the inflorescence ascending; perianth 3-3.5 mm. long; wet ground. May-Aug.
.....*J. acuminatus* Michx.
- 19. Heads more numerous; branches of the inflorescence widely divergent; perianth 2-2.5 mm. long; swampy ground, not common. June-July. [*J. robustus* sensu auth., non Wats.]*J. nodatus* Coville

2. LUZULA DC.—Woodrush

(*Juncoides* Adans.)

- 1. Flowers solitary (rarely 2) at the tips of the slender ascending or loosely spreading peduncles; inflorescence an umbel; perianth 3-4.5 mm. long, pale brown, shorter than the capsule; wooded banks, rare. Starved Rock State Park, G. N. Jones & G. D. Fuller 15746*L. saltuensis* Fern.
- 1. Flowers subsessile, crowded in small head-like clusters.
- 2. Rays of the inflorescence erect or ascending; perianth 2-3 mm. long; heads mostly cylindrical.
- 3. Base of plant commonly with small corms; perianth about 2.5 mm. long, slightly shorter than the capsule; stem-leaves 2-4 mm. wide; sandy soil in open woods, rare. Apr.-May. Kankakee Co., Hill
.....*L. bulbosa* (Wood) Rydb.
- 3. Plant not cormose; perianth about 3 mm. long, slightly exceeding the capsule; stem-leaves 4-8 mm. wide; dry open woods, chiefly n.e. Ill. Apr.-May*L. multiflora* (Ehrh.) Lej.
- 2. Rays of the inflorescence strongly divergent, unequal; plant without corms; perianth 3-4 mm. long, much longer than the capsule; dry open woods, rare. Apr.-May*L. echinata* (Small) Hermann

31. LILIACEAE Adans.—Lily Family

- 1. Stem leafy (bearing one or more leaves).
- 2. Flowers large, 4-10 cm. long; leaves alternate or whorled; fruit a capsule.....
.....9. *Lilium*
- 2. Flowers smaller.
- 3. Leaves whorled.
- 4. Flowers several; leaves in usually two whorls, parallel-veined.....18. *Medeola*
- 4. Flower solitary; leaves in one whorl, net-veined.....19. *Trillium*
- 3. Leaves alternate.
- 5. Flowers axillary or terminal, solitary or few, or in umbels.
- 6. Leaves reduced to scales with filiform short branchlets appearing like leaves about 1 cm. long in the axils; flowers axillary, small, greenish, nodding, on slender, jointed pedicels; berry red, 1-seeded.....13. *Asparagus*

6. Leaves foliaceous.
 7. Flowers in axillary umbels, dioecious; leaves net-veined; fruit a berry20. *Smilax*
 7. Flowers not in umbels.
 8. Stem simple; perianth-segments united below the middle; flowers greenish; fruit a berry17. *Polygonatum*
 8. Stem forked above; perianth-segments free; flowers yellowish; fruit a capsule16. *Uvularia*
5. Flowers in a terminal raceme or panicle.
 9. Leaves linear; styles 3, separate.
 10. Stem puberulent above; perianth-segments clawed, and (in our species) bearing a pair of glands; plants with a rhizome.....4. *Melanthium*
 10. Stem glabrous; plants from a bulb.
 11. Perianth-segments lanceolate, acuminate, glandless; panicle many-flowered1. *Stenanthium*
 11. Perianth-segments bearing a large obcordate gland; raceme simple or sparingly branched, few-or several-flowered.....2. *Zigadenus*
9. Leaves not linear.
 12. Leaves 2 or 3, cordate at base; perianth-segments 4, white; stamens 4; fruit a berry.....15. *Maianthemum*
 12. Leaves several, lanceolate; perianth-segments and stamens each 6.
 13. Flowers (in our species) greenish purple; styles 3; leaves strongly veined; fruit a capsule5. *Veratrum*
 13. Flowers white; style short, single; fruit a berry.....14. *Smilacina*
1. Leaves all or mostly basal, or apparently so, rarely absent at flowering time; fruit a capsule.
 14. Flowers 6-12 cm. long, orange; perianth-segments united below; leaves linear....
8. *Hemerocallis*
14. Flowers smaller, not orange.
 15. Flower solitary, nodding; leaves 2 (or 1); plants from deep-seated corms.....
10. *Erythronium*
15. Flowers several.
 16. Flowers in racemes.
 17. Flowers whitish, small; leaves equitant; inflorescence glandular; plants with a short rhizome.....3. *Tofieldia*
 17. Flowers lavender (rarely white); leaves not equitant; plants glabrous, from a bulb.....11. *Camassia*
16. Flowers in a corymb or umbel; plants with bulbs.
 18. Flowers in a corymb, greenish white; filaments flattened at the base; midvein of leaves whitish.....12. *Ornithogalum*
18. Flowers in an umbel.
 19. Plants with the odor and taste of onions (alliaceous); flowers often replaced by bulblets; seeds 1 or 2 in each locule of the capsule6. *Allium*
 19. Plants not alliaceous; seeds several in each locule.....
7. *Nothoscordum*

1. STENANTHIUM (Gray) Kunth

S. gramineum (Ker) Morong. Woods, and moist ground along creeks, rare, s. Ill.; extending northw. to Richland, Fayette, and Pike counties. June-Aug.

2. ZIGADENUS Michx.—Death Camas

Z. glaucus Nutt. Bogs, n. Ill., not common. July-Aug. [*Z. chloranthus* of auth., not Richards.; *Z. elegans* of auth., not Pursh].

3. TOFIELDIA Huds.—Asphodel

T. glutinosa (Michx.) Pers. Bogs in Lake, McHenry, and Cook counties. June-July.

4. MELANTHIUM L.

M. virginicum L. Bunchflower. Meadows, rare, w. and centr. Ill. June-July.

5. VERATRUM L.

V. woodii Robbins. Moist wooded ravines, rare. July-Sept. Bear Creek, Hancock Co., *S. B. Mead* in 1843; Burton Creek, Adams Co., *G. D. Fuller* in 1944.

6. ALLIUM L.—Onion

- 1. Leaves two, elliptical-lanceolate, 3-6 cm. wide, disappearing before flowering time; perianth-segments white, obtuse, 6-7 mm. long; filaments subulate, equalling the perianth; capsule strongly 3-lobed; woods in the n. half of Ill. June-Aug. Wild Leek *A. tricoccum* Ait.
- 1. Leaves linear, terete or flat, less than 1 cm. wide, present at flowering time.
 - 2. Leaves terete, hollow; umbels bulblet-bearing; filaments dilated, the alternate ones with a tooth on each side; ovary not crested; meadows and fields. June-July; nat. from Eur. Field Garlic *A. vineale* L.
 - 2. Leaves flat or concave, not terete; filaments not dilated.
 - 3. Umbel erect, usually with bulblets; scape terete; stamens included; capsule not crested; meadows, roadsides, and woods, common. May-June. Wild Garlic *A. canadense* L.
 - 3. Umbel not bulblet-bearing; capsule 6-crested; stamens exerted.
 - 4. Umbel nodding in flower; scape angular; banks, n. Ill. July-Sept. Nodding Onion *A. cernuum* Roth
 - 4. Umbel erect; scape terete; rocky slopes, w. Ill.; Union Co., *Earle*; Jo Daviess Co., *Pepoon*. July-Aug. *A. stellatum* Ker

7. NOTHOSCORDUM Kunth—False Garlic

N. bivalve (L.) Britt. Meadows, rare; apparently absent from the n. half of the state. Apr.-May. [*Allium striatum* Jacq.]

8. HEMEROCALLIS L.—Day Lily

H. fulva L. Roadsides, common; nat. from Eurasia. June-July.

9. LILIUM L.—Lily

- 1. Flowers erect; perianth segments with oval or lanceolate blades and a slender claw; leaves mostly alternate, linear, 2-7 mm. wide; dry open woods in the n. half of Ill. June-July. [*L. philadelphicum* var. *andinum* (Nutt.) Ker] *L. umbellatum* Pursh
- 1. Flowers nodding; perianth-segments oblanceolate, not clawed, recurved; leaves mostly whorled, elliptic-lanceolate, 1-2 cm. wide; moist woods, thickets, meadows. June-July [*L. canadense* and *L. superbum* of auth., not L.] *L. michiganense* Farw.

10. ERYTHRONIUM L.—Trout Lily

1. Perianth yellow; style clavate, the stigmas erect, united; woods apparently absent from the w. part of Ill. Apr.-May *E. americanum* Ker
1. Perianth white or pale lavender; style 3-cleft, the recurved stigmas 1-3 mm. long; alluvial soil in woods, common. Apr. *E. albidum* Nutt.

11. CAMASSIA Lindl.—Camas

(Quamasia Raf.)

- C. scilloides* (Raf.) Cory. Wild Hyacinth. Moist woods or meadows, [*C. esculenta* (Ker) B. L. Robins.; *Q. hyacinthina* (Raf.) Britt.].

12. ORNITHOGALUM L.

- O. umbellatum* L. Star-of-Bethlehem. Roadsides, edges of fields, locally abundant; escaped from cult.; nat. from Eur. Apr.-May.

13. ASPARAGUS L.

- A. officinalis* L. Garden Asparagus. Roadsides and fields, common; introd. from Eur. May-June.

14. SMILACINA Desf.—False Solomon's-seal

(Vagnera Adans.)

1. Flowers numerous in a panicle; perianth-segments 1-2 mm. long; woods, common. May-June. *S. racemosa* (L.) Desf.
1. Flowers few in a raceme; perianth-segments 3-5 mm. long; woods, common. May-June. *S. stellata* (L.) Desf.

15. MAIANTHEMUM Wigg.

- M. canadense* Desf. Moist woods, n. Ill. May-June. Our plants belong to the var. *interius* Fern.

16. UVULARIA L.—Bellwort

(Oakesia Wats.; Oakesiella Small)

1. Leaves perfoliate, puberulent beneath; capsules obtusely 3-angled, rounded or retuse at the apex; moist woods, not uncommon. Apr.-May *U. grandiflora* Sm.
1. Leaves sessile, glabrous; capsules sharply 3-angled, acutish at each end; woods, rare. Wabash Co., *H. Shearer* in 1900. [*Oakesia sessilifolia* (L.) Wats.] *U. sessilifolia* L.

17. POLYGONATUM Hill—Solomon's Seal

1. Leaves puberulent on the veins beneath; peduncles commonly 2-flowered; flowers 9-12 mm. long; woods. May-June. [*P. biflorum* sensu auth., non (Walt.) Ell.] *P. pubescens* (Willd.) Pursh
1. Leaves glabrous; peduncles commonly 2-5-flowered; flowers 15-18 mm. long; woods, and roadsides, common. May-June. [*P. commutatum* (R. & S.) Dietr.; *P. giganteum* Dietr.] *P. biflorum* (Walt.) Ell.

18. MEDEOLA L.

M. virginiana L. Indian Cucumber-root. Wooded ravines, rare. Evanston, Cook Co., L. N. Johnson in 1889.

19. TRILLIUM L.

1. Flowers sessile; petals purple.
 2. Leaves sessile; sepals not reflexed; moist woods, local. Apr.-May. *T. sessile* L.
 2. Leaves short-petioled; sepals reflexed; woods, common. Apr.-May. Purple Trillium *T. recurvatum* Beck
1. Flowers peduncled; petals white (or purple).
 3. Leaves sessile or essentially so; fruit 6-angled, winged.
 4. Petals 4-6 cm. long, obovate or oblanceolate; peduncle erect or ascending; woods, e. and n.e. Ill., rare. Apr.-May *T. grandiflorum* (Michx.) Salisb.
 4. Petals 2-4 cm. long, oval; peduncle usually horizontal or declined, rarely erect; woods, common. Apr.-May. [*T. declinatum* (Gray) Gleason, non Raf.] Occasional purple-flowered plants are sometimes mistaken for the eastern *T. erectum* L. *T. gleasoni* Fern.
 3. Leaves short-petioled; petals white, 1.5-3 cm. long; peduncle erect; fruit 3-lobed, not winged; wooded slopes, local; known from Stark, Peoria, Sangamon, Piatt, and Champaign counties. Mar.-Apr. Snow Trillium *T. nivale* Riddell

20. SMILAX L.

(*Nemexia* Raf.)

1. Stems woody, usually more or less prickly, at least on the lower part; ovules solitary in each locule of the ovary.
 2. Leaves glaucous on the lower surface, ovate; umbels 6-12-flowered; open woods and sandy soil, s. Ill. May-June. Sawbrier *S. glauca* Walt.
 2. Leaves green on both surfaces.
 3. Leaves more or less contracted near the middle or 3-lobed, commonly deltoid-hastate, often spinulose on the margins and veins beneath; umbels 15-45-flowered; fruit mostly 1-seeded; thickets, s. Ill. May-June. Fringed Greenbrier *S. bona-nox* L.
 3. Leaves ovate, cordate, or roundish.
 4. Leaves thin; branchlets terete; prickles black, terete (upper branches often without prickles); peduncles longer than the petioles; fruit black, not glaucous, usually 1-seeded; woods and thickets, common. May-June. Common Greenbrier *S. hispida* Muhl.
 4. Leaves firm; branchlets angular; prickles flattened, green; peduncles shorter than the petioles; fruit glaucous, 2- or 3-seeded; dry woods, s. Ill. May-June *S. rotundifolia* L.
1. Plants herbaceous, not bristly or prickly; ovules two in each locule.
 5. Leaves puberulent and green beneath; stem climbing; fruit black; wooded slopes, s. Ill. May *S. pulverulenta* Michx.

5. Leaves glaucous beneath; fruit bluish, glaucous, 2-5-seeded.
6. Stem climbing, 1-3 m. long; tendrils present; umbels 25-100-flowered; peduncles in the axils of leaves; woods, common. May-June. [*S. herbacea* var. *lasioneuron* (Hook.) A.D.C.; *S. herbacea* sensu auth., not L.] Carrion Flower *S. lasioneuron* Hook.
6. Stem erect, 40-60 cm. tall; tendrils usually absent; umbels with fewer than 25 flowers; peduncle in the axil of a bract below the leaves; moist woods, locally throughout Ill., except the s. counties. May. *S. ecirrhata* (Engelm.) Wats.

32. DIOSCOREACEAE Lindl.—Yam Family

1. DIOSCOREA L.—Yam

1. Petioles glabrous or nearly so at the insertion of the blade; mature capsules 1.5-2.3 cm. long; all the leaves alternate (or the three lowest close together or indefinitely whorled); blades glabrous or puberulent beneath; seeds (exclusive of the wing) 3-4.5 mm. broad; rhizome mostly 5-8 mm. thick (when dry), simple, or rarely branched; thickets or open woods, common. May-July [*D. paniculata* Michx.] *D. villosa* L.
1. Petioles puberulent at the insertion of the blade; mature capsules 2.5-3 cm. long; lower leaves in whorls of 4-9 (usually 6); lower surface of blades glabrous or puberulent, glaucous or green; seeds (exclusive of the wing) 5-6.5 mm. broad; rhizome stout, irregularly knotted, 1-1.5 cm. thick; woods, s. Ill., not common. May-June. [*D. glauca* Muhl.] *D. quaternata* (Walt.) Gmel.

33. AMARYLLIDACEAE Lindl.—Amaryllis Family

1. Bulbous herbs; flowers umbellate, on a solid scape; perianth white, the segments united below into a cylindrical tube 1. *Hymenocallis*
1. Plants not bulbous.
 2. Flowers in a long spike or spike-like raceme; leaves basal.
 3. Perianth greenish yellow; leaves thick, succulent; anthers versatile; ovary wholly inferior 2. *Agave*
 3. Perianth white (in our species); leaves thin, flat, lanceolate; anthers not versatile; ovary half inferior 3. *Aletris*
 2. Flowers solitary or subumbellate, bright yellow; low mostly pubescent herbs with grass-like leaves 4. *Hypoxis*

1. HYMENOCALLIS Salisb.

H. occidentalis (Le Conte) Kunth. Spider Lily. Stream-banks, rare, "s. Ill.," *M. Craig* in 1890.

2. AGAVE L.—American Aloe

A. virginica L. Sandy soil, s. Ill. June-Aug. [*Manfreda virginica* (L.) Salisb.]

3. ALETTRIS L.—Colic-root

A. farinosa L. Sandy woods, Kankakee, Cook, and Lake counties, rare. July-Aug.

4. HYPOXIS L.—Star-grass

H. hirsuta (L.) Coville. Meadows, sandy soil, open woods, common. Apr.-June.

34. IRIDACEAE Lindl.—Iris Family

- 1. Leaves more than 1 cm. wide; flowers large; plants with rhizomes.
 - 2. Flowers blue or reddish; seeds flattened or angular; style-branches broad, petal-like, opposite the anthers.....1. *Iris*
 - 2. Flowers orange, mottled with purple; seeds globose, black, shining, succulent; style-branches filiform, alternate with the anthers.....2. *Belamcanda*
- 1. Leaves less than 7 mm. wide; flowers small; plants without rhizomes....3. *Sisyrinchium*

1. IRIS L.—Iris

- 1. Flowers blue, variegated with yellow and white.
 - 2. Leaves somewhat glaucous; sepals 5-8 cm. long; capsule obscurely 3-lobed, 1.5 cm. thick; ditches, wet meadows, moist woods, banks of streams, ponds, and sloughs, common. May-June. [*I. versicolor* sensu auth. ex p., non L.]*I. shrevei* Small
 - 2. Leaves green, not glaucous; sepals 8-10 cm. long; capsule strongly 6-angled, 2 cm. thick; meadows, swamps, and borders of woods, s. Ill. May-June. [*I. foliosa* Mack. & Bush; *I. hexagona* sensu auth., non Walt.]*I. brevicaulis* Raf.
- 1. Flowers dull reddish brown, variegated with blue and green; leaves pale green and somewhat glaucous; sepals 3-5 cm. long; swamps, s. Ill., rare. May*I. fulva* Ker

2. BELAMCANDA Adans.

(*Gemmingia* Fabr.)

B. chinensis (L.) DC. Blackberry-lily. Roadsides and banks, chiefly s. Ill., escaped from cult.; native of Asia. June-July.

3. SISYRINCHIUM L.—Blue-eyed grass

- 1. Spathes and flowers arising directly from apex of stem; leaves and stem glaucous, 1-2 mm. broad, the margins entire.
 - 2. Spathes usually 2, with a single outer leaf-like bract; margins of the outer bract free to the base; perianth usually white, or sometimes purple; capsules 3-4 mm. long, straw-colored; meadows and prairies, common. May-June*S. albidum* Raf.
 - 2. Spathe solitary; outer bract with the edges united 3-5 mm. above the base; perianth bluish purple; capsules 4-6 mm. long, dark brown; prairies, n. e. Ill. May-June*S. augustifolium* Mill.
- 1. Spathes peduncled from the axil of a leaf-like bract; leaves and stems dark green, glossy, 2-6 mm. broad, the margins usually minutely serrulate; perianth bluish purple; capsules 4-6 mm. long.
 - 3. Leaves and stems dark green, not glaucous; stem broadly winged, almost straight; inner bract of spathe 1.5-3 cm. long; moist meadows. May-June. [*S. gramineum* Curtis, not Lam.]*S. gramineoides* Bickn.
 - 3. Leaves and stems glaucous; stem narrowly margined, curved or flexuous; inner bract of spathe 1-1.5 cm. long; sandy soil, local; Kankakee Co., R. A. Schneider. May-June*S. atlanticum* Bickn.

35. BURMANNIACEAE Blume—Burmanna Family

1. THISMIA Griff.

T. americana N. E. Pfeiff. "Chicago, Ill., in open prairie," *N. E. Pfeiffer*. Known only from the original collection; type, herb. Field Mus.; isotype, herb. Univ. of Ill. Discovered in Aug. 1912; now probably extinct. [*Sarcosiphon americanus* Schlecht.].

36. ORCHIDACEAE Lindl.—Orchid Family

1. Lip large, inflated, moccasin-shaped; leaves plaited; fertile anthers 2.....1. *Cypripedium*
1. Lip concave or flat, not moccasin-shaped; fertile anther 1.
2. Plants with ordinary green foliage at flowering time.
 3. Flowers distinctly spurred, the spur 2 mm. or more in length.
 4. Flowers bicolored, the lip white and the sepals and petals purple; leaves 2, basal, oval2. *Orchis*
 4. Flowers concolored3. *Habenaria*
 3. Flowers spurless.
 5. Flowers large (more than 1 cm. broad), solitary or few.
 6. Leaves grass-like; flowers several, racemose, pink-purple.....4. *Calopogon*
 6. Leaves not grass-like.
 7. Flowers axillary; lip not crested.....5. *Triphora*
 7. Flowers terminal, solitary or few; lip fringed and crested.....6. *Pogonia*
 5. Flowers smaller, several to many, in spikes or racemes.
 8. Flowers sessile or nearly so, spicate, white or greenish white.
 9. Spike more or less twisted spirally; leaves alternate, not variegated, often soon withering7. *Spiranthes*
 9. Spike not spiral; leaves basal, often whitish-variegated.....8. *Goodyera*
 8. Flowers distinctly pedicelled, racemose, greenish or purplish.
 10. Leaf solitary near the middle of the stem, ovate or oval, clasping; flowers many, greenish, 2-3 mm. long.....9. *Malaxis*
 10. Leaves two, basal; flowers few.....10. *Liparis*
 2. Plants with leaves absent at least at flowering time (or with a single basal withered one persisting).
 11. Inflorescence a spirally twisted spike; flowers white or greenish white.....7. *Spiranthes*
 11. Inflorescence not spirally twisted.
 12. Stem bulbous at base, with one basal, oval green leaf usually withering by flowering time.....11. *Aplectrum*
 12. Plant lacking chlorophyll; rhizomes coral-like; leaves reduced to scales12. *Corallorrhiza*

1. CYPRIPIEDIUM L.—Lady's Slipper

1. Sepals oval, not twisted, shorter than the white lip, which is 3-4 cm. long, tinged with purple; wet woods or springy places, rare. Peoria Co., *Brendel*; Lake Co., *Gates*. June-July. Showy Lady's Slipper. [*C. hirsutum* sensu auth., *haud* Mill.; *C. spectabile* Salisb.]*C. reginae* Walt.
1. Sepals lanceolate, attenuate, twisted, equalling or exceeding the lip.
 2. Lip white, 2-2.5 cm. long, purple-veined inside; sepals and petals greenish yellow, purple-lined; bogs, swamps, or wet ground on "original prairie." very rare. May-June. White Lady's Slipper*C. candidum* Muhl.
 2. Lip yellow, 2-5 cm. long; wooded hillsides or in ravines, or bogs, rare. May-June. Yellow Lady's Slipper. [*C. pubescens* Willd.; *C. hirsutum*

of auth., not Mill.; *C. parviflorum* var. *pubescens* (Willd.) Knight]
*C. parviflorum* Salisb.

× *C. andrewsii* Fuller (*C. candidum* × *parviflorum*), with cream-colored lip 2-2.5 cm. long, and purple sepals and petals, has been collected near Spring Bay, Woodford Co., *V. H. Chase* 4024.

2. ORCHIS L.

O. spectabilis L. Showy Orchis. Woods, rare. May-June. [*Galeorchis spectabilis* (L.) Rydb.]

3. HABENARIA Willd.

(*Perularia* Lindl.; *Platanthera* Rich.; *Coeloglossum* Hartm.; *Denslovia* Rydb.; *Linnorchis* Rydb.; *Lysias* Salisb.; *Blephariglottis* Raf.)

1. Lip not fringed or deeply lobed; flowers greenish.
2. Stem with one to several leaves.
3. Leaves several; bracts mostly longer than the flowers.
4. Lip not entire, 6-8 mm. long.
 5. Lip 3-toothed at apex; spur shorter than lip; rich woods, n. Ill., rare. May-June. Long-bracted Orchid
*H. bracteata* (Muhl.) R. Br.
 5. Lip with a median tubercle and a tooth on each side near the base; spur longer than the lip; wet ground, rare, Lake, Cook, Peoria, Tazewell, and Wabash counties. June-July. Tubercled Orchid
*H. flava* (L.) Gray
 4. Lip entire, shorter than the slender spur; swamps, rare; Lake, Peoria, Woodford and Tazewell counties. June-July. [*H. hyperborea* Am. auth., not *Orchis hyperborea* L.]
*H. huronensis* (Nutt.) Spreng.
3. Leaves 1 or 2; bracts shorter than the flowers; lip entire at base, cuneate, truncate, 3-5 mm. long; wet ground, rare, n.e. Ill. July-Aug. Wood Orchid
*H. clavellata* (Michx.) Spreng.
2. Stem scapiform; leaves basal, orbicular, 3-10 cm. broad; lip lanceolate, entire, about 1 cm. long; flowers yellowish green; rich woods, n.e. Ill., rare. June-July. Round-leaved Orchid
*H. hookeri* Torr.
1. Lip fringed or deeply lobed; flowers large and showy.
6. Flowers orange-yellow; lip oval, about 1 cm. long, the conspicuous fringe 3-5 mm. long; swampy ground, n. Ill., rare. July-Aug. Yellow Fringed Orchid
*H. ciliaris* (L.) R. Br.
6. Flowers whitish, greenish, or purplish; lip more or less 3-lobed, each lobe fringed or denticulate.
7. Petals entire; flowers greenish; lobes of the lip narrow, few-fringed; swamps, rare, n.e. Ill. June-July. Green Fringed Orchid
*H. lacera* (Michx.) Lodd.
7. Petals denticulate; lobes of the lip fan-shaped.
8. Lip deeply fringed and 3-parted, the fringe 2-5 mm. long.
9. Flowers white, the spikes relatively few-flowered; wet meadows,

- rare. June-July. White Fringed Orchid
*H. leucophaea* (Nutt.) Gray
 9. Flowers lilac or purplish, crowded in the spike; meadows and
 swamps, Lake and Cook counties, rare. July-Aug. Small Purple
 Fringed Orchid*H. psycodes* (L.) Spreng.
 8. Lip toothed but not fringed; flowers violet purple; moist woods,
 rare, s. Ill. July-Aug. Fringeless Purple Orchid
*H. peramoena* Gray

4. CALOPOGON R. Br.
 (*Limodorum* L. ex p.)

C. pulchellus (Salisb.) R. Br. Grass-pink Orchid. Meadows, in the n. half
 of Ill. June-July.

5. TRIPHORA Nutt.

T. trianthophora (Sw.) Rydb. Nodding Pogonia. Woods, not common.
 Aug.-Sept. [*Pogonia trianthophora* (Sw.) BSP.]

6. POGONIA Juss.

P. ophioglossoides (L.) Ker. Swamps and meadows, n.e. Ill., not common.
 June-July.

7. SPIRANTHES Rich.—Ladies' Tresses

1. Spike 8-12 mm. thick; flowers 4-5 mm. long, in a single spiral; rachis and
 upper part of stem glabrous; leaves oval, basal, soon withering, and usually
 absent at flowering time; open woods. July-Sept.
*S. gracilis* (Bigel.) Beck
 1. Spike 1.5-2.5 cm. thick; flowers 7-10 mm. long, in 2 or 3 spirals; rachis and
 upper part of stem pubescent; leaves linear; meadows and swamps. Aug-
 Oct.*S. cernua* (L.) Rich.

8. GOODYERA R. Br.
 (*Peramium* Salisb.)

G. pubescens (Willd.) R. Br. Rattlesnake-plantain. Woods, rare. July-
 Aug. [*Epipactis pubescens* (Willd.) A. A. Eaton.]

9. MALAXIS Sw.

M. unifolia Michx. Adder's-mouth Orchid. Woods, very rare. Athens,
 Menard Co., *E. Hall* in 1861.

10. LIPARIS Rich.—Twayblade
 (*Leptorchis* Thouars.)

1. Flowers few, greenish; lip about 5 mm. long, shorter than the petals; wet
 ground in the n. half of the state, rare. June-July.*L. loeselii* (L.) Rich.
 1. Flowers numerous, purple; lip 10-12 mm. long, about equalling the petals;
 woods, not common. June-July*L. liliifolia* (L.) Rich.

11. APLECTRUM Nutt.

A. hyemale (Muhl.) Torr. Puttyroot. Rich woods, rare. May-June.

12. CORALLORRHIZA R. Br.—Coralroot

- 1. Lip with 2 basal lobes or teeth; mature capsules 1-1.6 cm. long; woods, rare. Peoria, *Brendel*; Forest Hill, *Hill*. July-Aug. Spotted Coralroot
.....*C. maculata* Raf.
- 1. Lip entire or denticulate; mature capsules not more than 1 cm. long; woods, rare. Menard Co., *Hall*; Peoria, *Brendel*; Carlinville, *Andrews*. Aug.-Sept. Late Coralroot*C. odontorhiza* (Willd.) Nutt.

Class II. DICOTYLEDONEAE Juss.

37. SAURURACEAE Lindl.—Lizard-tail Family

1. SAURURUS L.

S. cernuus L. Lizard-tail. Wet ground in woods, or on muddy shores; locally abundant; extending northw. to Peoria and Vermilion counties. June-Sept.

38. SALICACEAE Lindl.—Willow Family

- 1. Catkin-scales fimbriate; leaves mostly broad, long-petioled; buds with several scales1. *Populus*
- 1. Scales entire; leaves usually narrow and short-petioled; bud-scale one.....2. *Salix*

1. POPULUS L.—Poplar

- 1. Petioles terete or nearly so, not strongly flattened laterally.
- 2. Buds small, pubescent or glabrous, not viscid.
- 3. Leaves sinuate-dentate to lobed; capsules 2-4 mm. long; catkin scales fringed with silky hairs; stigmas linear; bark smooth, whitish gray, rough only at the base of old trunks; introduced species.
- 4. Leaves persistently densely white-tomentose beneath, 3-5-lobed or irregularly dentate; buds copiously white-tomentose; stigmas yellow; roadsides and yards, often escaped from cult.; introd. from Eurasia. Apr. White Poplar*P. alba* L.
- 4. Leaves glabrous at maturity, gray-canescens beneath when young, glabrate, the margins sinuate-dentate; bud-scales ciliate or finely pubescent; stigmas purple; introd. from Eur.; cult., and persisting in a few places. Gray Poplar*P. canescens* (Ait.) Sm.
- 3. Leaves crenate-serrate, ovate, cordate at base, long-petioled, tomentose when young, becoming glabrous or remaining floccose beneath; bark furrowed; capsules 7-9 mm. long; catkin-scales glabrous; stigmas broad; borders of swamps, local; s. Ill., extending northw. to Crawford Co. Apr.-May. Swamp Cottonwood*P. heterophylla* L.
- 2. Buds (at least the terminal) elongated, pointed, glabrous, glossy, resinous-aromatic; leaves pale beneath, crenulate-serrate; bark smooth; capsules on short stout pedicels; catkin-scales with silky hairs; stigmas broad.

5. Leaves ovate-lanceolate, glabrous; river banks and wet ground, n.e. Ill. [*P. balsamifera* sensu auth., non L.] Balsam Poplar
*P. tacamahaca* Mill.
5. Leaves ovate, cordate; petioles, and veins on the lower surface of the blades puberulent or pubescent; planted and sometimes persisting; origin unknown. Athens, Menard Co., *E. Hall* in 1861; Waukegan, *Gates* 2780; Pecria, *Brendel*. Balm of Gilead*P. candicans* Ait.
1. Petioles strongly flattened laterally, at least near the blade.
6. Buds pubescent or glabrous, not glutinous; catkin-scales with silky hairs; stigmas linear; leaves dull or gray-green.
7. Leaves coarsely dentate, the blades 6-10 cm. long, white-tomentose beneath when young, glabrate in age, broadly ovate, the base truncate to broadly cuneate; bud-scales finely appressed-pubescent, glabrate; river banks. Apr.-May. Large-toothed Aspen
*P. grandidentata* Michx.
7. Leaves finely crenate, glabrous from the beginning, ovate to orbicular, the blades 3-6 cm. long; buds glabrous (or merely ciliolate), glossy; thickets and margins of woods in the centr. and n. parts of the state. Apr. Quaking Aspen*P. tremuoides* Michx.
6. Buds viscid, glossy, glabrous; catkin-scales glabrous; stigmas broad; leaves bright or yellow green.
8. Leaves rhombic-ovate, cuneate at base, crenate-serrate; petioles glandless; branches closely ascending or nearly erect, forming a narrow tree; native of Eur.; cult. and sometimes found wild. Lombardy Poplar*P. italica* Moench
8. Leaves broadly deltoid, mostly truncate at base, coarsely dentate with incurved teeth; petioles usually with a pair of glands at the base of the blade; branches widely spreading, forming a broad-crowned tree; along streams and in low ground, common. Mar.-Apr. [*P. balsamifera* L.; *P. virginiana* Foug.; *P. monilifera* Ait.] Cottonwood
*P. deltoides* Marsh.

2. SALIX L.—Willow

1. Scales of the catkins pale or yellowish, caducous; catkins on short leafy lateral branchlets.
2. Style not more than 0.5 mm. long.
3. Ovaries and capsules distinctly pedicelled.
4. Ovaries and capsules glabrous; leaves lanceolate, petioled, finely serrate; stamens 3-9.
5. Capsules 3-6 mm. long at maturity; trees 10-20 m. tall.
6. Capsules 3 mm. long; leaves linear-lanceolate, green on both sides, the petioles 3-6 mm. long; common along streams. May. Black Willow*S. nigra* Marsh.
6. Capsules 4-5 mm. long; leaves lanceolate, glaucous beneath, the petioles usually 5-15 mm. long; along streams. Apr.-May. Peach-leaved Willow*S. amygdaloides* Anders.

- 5. Capsules 7-11 mm. long; shrubs 2-4 m. tall; swamps and bogs, Lake Co. June. Autumn Willow*S. serissima* (Bailey) Fern.
- 4. Ovaries and capsules appressed-silky at first, soon glabrous; leaves linear, subsessile, remotely denticulate; stamens 2; shrub; common along streams. Apr.-June. [*S. longifolia* of Muhl., not Lam.] Sandbar Willow*S. interior* Rowlee
- 3. Ovaries and capsules nearly sessile, or very short-pedicelled, glabrous; stamens 2; tree; commonly planted and often spontaneous; introd. from Eur. May. White Willow*S. alba* L.
- 2. Style distinct, 0.5-1 mm. long; ovaries and capsules glabrous.
 - 7. Catkins slender, 4-7 mm. in diameter at flowering time, 8-18 mm. thick in fruit; stamens 2; tree; nat. of Eur.; often planted, and self-propagating from broken branchlets. Apr.-May. Brittle Willow*S. fragilis* L.
 - 7. Catkins stout, 8-14 mm. in diameter at flowering time, 2-2.5 cm. thick in fruit; stamens 5; style almost 1 mm. long; shrubs; swamps, and along streams and lake shores. Shining Willow*S. lucida* Muhl.
- 1. Scales of the catkins brown to black (except *S. bebbiana*), persistent; stamens 2.
- 8. Ovaries and capsules glabrous.
 - 9. Style 0.5-1.5 mm. long; scales densely silky-villous; young twigs often more or less puberulent; leaves serrate or serrulate.
 - 10. Flowering catkins appearing before the leaves, sessile or nearly so, subtended by a few bracts; leaves pale green or more or less glaucous beneath, at least at maturity.
 - 11. Style 0.5 mm. long; capsules 4-7 mm. long, on pedicels 1-2 mm. long; leaves lanceolate, acuminate, becoming glabrous or nearly so; wet ground, common. Apr.-May*S. cordata* Muhl.
 - 11. Style 1 mm. long; capsules 7-10 mm. long, on pedicels 2-4 mm. long; leaves ovate-lanceolate, acute; swamps in the n. third of the state. May. Blue-leaf Willow*S. glaucophylla* Bebb
 - 10. Flowering catkins on short leafy peduncles 1-2 cm. long; style 0.7-1.5 mm. long; capsules 5-8 mm. long, the pedicels less than 1 mm. long; leaves ovate to oval, acute or abruptly acuminate, silky-pubescent, not glaucous; sandy shores, n.e. Ill. [*S. sylvicola* Fern.]*S. adenophylla* Hook.
 - 9. Style 0.1-0.2 mm. long, the stigmas therefore sessile or nearly so; scales glabrous on the back, pilose within; twigs glabrous; leaves oblanceolate or elliptical, entire, glaucous beneath; catkins appearing with the leaves; bogs and wet meadows, n. Ill., rare. Apr.-May*S. pedicellaris* Pursh
- 8. Ovaries and capsules pubescent.
 - 12. Catkins with some small leafy bracts at base, in flower as the leaf-buds are opening.
 - 13. Scales yellowish or pink-tipped, thinly villous, shorter than the pedicel; capsules 6-10 mm. long; stigmas nearly sessile; leaves

- elliptical, entire or nearly so, tomentose beneath; wet ground, chiefly n. Ill. May. Bebb Willow*S. bebbiana* Sarg.
13. Scales dark brown or black.
14. Style 1-1.5 mm. long; capsules white-tomentose, 6-8 mm. long at maturity; leaves thick, elliptical-lanceolate, the revolute margins entire or repand; bogs in the n. half of Ill. May. Sage Willow*S. candida* Fluegge
14. Style less than 0.5 mm. long; ovaries and capsules strigose.
15. Capsules acuminate, 6-8 mm. long, the pedicel 2.5-5 mm. long; catkins 10-15 mm. long; leaves linear-oblongeolate, glandular-serrulate; wet ground, chiefly in the n. third of the state. Apr.-May*S. petiolaris* Sm.
15. Capsules obtuse, 3-5 mm. long, the pedicel 1-1.5 mm. long; catkins 18-30 mm. long; leaves lanceolate, acuminate, finely serrate; wet ground. Apr. Silky Willow*S. sericea* Marsh.
12. Catkins sessile or nearly so, appearing before the leaves; young twigs glabrous or puberulent.
16. Pistillate catkins 2-4 cm. long, becoming 4-6 cm. long in fruit; mature capsules 9-12 mm. long; pedicel shorter than the scale; leaves elliptical to obovate, glabrous or nearly so at maturity, glaucous beneath; tall shrubs (2-7 m. high) of wet ground; common. Apr.-May. Pussy Willow. [*S. eriocephala* Michx.; *S. prinoides* Pursh; *S. discolor* var. *latifolia* Anders.]*S. discolor* Muhl.
16. Pistillate catkins 1.5-2 cm. long, becoming 2-4 cm. long in fruit; mature capsules 6-9 mm. long; pedicel equalling or slightly longer than the scale; leaves linear-oblongeolate, pubescent beneath; low shrubs of sandy or clayey soil, common. Apr.-May. Prairie Willow. [*S. tristis* Ait.]*S. humilis* Marsh.

KEY FOR STAMINATE SPECIMENS

1. Stamens 3 or more; scales yellowish, caducous; catkins on leafy branchlets.
2. Catkins slender, 6-10 mm. thick; petioles not glandular; trees.
3. Leaves linear-lanceolate, green on both sides; stamens more than twice the length of the scale; nectary yellow.....*S. nigra*
3. Leaves broadly lanceolate, paler and somewhat glaucous beneath; stamens not more than twice the length of the scale; nectary red.....*S. amygdaloides*
2. Catkins 1-1.5 cm. thick; petioles usually glandular at base of blade.
4. Catkins 3-6 cm. long; leaves serrate, green on both surfaces.....*S. lucida*
4. Catkins 1-1.5 cm. long; leaves serrulate, glaucous beneath.....*S. serissima*
1. Stamens 2 (rarely 3 or 4).
5. Filaments pilose.
6. Filaments pilose half their length; leaves linear, subsessile, remotely denticulate; shrubs*S. interior*
6. Filaments pilose only near base; trees.
7. Twigs pubescent; young leaves silky-pubescent.....*S. alba*
7. Twigs and leaves glabrous.....*S. fragilis*
5. Filaments glabrous.
8. Catkins on short leafy-bracted branchlets.

- 9. Leaves entire *S. pedicellaris*
- 9. Leaves glandular-serrulate.
- 10. Leaves sericeous above..... *S. adenophylla*
- 10. Leaves glabrous or nearly so from the first.
- 11. Twigs puberulent *S. cordata*
- 11. Twigs glabrous *S. glaucophylla*
- 8. Catkins sessile or nearly so.
- 12. Anthers red.
- 13. Young twigs white-tomentose; catkins about 2.5 cm. long..... *S. candida*
- 13. Young twigs puberulent; catkins 1-1.5 cm. long..... *S. humilis*
- 12. Anthers yellow.
- 14. Scales yellowish or pink-tipped..... *S. bebbiana*
- 14. Scales dark brown.
- 15. Catkins 10-18 mm. long *S. petiolaris*
- 15. Catkins 2-4 cm. long.
- 16. Anthers 0.5 mm. long *S. sericea*
- 16. Anthers 0.7-0.9 mm. long.
- 17. Catkins slender, 5-8 mm. thick, with a few leafy-bracts at base *S. cordata*
- 17. Catkins stout, dense, sessile, about 1 cm. thick, without leafy-bracts at base *S. discolor*

39. MYRICACEAE Dum.—Bayberry Family

1. COMPTONIA Banks

C. peregrina (L.) Coult. Sweetfern. Open woods, n.e. Ill., not common. Apr.-May. [*Myrica asplenifolia* L.]

40. JUGLANDACEAE Lindl.—Walnut Family

- 1. Pith of twigs lamellate or chambered; staminate catkins sessile or nearly so; leaflets conduplicate in vernation; nut enclosed in an indehiscent husk 1. *Juglans*
- 1. Pith solid; staminate catkins slender, long-peduncled; leaflets involute in vernation; husk of nut splitting into 4 valves..... 2. *Carya*

1. JUGLANS L.—Walnut

- 1. Lower surface of mature leaflets softly stellate-pubescent and somewhat glandular; leaflets 7-19; upper margin of leaf-scar pubescent, straight or curved; stamens 8-12; anthers brown; pith dark brown; fruit ellipsoid, acute, viscid-pubescent; woods, not common. May. Butternut..... *J. cinerea* L.
- 1. Lower surface of mature leaflets glandular-puberulent, shortly-pubescent along the midvein, the terminal one rarely present; leaflets 11-23; upper margin of leaf-scar notched, not pubescent; pith light brown; fruit subglobose, glandular; woods, common. May. Black Walnut..... *J. nigra* L.

2. CARYA Nutt.—Hickory

(*Hicoria* Raf.)

- 1. Leaflets 9-17 (usually 13), lanceolate, acuminate, the lateral ones somewhat falcate; bud-scales 4 or 6, valvate.
- 2. Rachis and lower surface of leaflets pubescent; staminate catkins fascicled; nut smooth, nearly terete; seed not bitter; river-bottom woods, common; apparently absent from the n. part of the state. Apr.-May. Pecan.

- [*C. olivaeformis* Nutt.; *C. pecan* (Marsh.) Engler & Graebn.]
*C. illinoensis* (Wang.) K. Koch
2. Leaves glabrous; staminate catkins in threes on a common peduncle; nut sharply angled; seed very bitter; bark of trunk exfoliating in long strips; river bottoms, rare, s. Ill. Mar.-Apr. Water Hickory. Bitter Pecan
*C. aquatica* (Michx. f.) Nutt.
1. Leaflets 5-9 (or rarely 11).
3. Bud-scales mustard-yellow, 4 or 6, valvate in pairs; leaflets lanceolate, acuminate, sessile or nearly so, the lateral ones somewhat falcate; staminate catkins in threes on a common peduncle; nut smooth, globose, acute, thin-shelled, whitish; seed becoming bitter; bark of trunk not exfoliating, gray, close, smooth or ridged, woods, common. May-June. Bitternut Hickory. Yellowbud Hickory. [*C. amara* Nutt.; *Hicoria minima* Britt.]*C. cordiformis* (Wang.) K. Koch
3. Buds not yellow; bud-scales 6 or more, imbricated.
4. Leaflets usually 7 (rarely 5 or 9).
5. Leaflets at maturity glabrous or nearly so; young twigs, and rachises of mature leaves glabrous; terminal bud 5-10 mm. long; bark close or scaly; nut 1.5-3 cm. long, compressed, round at the base; woods, centr. and s. Ill. May-June. [*C. microcarpa* Nutt.] Small-fruited Hickory*C. ovalis* (Wang.) Sarg.
5. Leaflets at maturity pubescent beneath; terminal bud 1-2.5 cm. long.
6. Rachis and lower surface of mature leaflets stellate-tomentose; bark rather close, ridged; nut 1.5-3 cm. long, rounded at base; seed somewhat astringent; woods. May-June. [*C. alba* (L.) K. Koch, not Nutt.] Mockernut. Bigbud Hickory
*C. tomentosa* Nutt.
6. Rachis and lower surface of mature leaflets short-pubescent especially along the veins; bark shaggy; nut 3-6 cm. long, cuneate at base; seed sweet, not astringent; woods, not common. Big Shagbark Hickory*C. laciniosa* (Michx. f.) Loud.
4. Leaflets usually 5 (rarely 3 or 4).
7. Terminal bud 1-2 cm. long, grayish-tomentulose; twigs stout; leaflets more or less pubescent beneath, at least on the veins; dry husk of fruit 4-10 mm. thick; bark shaggy; woods, common. [*C. alba* Nutt.] Shagbark Hickory*C. ovata* (Mill.) K. Koch
7. Terminal bud 5-10 mm. long, glabrous or nearly so; twigs slender; mature leaflets glabrous except on the veins; bark shallowly ridged, tight; dry husk of fruit 1-3 mm. thick; woods, not infrequent. Pig-nut Hickory*C. glabra* (Mill.) Sweet

41. BETULACEAE Agardh.—Birch Family

1. Nuts small, compressed and often winged, without an involucre, borne in catkins; staminate flowers consisting of 2-4 stamens and a 2-4-parted calyx.
2. Scales of the pistillate catkins 3-lobed, deciduous (sometimes only tardily so); stamens 2, bifid; leaf-buds sessile, with 3 or more scales; bark often peeling horizontally1. *Betula*

2. Scales of the pistillate catkins 5-lobed, woody, persistent; stamens 4; buds usually stalked and with 2 valvate scales; bark not peeling horizontally.....2. *Alnus*
1. Nuts with a foliaceous involucre or subtended by or enclosed in a large bractlet, borne in clusters or catkins; stamens 3-10; calyx none; buds with several scales.
3. Shrubs; leaves broadly cordate-ovate, doubly serrate usually with 5-8 pairs of veins; leaf-buds obtuse; nuts in clusters, each enclosed in a foliaceous involucre 3. *Corylus*
3. Small trees; leaves oval or ovate, with 9 or more pairs of veins; leaf-buds acute; fruits in pendent catkins, the nut subtended by or enclosed in a large bractlet.
4. Fruiting bracts foliaceous, 3-lobed; bark of the trunk and branches smooth; lower surface of leaves glossy green with small tufts of whitish hairs in the axils of the principal veins; lateral veins unbranched; anthers glabrous..... 4. *Carpinus*
4. Fruiting bracts becoming sac-like, inflated, enclosing the nut; bark rough, scaly; lower surface of leaves pale dull green, thinly short-pilose; lateral veins usually forked near the margin; anthers pilose at apex.....5. *Ostrya*

1. BETULA L.—Birch

1. Trees up to 30 m. tall, with acute or acuminate, serrate or double-serrate leaves; bark of trunk and large branches peeling horizontally in thin strips.
2. Bark of trunk gray or brown; fruiting catkins erect or suberect, the scales more or less persistent; wing of the fruit not broader than the nutlet.
3. Fruiting catkins nearly sessile, ovoid or subglobose; bracts ciliate; leaves oval; bark of twigs with faint wintergreen flavor; locally in wooded areas in the n. half of Ill.; known from Lake and Lee counties. Our plants have been named var. *macrolepis* Fern. Yellow Birch *B. lutea* Michx. f.
3. Fruiting catkins short-peduncled, ellipsoid; bracts tomentose; leaves rhombic-ovate; bark bitter, not aromatic; river banks, the common birch in Ill. May. River Birch *B. nigra* L.
2. Bark chalky- or silvery-white; fruiting catkins cylindrical, slender-peduncled, usually pendulous, the scales deciduous; wing of the fruit distinctly broader than the nutlet; cold woods, local, n. Ill. May. Paper Birch. Canoe Birch *B. papyrifera* Marsh.
1. Shrubs 0.5-4 m. tall; bark brown, not exfoliating; twigs of the season pubescent or puberulent, sometimes glandular.
4. Leaves ovate, acute, 3-6 cm. long, serrate; fruiting catkins 1.5-2.5 cm. long, 10-12 mm. thick; edge of boggy meadow, Beach, Lake Co., G. N. Jones. [*B. glandulifera* × *lutea* Rydb.; *B. lutea* × *pumila* var. *glandulifera* Rosend.] × *B. purpusii* Schneid.
4. Leaves obovate, obtuse, or acutish, mostly 1.5-3 cm. long, crenate-dentate; fruiting catkins about 1 cm. long, 6-8 mm. thick; bogs, n.e. Ill. May. Dwarf Birch *B. pumila* L.

2. ALNUS Hill—Alder

1. Leaves oval to ovate, doubly or coarsely serrate, usually rounded at the base; stipules lanceolate; nut orbicular; wet ground, rare; Lake, McHenry, and Boone counties. June. Speckled Alder *A. incana* (L.) Moench

1. Leaves obovate, finely serrate, tapering at the base; stipules oval; nut ovate; wet ground, s. Ill., as far n. as Wabash Co. Apr.-May. Smooth Alder
*A. rugosa* (DuRoi) Spreng.

3. CORYLUS L.—Hazel

C. americana Walt. Thickets, common; probably the only species in Ill. Mar.-Apr.

4. CARPINUS L.

C. caroliniana Walt. Blue Beech. Muscle Tree. Woods, common. Apr.-May.

5. OSTRYA Scop.

O. virginiana (Mill.) K. Koch. Ironwood. Hop-hornbeam. Woods, common. Apr.-May.

42. FAGACEAE A. Br.—Beech Family

1. Staminate flowers in small pendent globose heads on slender peduncles; nuts sharply trigonal; winter buds lanceoloid, acuminate.....1. *Fagus*

1. Staminate flowers in slender catkins.

2. Staminate catkins erect or ascending, 15-30 cm. long; involucre prickly, 2-7-flowered2. *Castanea*

2. Staminate catkins pendent; fruit an acorn in a scaly involucre-cup; winter buds ovoid, obtuse or acute.....3. *Quercus*

1. FAGUS L.—Beech

F. grandifolia Ehrh. American Beech. Woods, especially near streams, local; chiefly in the valleys of the Mississippi, Ohio, and Wabash rivers; absent from centr. and w. Ill.

2. CASTANEA Hill—Chestnut

C. dentata (Marsh.) Borkh. Rocky woods, s. Ill., very rare. Pulaski and Union counties. June.

3. QUERCUS L.—Oak

1. Leaves entire, elliptical or oblanceolate, bristle-tipped.

2. Leaves permanently stellate-tomentulose beneath; woods, common. Shingle Oak*Q. imbricaria* Michx.

2. Leaves quite glabrous on both surfaces, or sometimes sparsely pubescent on the lower surface along the midvein; moist woods, rare. Massac Co., Telford in 1924; Mermet, *McDougall* 145. Willow Oak
*Q. phellos* L.

1. Leaves not entire.

3. Leaf-lobes with bristle-tips; acorns maturing the second season. (Red or Black Oaks.)

4. Leaves 3-5-lobed above the middle, obovate in outline.

5. Leaves glabrous or nearly so beneath; buds ovoid, small; acorn-cups saucer-shaped, 1.5 cm. in diameter; woods, Crystal Lake Park, Urbana, *G. N. Jones* 12514; supposedly a hybrid between *Q. borealis* and *Q. imbricaria**Q. runcinata* Engelm.

5. Leaves brownish stellate-tomentulose beneath; buds conical-fusiform, 8-10 mm. long; acorn-cups turbinate, 1.5-2 cm. in diameter, enclosing half the acorn; upland woods, not common. Black Jack Oak *Q. marilandica* Muench.
4. Leaves pinnately 5-9-lobed or cleft.
 6. Leaves grayish-tomentulose beneath; lobes often falcate; acorn glabrous; cup saucer-shaped; woods, s. Ill., not common. [*Q. pagodaefolia* Ashe; *Q. falcata* Michx.] Spanish Oak *Q. rubra* L.
 6. Leaves glabrous or nearly so, not grayish tomentulose beneath, but often with tufts of hairs in the axils of the principal veins.
 7. Leaves lobed about halfway to the midvein; acorn-cup shallow, saucer-shaped; winter-buds nearly glabrous; inner bark gray or reddish; woods, common. [*Q. rubra* sensu DuRoi, non L.; *Q. borealis* var. *maxima* (Marsh.) Ashe]. Red Oak *Q. borealis* Michx. f.
 7. Leaves usually cleft more than half-way to the midvein.
 8. Acorn-cup shallow, saucer-shaped, enclosing not more than one-third of the acorn; inner bark gray or reddish; winter buds glabrous or sparsely pubescent.
 9. Acorn-cup 1-1.5 cm. in diameter, the rim only 3-4 mm. high; acorn 1-1.5 cm. long; woods along streams. Pin Oak *Q. palustris* Muench.
 9. Acorn-cup 16-22 mm. in diameter, the rim 5 mm. or more high; acorn 1.8-2.5 cm. long; woods near streams, s. Ill. [*Q. schneckii* Britt.] *Q. shumardii* Buckl.
 8. Acorn-cup hemispherical or turbinate enclosing about one-half of the mature acorn.
 10. Scales of the acorn-cup closely appressed; winter buds conical, sparsely pubescent to glabrous.
 11. Acorn-cup 15-25 mm. in diameter, the scales glabrate, glossy; acorn ovoid; inner bark reddish or gray; upland woods, s. Ill. Scarlet Oak *Q. coccinea* Wang.
 11. Acorn-cup 10-15 mm. in diameter, the scales puberulent; acorn ellipsoid; inner bark yellowish; upland woods, n. Ill. Northern Pin Oak. Hill's Oak. Discovered near Chicago in 1891, by the pioneer Illinois botanist, E. J. Hill *Q. ellipsoidalis* E. J. Hill
 10. Scales of the acorn-cup pubescent, loosely imbricated, the upper forming a fringed border; cup 18-25 mm. in diameter; winter-buds large, angular, densely grayish pubescent; inner bark yellowish or orange; upland woods, common. Black Oak *Q. velutina* Lam.
 3. Leaf-lobes not bristle-tipped; acorns maturing in the autumn of the first year.
 12. Leaves irregularly deeply lobed, often somewhat lyrate. (White Oaks.)

13. Mature leaves usually glabrous and glaucous beneath; winter-buds nearly or quite glabrous; acorns 1.5-2 cm. long, 3-4 times the length of the shallow cup; upland woods, common. White Oak*Q. alba* L.
13. Mature leaves pubescent beneath; acorn-cup one-half to one-third the length of the acorn; buds ovoid, pubescent.
14. Young twigs pubescent; lower surface of leaves grayish or brownish stellate-pubescent; mature acorns ovoid, 1-2 cm. long, about 1 cm. in diameter; cup one-third to one-half as long as the acorn, nearly sessile; upland woods, more common in the s. part of the state, but extending northw. to Adams, Mason, Coles, and Clark counties. Post Oak*Q. stellata* Wang.
14. Young twigs glabrous or nearly so; lower surface of leaves whitish tomentulose; mature acorns 2-3.5 cm. long, the cup 2-5 cm. in diameter, short-peduncled.
15. Upper scales of acorn-cup caudate-acuminate, forming a fringe around the acorn, which is half immersed in the cup; leaf-buds acutish, the terminal 5-8 mm. long; vigorous 1-year-old twigs sometimes with corky ridges; upland woods, common. Bur Oak*Q. macrocarpa* Michx.
15. Scales broad, not caudate-acuminate; acorn nearly or quite immersed in the cup; buds obtuse the terminal 2-4 mm. long; swamps and bottomland woods in the s. third of the state. Overcup Oak*Q. lyrata* Walt.
12. Leaves angularly dentate, coarsely toothed or merely undulate, but not at all or only slightly lobed. (Chestnut Oaks.)
16. Leaves elliptical or lanceolate, glossy dark green above, more or less whitish stellate-tomentulose beneath, with 8-13 pairs of lateral veins, each vein ending in an acutish, mucronate, often incurved tooth; acorns nearly sessile, or short-peduncled, 10-18 mm. long; hillsides and wooded bluffs, common. [*Q. acuminata* (Michx.) Houba] Chinquapin Oak*Q. muhlenbergii* Engelm.
16. Leaves obovate, cuneate toward the base, angularly shallowly coarsely dentate; acorns 2-3 cm. long.
17. Leaves regularly obtusely dentate; lateral veins 9-12 pairs; fruit sessile or short-peduncled, the peduncles less than 1 cm. long; bottomlands and borders of streams, chiefly s. Ill. [*Q. michauxii* Nutt.]*Q. prinus* L.
17. Leaves undulate-crenate or coarsely sinuate.
18. Lateral veins 10-16 pairs; fruit sessile or nearly so; hillsides and crests of ridges. Union Co. [*Q. prinus* sensu auth., not L.] Chestnut Oak*Q. montana* Willd.
18. Lateral veins 4-8 pairs; fruit on peduncles 2-6 cm. long; alluvial soil, throughout Ill., except the n.w. part. [*Q.*

platanoides (Lam.) Sudw.] Swamp White Oak
*Q. bicolor* Willd.

43. ULMACEAE Mirb.—Elm Family

- 1. Leaves with 1 principal vein from the base, the lateral veins straight, parallel, usually more than 10 pairs; flowers in clusters on twigs of the preceding season; twigs with solid pith.
- 2. Flowers appearing before the leaves; fruit a 1-seeded, flat, thin-winged samara; leaves usually doubly serrate1. *Ulmus*
- 2. Flowers appearing with the leaves; fruit nut-like, muricate; leaves simply serrate2. *Planera*
- 1. Leaves (at least when mature) with 3-5 veins from the base, the lateral veins curved, fewer than 10 pairs; flowers borne on the twigs of the season, appearing with the leaves; twigs with chambered pith; fruit a drupe; bark corky-ridged.....3. *Celtis*

1. ULMUS L.—Elm

- 1. Flowers drooping, on slender pedicels; calyx not ciliate; leaves glabrous or nearly so above; nut scabrous.
- 2. Branches not corky-winged; buds glabrous or nearly so; fruit glabrous except the ciliate margins; woods, very common. Apr. American or White Elm*U. americana* L.
- 2. Branches (at least some of them) usually more or less corky-winged; fruit pubescent.
- 3. Buds pubescent; leaves 5-13 cm. long; flowers racemose; woods, in the n. half of the state, not common. Apr.-May. Rock Elm. [*U. racemosa* Thomas, not Borkh.]*U. thomasi* Sarg.
- 3. Buds glabrous or nearly so; leaves 2-8 cm. long; flowers fascicled; hill-sides, cliffs, ridges, s. Ill. Apr. Winged Elm*U. alata* Michx.
- 1. Flowers nearly sessile in erect dense clusters; calyx ciliate; leaves scabrous above; buds reddish-pubescent; branches not corky-winged; woods, common. Apr. Slippery Elm*U. fulva* Michx.

2. PLANERA J. F. Gmel.

P. aquatica [Walt.] J. F. Gmel. Water Elm. Swamps, s. Ill., not common. Apr.-May. A specimen without flowers or fruits collected at Mermet, July 18, 1928 (McDougall 142), may be this species, but sterile specimens often closely resemble smooth-branched material of *Ulmus alata*.

3. CELTIS L.—Hackberry

- 1. Leaves sharply serrate; drupes 7-9 mm. in diameter at maturity; fruiting pedicels longer than the petioles: nutlet brownish, 6-8 mm. long, obovoid, pitted; tree, 10-20 m. tall; woods, usually near streams, common. Apr.-May. [*C. crassifolia* Lam.] Hackberry*C. occidentalis* L.
- 1. Leaves entire or nearly so; nutlet 5-6 mm. long, globose, pitted.
- 2. Leaves lanceolate, long-acuminate, usually broadly cuneate at base; fruiting pedicels longer than the petioles; drupes 4-6 mm. in diameter; tree, 10-30 m. tall; woods and river banks, s. Ill., in the valley of the

Wabash R., northw. to Lawrence Co., and the Mississippi valley northw. to Adams Co. [*C. mississippiensis* Bosc.] Sugarberry
*C. laevigata* Willd.

2. Leaves ovate, short-acuminate, usually rounded or subcordate at base; fruiting pedicels about as long as the petioles; drupes 6-8 mm. in diameter; shrub or small tree to 4 m. tall; sand dunes or rocky banks of streams, rare and local. Dwarf Hackberry
*C. pumila* (Muhl.) Pursh

44. MORACEAE DC.—Mulberry Family

1. Leaves serrate or lobed, 3-veined at base; branches never spiny; flowers in spikes 1. *Morus*
 1. Leaves entire, pinnately veined; branches usually spiny; staminate flowers in loose racemes, the pistillate in globose heads; fruit large, globose, yellowish green. 8-12 cm. in diameter..... 2. *Maclura*

1. MORUS L.—Mulberry

1. Leaves becoming scabrous above, the lower surface pubescent, or hispidulous along the veins; lateral lobes, if present, caudate; buds somewhat divergent, acute; fruit reddish purple, 2 cm. or more in length; native tree; woods, common. May-June. Red Mulberry*M. rubra* L.
 1. Leaves glabrous, somewhat glossy and nearly smooth above; lower surface glabrous or nearly so, except on the veins or in their axils; lateral lobes usually obtuse; native of Asia.
 2. Fruit whitish or pinkish, 1-1.5 cm. long; cult., and rarely escaped. May. White Mulberry*M. alba* L.
 2. Fruit dark red, smaller; a small bushy tree; leaves commonly much lobed; along fences and in woods, common. [*M. alba* var. *tatarica* (L.) Ser.]*M. tatarica* L.

2. MACLURA Nutt.

M. pomifera (Raf.) Schneid. Osage-orange. Hedge-apple. Commonly planted for fences and windbreaks, sometimes spontaneous; native from Va. to Kans., and southw. May-June.

45. CANNABINACEAE Lindl.—Hemp Family

1. Erect herbs; pistillate flowers in spikes..... 1. *Cannabis*
 1. Stems twining; flowers in catkin-like drooping clusters (hops)..... 2. *Humulus*

1. CANNABIS L.—Hemp

C. sativa L. Common Hemp. Marijuana. Moist soil, edges of fields, along roads, waste ground, locally common; nat. from Asia. July-Sept.

2. HUMULUS L.—Hop

H. americanus Nutt. American Hop. Sandy soil at edges of woods and along fences, common. Aug. [*H. lupulus* sensu auth., non L.]

46. URTICACEAE Reichenb.—Nettle Family

- 1. Leaves mostly opposite.
 - 2. Plants with stinging hairs, perennial; stigma capitate-tufted.....1. *Urtica*
 - 2. Plants without stinging hairs.
 - 3. Plants perennial, more or less pubescent; stems opaque; petioles usually somewhat shorter than the blades; stipules separate; stigma filiform.....2. *Boehmeria*
 - 3. Plants annual, glabrous; stems translucent; blades glossy above, about as long as the petioles; stipules united; stigma capitate-tufted.....3. *Pilea*
- 1. Leaves alternate.
 - 4. Plants with stinging hairs; leaves ovate, 5-12 cm. broad; flowers in loose branched cymes4. *Laportea*
 - 4. Plants without stinging hairs; leaves lanceolate, less than 2.5 cm. wide; flower clusters sessile in the leaf-axils.....5. *Parietaria*

1. URTICA L.—Nettle

- 1. Plants perennial, 0.5-3 m. tall; flower-clusters in branched paniculate spikes.
 - 2. Leaves lanceolate, firm, not cordate at base; alluvial soil, chiefly in the n. half of the state. July-Aug. [*U. gracilis* sensu auth., non Ait.] Common Nettle*U. procer* Muhl.
 - 2. Leaves ovate-lanceolate or ovate, coarsely serrate, thin, cordate or rounded at base; waste places and roadsides, not common; nat. from Eur. July-Sept. Great Nettle*U. dioica* L.
- 1. Plants annual, 10-40 cm. tall; flower-clusters simple, two in each leaf-axil; leaves oval or ovate, 1-4 cm. long, acute, coarsely serrate or incised; waste places; nat. from Eur. May-Sept. Small Nettle*U. urens* L.

2. BOEHMERIA Jacq.—False Nettle

B. cylindrica (L.) Sw. Moist woods. July-Aug.

3. PILEA Lindl.—Clearweed

- 1. Fruit ovate, green, irregularly roughened, purplish-marked, not margined; moist shaded ground, common. July-Sept.*P. punila* (L.) Gray
- 1. Fruit shortly lanceolate, dull brownish, smooth, with a distinct narrow margin; moist ground rare. July-Sept.*P. fontana* (Lunell) Rydb.

4. LAPORTEA Gaud.

(*Urticastrum* Fabr.)

L. canadensis (L.) Gaud. Wood Nettle. Woods, common. July-Aug.

5. PARIETARIA L. —Pellitory

P. pennsylvanica Muhl. Woods, common. May-Sept.

47. SANTALACEAE R. Br.—Sandalwood Family

1. COMANDRA Nutt.

C. umbellata (L.) Nutt. Sandy soil or grassy roadsides, local. May-June.
[*C. richardsiana* Fern.]

48. LORANTHACEAE D. Don—Mistletoe Family

1. PHORADENDRON Nutt.

P. flavescens (Pursh) Nutt. American Mistletoe. Parasitic on American elm, black gum, oak, and other deciduous trees, s. Ill., northw. to Union and Lawrence counties.

49. ARISTOLOCHIACEAE Blume—Birthwort Family

1. Stem prostrate, rooting at the nodes; flowers regular, 3-lobed; calyx persistent; stamens 12 1. *Asarum*
 1. Stem erect or twining; flowers very irregular, the calyx deciduous; stamens 6..... 2. *Aristolochia*

1. ASARUM L.—Wild Ginger

1. Calyx-lobes deltoid-ovate, shortly acuminate, scarcely longer than the calyx-tube, spreading or reflexed at flowering time; woods, common. May
 *A. reflexum* Bickn.
 1. Calyx-lobes lanceolate, caudate-acuminate, much longer than the tube, erect or spreading at flowering time; wooded hillsides, local; extending southw. to Knox, Peoria, and Kankakee counties. May-June.
 *A. acuminatum* (Ashe) Bickn.

2. ARISTOLOCHIA L.—Birthwort

1. Low herb; flowers purple, 1-1.5 cm. long, solitary on slender basal scaly peduncles; calyx-tube curved like the letter S; leaves ovate-lanceolate, cordate or hastate at base, thin, green on both sides; capsule subglobose, ridged, about 1 cm. in diameter; rich woods, s. Ill., rare. Virginia Snake-root *A. serpentaria* L.
 1. Twining shrub; flowers on axillary solitary pubescent bractless peduncles; calyx tomentose, the tube abruptly bent, yellowish green, about 3 cm. long, dark purple within; leaves suborbicular or broadly ovate, tomentose; capsule ellipsoid, 4-6 cm. long; rich woods, s. Ill., rare; extending northw. to Wabash and Jackson counties. Dutchman's Pipe *A. tomentosa* Sims

50. POLYGONACEAE Lindl.—Buckwheat Family

1. Plants not climbing by tendrils; calyx-tube not enlarged in fruit; leaves with sheathing stipules.
 2. Sepals 6, the three inner ones becoming enlarged (valves) in fruit (except in the first species); stigmas tufted 1. *Rumex*
 2. Sepals 5, sometimes 4, nearly equal; stigmas capitate.
 3. Leaves not hastate-deltoid, or if so, the stems climbing by prickles or reclining.
 4. Branches not at all adnate to the stem; flowers clustered (or if solitary not pink and the leaves not linear) 2. *Polygonum*
 4. Branches more or less adnate to the internodes of the stem; stipular sheaths oblique or truncate, glabrous; flowers solitary in the axils of the bracts in slender paniced racemes; calyx pink; stamens 8; slender annual with linear leaves 3. *Polygonella*
 3. Leaves hastate-deltoid; stem erect, smooth; flowers white; mature achenes much exerted from the calyx 4. *Fagopyrum*
 1. Plants climbing by tendrils; calyx-tube conspicuously enlarged in fruit, enclosing the achene; stipules obsolete; flowers in slender axillary and terminal racemes.....
 5. *Brunnichia*

1. RUMEX L.—Dock

1. Leaves hastate, sometimes linear or lanceolate; plants with acid juice, dioecious or polygamous; rhizomes horizontal.
2. Calyx essentially unchanged in fruit; achenes granular, dull, much longer than the sepals; fields, roadsides, waste ground, common; nat. from Eur. May-July. Field Sorrel or Sour Dock*R. acetosella* L.
2. Inner sepals winged in fruit, thin, reticulate, cordate, 3-4 mm. wide, enclosing the smooth, glossy achene; sandy soil; Madison Co., *McDonald**R. hastatulus* Baldw.
1. Leaves not hastate or markedly acid; flowers perfect; roots stout.
3. Inner sepals (valves) entire or merely denticulate.
 4. Leaves flat, not crisped, pale green or glaucescent, acute at each end; native species.
 5. Pedicels about equalling or shorter than the valves, curved.
 6. Only one valve (rarely two or three) bearing a tubercle; valves 4-5 mm. long; leaves lanceolate; roadsides and alluvial soil, common. June. Pale Dock*R. altissimus* Wood
 6. Usually all three (rarely only 2) valves bearing a tubercle; valves 2.5-3 mm. long; leaves linear-lanceolate; sandy soil, not common. Chicago, *Filck*. June. [*R. mexicanus* of auth., not Meisn.].....*R. triangulivalvis* (Danser) Rech.f.
 5. Pedicels several times longer than the valves, deflexed, nearly straight, jointed close to the base; wet ground, common. June-July. Swamp Dock*R. verticillatus* L.
4. Leaves wavy-margined or crisped, dark green.
 7. Only one of the valves bearing a small or rudimentary tubercle; valves cordate, nearly or quite entire, 5-6 mm. broad; pedicels with a conspicuous joint; waste ground, occasional; nat from Eur. May-July. Patience Dock*R. patientia* L.
 7. Usually all three valves bearing well-developed tubercles.
 8. Pedicels obscurely jointed; leaves 5-10 cm. wide, the lower ones narrowed at the base; stem 1-2 m. tall; wet ground, not common; chiefly in the n. half of the state; Aug.-Sept. Water Dock*R. britannica* L.
 8. Pedicels conspicuously jointed; leaves narrower, the lower ones truncate or cordate at the base; stem 30-90 cm. tall; cult. and waste ground, or roadsides, common; nat. from Eur. May-June. Curly Dock*R. crispus* L.
3. Valves with spinulose teeth.
 9. Valves 3-4 mm. long, deltoid, reticulate, only one tubercled; pedicels jointed below the middle; lowest leaves broadly ovate, cordate at the base; plants perennial; fields and roadsides, common; nat. from Eur. July-Aug. Bitter Dock*R. obtusifolius* L.
 9. Valves 2 mm. long, with slender teeth, all three valves tubercled; pedi-

cels jointed at base; leaves linear-lanceolate, narrowed at base, undulate or crisped; sandy shores, local. McHenry Co., *Vasey*; Cahokia, *Eggert*. July-Sept. [*R. persicarioides* sensu auth., non L.]
*R. fueginus* Phil.

2. POLYGONUM L.

(*Persicaria* Mill.)

1. Stems not twining.
2. Stems not retrorsely bristly.
3. Flowers axillary.
 4. Stems leafy throughout; achenes included in or only shortly exerted from the calyx.
 5. Sepals with yellowish green margins; stems erect or ascending.
 6. Leaves oval, obtusish; achenes dull; waste ground. Aug.-Oct. Erect Knotweed*P. erectum* L.
 6. Leaves lanceolate or narrowly oval, acute; achenes glossy; sandy soil. July-Sept.*P. ramosissimum* Michx.
 5. Sepals with pink or white margins; stems prostrate or spreading.
 7. Leaves thick, prominently veined, oval, pale green; stipules very conspicuous; achenes granular; waste ground, not common. Aug.-Oct.*P. buxiforme* Small
 7. Leaves thin, not prominently veined, bright green, narrowly elliptical to linear; stipules not conspicuous; achenes striate; waste ground, very common; variable in appearance. July-Oct. Common Knotweed*P. aviculare* L.
 4. Stems with the upper leaves reduced in size.
 8. Achenes conspicuously exerted from the calyx; branches terete, striate; stamens 5 or 6; sandbars or rocky ground, not common. Aug.-Oct. Long-fruited Knotweed*P. exsertum* Small
 8. Achenes included in the calyx; stem and branches angular, slender; leaves plicate; stamens 8; sandy soil. July-Sept. Slender Knotweed*P. tenue* Michx.
3. Flowers in terminal or axillary panicles.
 9. Styles short; calyx not curved, the sepals usually 5.
 10. Panicle terminal, usually solitary; perennial marsh or aquatic or more or less amphibious herbs with long rhizomes.
 11. Panicle ovoid or ellipsoid, 1-3 cm. long.
 12. Peduncle glabrous or nearly so; leaves elliptical, glabrous, glossy above, obtuse or acute; shallow water. June-Aug. [*P. fluitans* Eaton; *P. amphibium* sensu Am. auth., non L.]*P. natans* (Michx.) Eaton
 12. Peduncle pubescent; leaves elliptical-lanceolate, pubescent, not glossy, acute or attenuate; swampy ground. June-Aug. [*P. hartwrightii* Gray; *P. amphibium* var. *hartwrightii* Bissell]
*P. natans* f. *hartwrightii* (Gray) Stanford

11. Panicle linear-cylindrical, 3-9 cm. long, the peduncle glandular-hispidulous or strigose; leaves lanceolate, acuminate; wet ground, common. July-Oct. [*P. emersum* (Michx.) Eaton; *P. muhlbergii* (Meisn.) Wats.]*P. coccineum* Muhl.
10. Panicle usually several (except in depauperate plants), axillary as well as terminal; plants of moist rich soil.
13. Sheaths not ciliate.
14. Panicles erect; glands of the peduncles stipitate; stamens 8 or fewer; achenes 2-3 mm. wide; cult. ground, roadsides, or along streams, common. Aug.-Oct.
.....*P. pennsylvanicum* L.
14. Panicles drooping; glands of the peduncles sessile; stamens 6; achenes 1.5-2 mm. wide; moist soil, common. July-Sept.*P. lapathifolium* L.
13. Sheaths ciliate.
15. Stems and peduncles glandular-hispidulous; sandy soil, local. Aug.-Sept.*P. careyi* Olney
15. Stems and peduncles not glandular-hispidulous.
16. Sepals glandular-dotted.
17. Spikes drooping; stamens 4 or 6; achenes dull; along ditches, common. Aug.-Oct. Water-pepper
.....*P. hydropiper* L.
17. Spikes erect; stamens 8; achenes glossy; along ditches, common. July-Aug. Water Smartweed
.....*P. punctatum* L.
16. Sepals not evidently glandular-dotted.
18. Leaves lanceolate, elliptical, or linear, 0.5-2 cm. broad; stems 15-100 cm. tall.
19. Plants perennial, native; leaves not dark-blotched; stamens 8; panicles linear, slender, erect, often interrupted at base, 3-8 cm. long, less than 5 mm. thick.
20. Leaves strigose on both surfaces, lanceolate; flowers white or pink; swamps, rare. June-Sept.*P. setaceum* Baldw.
20. Leaves glabrous or nearly so.
21. Leaves lanceolate; calyx white or pink; achene 2-2.5 mm. long, the tip covered by the calyx; wet ground or in water, common. July-Sept. Mild Water-pepper*P. hydropiperoides* Michx.
21. Leaves linear or linear-lanceolate; calyx greenish white; achene 1.5-2 mm. long, the tip protruding beyond the calyx; swamps, s. Ill., rare
.....*P. opelousanum* Riddell

19. Plants annual, adv. from Eur.; leaves (when fresh) with a more or less evident dark blotch; calyx pink; stamens 6; cult. ground, waste places, roadsides, common. May-Sept. [*Persicaria persicaria* (L.) Small; *P. mitis* Gilib.; *P. maculosa* S. F. Gray] Lady's Thumb
*P. persicaria* L.
18. Leaves broadly ovate, acuminate, long-petioled; stems 1-3 m. tall; garden escape, introd. from Asia. Aug.-Sept. Prince's Feather
*P. orientale* L.
9. Styles long, exerted, persistent, reflexed, becoming hooked in fruit; calyx curved; sepals 4; stamens 4; racemes slender, rigid, greenish; leaves ovate, acuminate; woods, common. July-Sept. [*Tovara virginiana* (L.) Raf.] Virginia Knotweed*P. virginianum* L.
2. Stems retrorsely bristly on the angles.
22. Leaves sagittate; stem 4-angled; stamens 8; styles 3; achenes 3-angled; wet ground, not common. July-Oct. [*Tracaulon sagittatum* (L.) Small]*P. sagittatum* L.
22. Leaves hastate; stem ridged; stamens 6; styles 2; achenes lenticular; wet ground, not common. July-Oct. [*Tracaulon arifolium* (L.) Raf.]*P. arifolium* L.
1. Stems twining, not prickly; flowers in paniced racemes; leaves ovate, cordate; outer sepals winged or keeled at maturity.
23. Outer sepals merely keeled at maturity.
24. Achenes dull, minutely granular; stipules glabrous; plants annual; nat. from Eur.; fields and waste places, common. May-Sept. Black Bindweed*P. convolvulus* L.
24. Achenes glossy, smooth; stipules with a fringe of stiff reflexed hairs at base; perennial; rocky soil, rare. June-Sept.*P. cilinode* Michx.
23. Outer sepals developing conspicuous wings; achenes glossy, not striate.
25. Calyx 5-8 mm. long at maturity, flat-winged; achenes 2.5-3 mm. long; edges of woods, common. Aug.-Sept.*P. dumetorum* L.
25. Calyx 10-12 mm. long when mature, undulate wing-margined; achenes 3.5-5 mm. long; woods and roadsides, common. July-Oct.*P. scandens* L.

3. POLYGONELLA Michx.—Jointweed

(*Gonopyrum* F. & M.; *Delopyrum* Small)

P. articulata (L.) Meisn. Sandy soil, local; n. Ill. as far southw. as Peoria and Kankakee counties. July-Oct.

4. FAGOPYRUM Gaertn.—Buckwheat

F. esculentum Moench. Fields or roadsides, occasionally escaped from cult.; introd. from Eur. July-Sept.

5. BRUNNICHIA Banks

B. cirrhosa Gaertn. Banks of streams, s. Ill., not common. Pulaski Co., Brendel in 1860; Metropolis, Massac Co., Gleason in 1902.

51. CHENOPODIACEAE Dumort.—Goosefoot Family

- 1. Leaves not spine-tipped or subulate.
- 2. Flowers perfect, not enclosed in a pair of triangular bracts; perianth present.
- 3. Flowers in clusters; fruit enclosed in the calyx.
- 4. Calyx not horizontally winged.....1. *Chenopodium*
- 4. Calyx becoming horizontally winged.
- 5. Leaves linear or narrowly lanceolate, entire, yellowish green; flowers spicate.....2. *Kochia*
- 5. Leaves sinuate-dentate; flowers paniculate.....3. *Cyclocoma*
- 3. Flowers solitary, axillary; fruit exerted from the marcescent calyx; leaves linear.....4. *Corispermum*
- 2. Flowers unisexual, the pistillate enclosed by a pair of triangular bracts; leaves narrowly lanceolate to hastate.....5. *Atriplex*
- 1. Leaves subulate, spinescent; stems branched, striate; flowers 1-3 in the axils.....6. *Salsola*

1. CHENOPODIUM L.—Goosefoot. Pigweed

- 1. Plants more or less glandular and aromatic, not at all farinose (mealy).
- 2. Leaves sinuate-pinnatifid; pericarp not gland-dotted; fruit only partly enclosed by the calyx; roadsides, waste ground, occasional, nat. from Eur. July-Aug. Jerusalem Oak*C. botrys* L.
- 2. Leaves repand-dentate to subentire; pericarp gland-dotted; fruit completely enclosed by the calyx; waste ground, common, nat. from S. Am. July-Aug. [*C. anthelminticum* L.] Mexican Tea*C. ambrosioides* L.
- 1. Plants not glandular or aromatic, but sometimes farinose.
- 3. Flowers in globose clusters 1 cm. or more in diameter, forming an interrupted spike, the calyx becoming red, succulent, and strawberry-like at maturity; leaves triangular to lanceolate; seeds horizontal, dull, 0.8 mm. in diameter; sandy soil, occasional. May-Aug. [*Blitum capitatum* L.] Strawberry Pigweed*C. capitatum* (L.) Aschers.
- 3. Flowers in smaller glomerules; calyx not succulent.
- 4. Leaves sinuately dentate or entire.
- 5. Sepals more or less prominently keeled in fruit.
- 6. Pericarp loose, readily separating from the seed; leaves thin; seeds horizontal.
- 7. Leaves green and glabrous or nearly so on both surfaces when mature, slender-petioled, lanceolate to ovate, entire, or the lower ones sinuate-dentate; woods, common. June-Oct. [*C. boscianum* sensu auth. non Moq.].....*C. standleyanum* Aellen
- 7. Leaves densely farinose at least beneath, rather short-petioled, linear or lanceolate, often somewhat hastately toothed; sepals strongly carinate; sandy soil, occasional; native w. of the Mississippi R.; probably adventive in Ill. Urbana, G. N. Jones 11813. July-Sept. [*C. leptophyllum* sensu auth., non Nutt.] Narrow-leaved Goosefoot*C. pratericola* Rydb.

6. Pericarp firmly adherent to the seed.
8. Leaves more or less sinuately dentate.
9. Leaves commonly densely farinose on the lower surface; seed 1-1.2 mm. in diameter; cult. ground and waste places, common; nat. from Eur. July-Sept. Lamb's Quarter
..... *C. album* L.
9. Leaves green and glabrous on both surfaces.
10. Leaves lanceolate to rhombic-ovate; seeds 1.5-1.7 mm. in diameter; stem 1-3 m. tall; plants often purplish in autumn; fields and roadsides, common; nat. from Eur. June-Oct. [*C. missouriense* Aellen]
..... *C. paganum* Reichenb.
10. Leaves triangular-ovate or somewhat deltoid-hastate, often truncate at base; seed 1 mm. in diameter; stem 30-90 cm. tall; waste places, occasional; nat. from Eur. July-Sept. City Goosefoot*C. urbicum* L.
8. Leaves small, entire, or merely hastately toothed, the upper ones smaller, elliptical, cuspidate; seed punctulate, 1 mm. in diameter; dry soil. July-Sept.*C. berlandieri* Moq.
5. Sepals only slightly or not at all keeled.
11. Leaves bright green on both surfaces; seeds 1-1.5 mm. in diameter.
12. Leaves rhombic-ovate, coarsely toothed; stem slender, erect or decumbent, 30-60 cm. long; seeds sharp-edged; waste places, nat. from Eur. July-Oct. Nettle-leaved Goosefoot
.....*C. murale* L.
12. Leaves broadly triangular-hastate, entire or nearly so, 5-12 cm. long; stem stout, erect; seeds obtuse-edged; waste places, nat. from Eur. July-Oct. Good-King-Henry
.....*C. bonus-henricus* L.
11. Leaves pale green, sinuate-margined, 1-3 cm. long, the lower surface whitish-mealy; stem low, spreading or prostrate; seeds 0.6-0.8 mm. in diameter, sharp-edged; waste places, nat. from Eur. July-Sept. Oak-leaved Goosefoot*C. glaucum* L.
4. Leaves sharply divaricately lobed or coarsely few-toothed, thin, large, green, glabrous; sepals slightly keeled, incompletely covering the seed; pericarp firmly adherent; seed 1.5-2 mm. in diameter; fields, woods, or waste ground, nat. from Eur. July-Sept. [*C. gigantospermum* Aellen]*C. hybridum* L.

2. KOCHIA Roth

K. scoparia (L.) Schrad. Summer Cypress. Frequently cultivated, and occasionally spontaneous in waste ground or along roads; introd. from Eur. July-Sept.

3. CYCLOLOMA Moq.

C. atriplicifolium (Spreng.) Coult. Winged Pigweed. Sandy soil, local. July-Aug.

4. CORISPERMUM L. Bugseed

C. nitidum Kit. Sandy soil, local. July-Sept.

5. ATRIPLEX L.

- 1. Leaves lanceolate; bracts rhombic, cuneate at base; waste ground; nat. from Eur. July-Aug. *A. patula* L.
- 1. Leaves hastate; bracts ovate, rounded at base; waste ground; nat. from Eur. Aug.-Oct. *A. hastata* L.

6. SALSOLA L.—Saltwort

S. pestifer A. Nels. Sandy soil, local; nat. from Asia. July-Sept. [*S. kali* var. *tenuifolia* G. F. W. Mey.]

52. AMARANTHACEAE J. St. Hil.—Amaranth Family

- 1. Leaves alternate; filaments separate and distinct; anthers 2-loculed.
- 2. Flowers monoecious or polygamous; both staminate and pistillate flowers with 3-5 sepals; fruit thin, dry, dehiscent.....1. *Amaranthus*
- 2. Flowers dioecious; pistillate flowers without a calyx; staminate flowers with 5 conspicuous mucronate sepals longer than the bracts; fruit fleshy, 3-5-angled, indehiscent2. *Acnida*
- 1. Leaves opposite; plants pubescent; flowers perfect; calyx 5-cleft; filaments united in a tube; anthers 1-loculed.....3. *Froelichia*

1. AMARANTHUS L.—Amaranth

- 1. Flowers in dense terminal and axillary panicles; plants tall, erect.
- 2. Leaves with a pair of rigid axillary spines; waste ground, common; nat. from trop. Am. July-Oct. Spiny Amaranth *A. spinosus* L.
- 2. Leaves without spines.
- 3. Spikes stout, 1-1.5 cm. thick; stem pubescent; common weed in fields and waste ground; nat. from trop. Am. Aug.-Sept. Rough Pigweed *A. retroflexus* L.
- 3. Spikes slender, 4-6 mm. thick; stem glabrous.
- 4. Bracts deltoid-lanceolate, half the length of the sepals; river banks, rare *A. ambigens* Standl.
- 4. Bracts subulate, twice the length of the sepals; weed in waste ground; nat. from trop. Am. Sept.-Oct. *A. hybridus* L.
- 1. Flowers in small axillary clusters; plants diffusely branched or prostrate.
- 5. Stems prostrate or ascending, forming a loose mat; upper leaves scarcely reduced; sepals 4-5; utricle smooth or nearly so when dry; seeds about 1 mm. in diameter; fields and roadsides, common. July-Sept. Prostrate Amaranth *A. blitoides* Wats.
- 5. Stems erect, forming round, bushy-branched tumbleweeds in late summer; upper leaves much reduced; sepals 3; utricle rugose when dry; seeds about 0.5 mm. in diameter; waste ground and fields, common. July-Sept. Tumbleweed *A. graecizans* L.

2. ACNIDA L.—Water-hemp

- 1. Stem erect, 1-3 m. tall; leaves lanceolate or ovate-lanceolate.
- 2. Leaves obtuse or notched at the apex; pistillate inflorescence of slender interrupted spikes; fruit circumscissile; sandy soil. July-Sept. *A. tamariscina* (Nutt.) Wood

2. Leaves acute or acuminate; pistillate inflorescence of closely clustered spikes; fruit indehiscent or splitting irregularly; seeds about 0.8 mm. in diameter; banks of streams. July-Sept. [*A. tuberculata* Moq.]
 *A. altissima* Riddell
1. Stem slender, decumbent or prostrate, 10-40 cm. long; leaves obovate or spatulate, rounded or obtuse at the apex; pistillate inflorescence of closely clustered spikes; fruit indehiscent or irregularly splitting; seeds 1-1.2 mm. in diameter; banks of streams. July-Sept.
 *A. subnuda* (Wats.) Standley

3. FROELICHIA Moench

F. campestris Small. Sandy soil, chiefly in the w. half of the state; also Kankakee Co. June-Sept. [*F. floridana* of auth., not Moq.]

53. PHYTOLACCACEAE Lindl.—Pokeweed Family

1. PHYTOLACCA L.—Pokeweed

P. americana L. Woods and fields, common. June-Sept. [*P. decandra* L.]

54. NYCTAGINACEAE Lindl.—Four-o'clock Family

1. MIRABILIS L.

(*Allionia* Loefl.; *Oxybaphus* L'Her.)

1. Leaves ovate or ovate-lanceolate, all except the uppermost petiolate; gravelly or sandy soil, particularly along railroad embankments, common throughout Ill. May-Aug. Umbrella-wort *M. nyctaginea* (Michx.) MacM.
1. Leaves linear to lanceolate, sessile.
2. Leaves lanceolate, 0.5-5 cm. wide; sandy meadow near lake, Hyde Park, Chicago, Aug. 8, 1889, *Agnes Chase* 1173
 *M. hirsuta* (Pursh) MacM.
2. Leaves linear, thick, glaucous, usually not more than 5 mm. wide; roadside near Morgan Park, Cook Co., Aug. 16, 1898, *Hill*
 *M. linearis* (Pursh) Heimerl

55. ILLECEBRACEAE Lindl.—Whitlow-wort Family

1. Leaves oval 1. *Paronychia*
1. Leaves linear-subulate 2. *Scleranthus*

1. PARONYCHIA Adans.—Forked-chickweed

(*Anychia* Michx.)

1. Stem glabrous; sepals oval; utricle longer than the calyx; sandy soil. June-Aug. *P. canadensis* (L.) Wood
1. Stem puberulent; sepals ovate; utricle about as long as the calyx; sandy soil, not common. June-Sept. [*Anychia polygonoides* Raf.]
 *P. fastigiata* (Raf.) Fern.

2. SCLERANTHUS L.

S. annuus L. Waste ground; nat. from Eur. Apr.-Oct.

56. AIZOACEAE A. Br.—Carpetweed Family

1. MOLLUGO L.

M. verticillata L. Carpetweed. Fields, roadsides, and waste places, common; nat. from the s. states. June-Oct.

57. PORTULACACEAE Reichenb.—Purslane Family

- 1. Leaves several, clustered at the base of the stem, terete; petals rose; capsule papery, opening by 3 valves1. *Talinum*
- 1. Leaves not all clustered at the base of the stem.
 - 2. Leaves 2, linear-lanceolate; petals pink or white; capsule 3-6-seeded, opening by 3 valves2. *Claytonia*
 - 2. Leaves numerous, thick, spatulate; petals yellow (in our species); capsule circumscissile, many-seeded3. *Portulaca*

1. TALINUM Adans.

T. rugospermum Holz. Rock Pink. Sandy soil, rare; Henderson, La Salle, Lee, Ogle, and Jo Daviess counties. June-Aug.

2. CLAYTONIA L.

C. virginica L. Spring Beauty. Woods and waysides, abundant throughout the state. Mar.-May.

3. PORTULACA L.

P. oleracea L. Purslane. Fields and waste ground, common; nat. from Eur. July-Sept.

58. CARYOPHYLLACEAE Reichenb.—Pink Family

- 1. Sepals separate or nearly so; petals without claws or appendages.
 - 2. Petals deeply 2-cleft or 2-parted.
 - 3. Capsules cylindrical, commonly curved, opening by a row of 10 (rarely 8) apical teeth; styles 51. *Cerastium*
 - 3. Capsules ovoid or ellipsoid, splitting into usually 6 (rarely 8 or 10) valves; styles 3 (except in *S. aquatica*).....2. *Stellaria*
 - 2. Petals entire or emarginate, or absent.
 - 4. Styles as many as the sepals3. *Sagina*
 - 4. Styles fewer than the sepals4. *Arenaria*
- 1. Sepals united into a tubular calyx; petals clawed.
 - 5. Calyx-teeth much longer than the calyx-tube; styles 55. *Agrostemma*
 - 5. Calyx-teeth much shorter than the calyx-tube.
 - 6. Styles 5 or 3 (0 in the staminate flowers of *Lychnis*).
 - 7. Styles 3, rarely 4; flowers perfect; capsule opening by 6 teeth.....6. *Silene*
 - 7. Styles 5 (or flowers unisexual); capsule opening by 10 teeth.....7. *Lychnis*
 - 6. Styles 2; calyx terete or 5-angled8. *Saponaria*

1. CERASTIUM L.—Mouse-ear Chickweed

- 1. Petals much longer than the sepals.
 - 2. Flowers 1.2-2 cm. broad; fruiting calyx 6-7 mm. long; capsule 12-14 mm. long; seeds 1 mm. in diameter; plants perennial; in thin soil, chiefly in limestone areas. May-June. [*C. arvense* sensu auth., non L.; *C. arvense* var. *oblongifolium* (Torr.) Hollick & Britt.] Field Mouse-ear Chickweed*C. velutinum* Raf.
 - 2. Flowers 5-8 mm. broad; fruiting calyx 4-5 mm. long; capsule 9-11 mm. long; seeds 0.4-0.6 mm. in diameter; plants annual; moist ground, common. Apr.-May. Nodding Mouse-ear Chickweed*C. nutans* Raf.

1. Petals equalling or only slightly longer than the sepals.
 3. Pedicels longer than the sepals, the cyme therefore rather loose; sepals acutish or obtuse, 4-5 mm. long, elliptical-lanceolate, broadly scarious-margined; stems spreading, 10-30 cm. long; plants perennial or biennial; waste ground, lawns, fields, common, nat. from Eur. May-Aug. Common Mouse-ear Chickweed*C. vulgatum* L.
 3. Pedicels scarcely longer than the sepals, the cyme therefore compact; sepals acuminate, 5-6 mm. long, linear-lanceolate, narrowly scarious-margined; stem erect, 10-25 cm. tall; plants annual; moist ground; nat. from Eur. Apr.-May*C. viscosum* L.

2. STELLARIA L.—Chickweed

(*Alsine* L. ex p., non Wahl.)

1. Leaves oval or ovate.
 2. Petals shorter than the sepals; stem terete, with a single line of hairs; stamens 3-7; styles 3-4; plant annual; waste ground and fields, very common, adv. from Eur. Mar.-June. Common Chickweed*S. media* (L.) Cyrill.
 2. Petals much longer than the sepals; stem more or less angled, glabrous below, glandular-puberulent above; stamens 10; styles 5; plant perennial; waste places, occasional; adv. from Eur. Waukegan, Lake Co., July 1, 1908, *Gates* 2820; Jo Daviess Co., *G. N. Jones* 15861; Sangamon Co., *G. D. Fuller* 4460. Water Chickweed*S. aquatica* (L.) Scop.
1. Leaves linear or narrowly lanceolate.
 3. Pedicels erect; flowers few or solitary; leaves linear-lanceolate, widest near the base; seeds smooth; moist ground, not common. July-Aug. [*S. longipes* sensu auth., non Goldie]*S. stricta* Richards.
 3. Pedicels spreading, the cymes diffuse.
 4. Leaves linear, acute at each end; fruiting calyx 2-3 mm. long; seeds smooth; moist ground. May-June*S. longifolia* Muhl.
 4. Leaves narrowly lanceolate, broadest near the base; fruiting calyx 4-5 mm. long; seeds rugulose; moist ground; adv. from Eur. May-June*S. graminea* L.

3. SAGINA L.—Pearlwort

S. decumbens (Ell.) Torr. & Gray. Dry ground, not common. Apr.-May.

4. ARENARIA L.—Sandwort

(*Moechringia* L.)

1. Leaves oval or ovate; valves of the capsules 2-toothed or 2-cleft.
 2. Leaves oval, obtuse, 1-3 cm. long; sepals obtuse, shorter than the petals; seeds smooth; woods in the n. half of the state. May-June*A. lateriflora* L.
 2. Leaves ovate, acute, 2-8 mm. long; sepals acuminate, longer than the petals; seeds rough; waste ground; adv. from Eur. Apr.-June. Thyme-

- leaved Sandwort *A. serpyllifolia* L.
1. Leaves linear-filiform or subulate; valves of the capsule entire.
3. Leaves rigid, subulate, evergreen, with others fascicled in the axils; plant perennial, glabrous; capsule shorter than the sepals; dry wooded bluffs, and on rocks, rare; n. Ill. May-July. [*A. michauxii* (Fenzl) Hook. f.]
..... *A. stricta* Michx.
3. Leaves soft, linear-filiform; plant annual; pedicels glandular-puberulent; capsule nearly equalling the sepals; wooded slopes along streams, rare. May-June *A. patula* Michx.

5. AGROSTEMMA L.

A. githago L. Corn Cockle. An occasional weed in fields and waste ground; seeds poisonous; adv. from Eur. May-July.

6. SILENE L.—Catchfly

1. Leaves opposite, not whorled.
2. Calyx ovoid or clavate, not becoming inflated in fruit or constricted at the mouth.
3. Stem glabrous or nearly so, or the upper internodes glutinous.
4. Flowers 12-17 mm. in diameter, in flat-topped cymes; calyx clavate, 1-1.5 cm. long; leaves ovate-lanceolate; waste places, adv. from Eur. June-July. Sweet William *S. armeria* L.
4. Flowers 3-4 mm. in diameter, paniculate; calyx ovoid, 5-8 mm. long; upper leaves linear to lanceolate; roadsides and fields, not uncommon. May-July. Sleepy Catchfly. *S. antirrhina* L.
3. Stem puberulent.
5. Calyx 12-25 mm. long.
6. Petals white or pink; calyx 12-16 mm. long; roadsides and fields, adv. from Eur. June-July. Forked Catchfly
..... *S. dichotoma* Ehrh.
6. Petals crimson or scarlet; calyx 15-25 mm. long.
7. Leaves ovate-lanceolate; petals mostly undivided; roadsides and prairies, s. Ill., rare. July-Aug. Royal Catchfly..... *S. regia* Sims
7. Leaves spatulate or oblanceolate; petals 2-cleft; woods. Apr.-July. Firepink *S. virginica* L.
5. Calyx 3-4 cm. long, its lobes linear-lanceolate, 4-8 mm. long; petals white; cultivated ground or roadsides, adv. from Eur. June-July. Night-flowering Catchfly *S. noctiflora* L.
2. Calyx strongly inflated in fruit, more or less constricted at the mouth.
8. Calyx campanulate or subglobose, veiny; plants glaucous; flowers numerous in loose terminal panicles; fields or roadsides, adv. from Eur. May-July. [*S. inflata* Sm.; *S. vulgaris* (Moench) Garcke; *S. latifolia* (Mill.) Britten & Rendle.] Bladder Catchfly
..... *S. cucubalus* Wibel

8. Calyx subcylindrical; plants not glaucous; flowers few, usually solitary; woods, not common. June-July. [*S. alba* Muhl.]*S. nivea* (Nutt.) Oth.
1. Leaves mostly in whorls of four, acuminate; petals white, 1.5-2 cm. long; calyx campanulate, 1-1.5 cm. long; woods, common. June-Aug. [*S. stellata* var. *scabrella* Palmer & Steyerl.]*S. stellata* (L.) Ait.

7. LYCHNIS L.—Campion

(Melandrium Roehl)

1. Flowers white or pink, fragrant, opening in the evening; similar in appearance to *Silene noctiflora*, but plants dioecious or monoecious, calyx-teeth triangular, 3-5 mm. long, styles 5, and the capsules with 5 bifid teeth; fields and roadsides; nat. from Eur. May-Aug. Evening Champion*L. alba* Mill.
1. Flowers red, inodorous, opening in the morning; waste places, occasional; adv. from Eur. June-Aug. Red Champion*L. dioica* L.

8. SAPONARIA L.

(Vaccaria Medic.)

1. Calyx terete; flowers 2-3 cm. in diameter (sometimes double), in dense corymbiform cymes; plants perennial; roadsides, common, adv. from Eur. June-Sept. Bouncing Bet*S. officinalis* L.
1. Calyx sharply 5-angled; flowers 6-8 mm. in diameter, few, in a loose cyme; plants annual; roadsides and fields, adv. from Eur. June-Aug. [*Vaccaria vulgaris* Host] Cow-herb*S. vaccaria* L.

59. ELATINACEAE Lindl.—Waterwort Family

1. ELATINE L.—Waterwort

E. brachysperma Gray. Shallow water, rare. Springfield, *Bebb.*; Athens, *Hall.*

60. MAGNOLIACEAE J. St. Hil.—Magnolia Family

1. Leaves entire, acute or acuminate; buds pubescent; fruit a follicle.....1. *Magnolia*
1. Leaves with a truncate apex and two broad lateral lobes; buds glabrous; fruit a samara2. *Liriodendron*

1. MAGNOLIA L.

M. acuminata L. Cucumber Tree. Woods, s. Ill., as far north as Union, Johnson, and Pope counties. May.

2. LIRIODENDRON L.—Tulip Tree

L. tulipifera L. Woods, local; s. Ill., extending northw. to St. Clair and Crawford counties. Apr.-June.

61. ANNONACEAE DC.—Custard-apple Family

1. ASIMINA Adans.

A. triloba (L.) Dunal. Pawpaw. Woods, nearly throughout Ill., extending northw. to Cook and Lee counties. Apr.-May.

62. RANUNCULACEAE Juss.—Buttercup Family

1. Flowers yellow.
 2. Petals none; sepals petal-like, yellow, deciduous; leaves crenate; carpels several-ovuled, becoming follicles.....1. *Caltha*
 2. Petals present; sepals green; carpels 1-ovuled, becoming achenes.....9. *Ranunculus*
1. Flowers not wholly yellow.
 3. Flowers white to pink.
 4. Stems climbing; leaves opposite; flowers in panicles, dioecious.....15. *Clematis*
 4. Stems not climbing; leaves not opposite.
 5. Flowers zygomorphic; upper petal spurred; leaves palmately divided or cleft; inflorescence a raceme.....7. *Delphinium*
 5. Flowers actinomorphic, spurless.
 6. Aquatic plants with finely dissected leaves; sepals 5, green; petals 5, white; carpels 1-ovuled, becoming achenes.....9. *Ranunculus*
 6. Not aquatic, mostly woodland plants.
 7. Flowers racemose; petals small, stamen-like or none; leaves ternately compound.
 8. Racemes simple, short; fruit red or white, berry-like.....5. *Actaea*
 8. Racemes paniculate, elongate; fruit a follicle.....6. *Cimicifuga*
 7. Flowers solitary or in pairs, or 3 or 4 in an umbel, not racemose.
 9. Flowers with an involucre of 3 sepal-like bracts immediately beneath the calyx; leaves 3-lobed.....14. *Hepatica*
 9. Flowers without an involucre, or the involucre similar to the leaves, and remote from the flowers.
 10. Sepals 3, petaloid, evanescent; petals none; carpels 2-ovuled, becoming berries; leaves reniform, palmately lobed...2. *Hydrastis*
 10. Sepals 5 or more, petal-like; petals none; fruit of achenes or follicles.
 11. Leaves palmately lobed or cleft, the segments usually sessile; fruit of achenes; plants with a rhizome or caudex.....12. *Anemone*
 11. Leaves ternately compound, the leaflets stalked.
 12. Flower solitary; leaflets mucronulate; carpels 3-4, each 2-3-ovuled, becoming divaricate, slender-beaked follicles 5 mm. long; style present; roots not at all or only slightly thickened.....3. *Isopyrum*
 12. Flowers usually 3 or 4 in an umbel; leaflets not mucronulate; carpels 4-15, each 1-ovuled, becoming ribbed achenes 8-12 mm. long at maturity; stigma sessile; roots tuberous-thickened.....13. *Anemonella*
3. Flowers red, blue, purple, or greenish.
 13. Leaves entire, basal, linear; sepals minutely spurred at base; receptacle becoming conspicuously elongated.....8. *Myosurus*
 13. Leaves lobed, parted, or compound.
 14. Flowers red, spurred, nodding so that the five spurs point upward; stamens exerted; anthers yellow.....4. *Aquilegia*
 14. Flowers not red.
 15. Flowers spurred, blue; leaves alternate.....6. *Delphinium*
 15. Flowers spurless; petals none.
 16. Leaves alternate.
 17. Leaves simple, palmately lobed; flowers all perfect.
 18. Flowers solitary, subtended by 3 small sessile bracts simulating a calyx; sepals 6-12.....14. *Hepatica*
 18. Flowers corymbose; involucre none; sepals 3-5, usually 4....11. *Trautvetteria*
 17. Leaves ternately compound; flowers polygamous or dioecious....10. *Thalictrum*
 16. Leaves not alternate; flowers solitary.
 19. Leaves (of the stem) whorled, dissected.....12. *Anemone*
 19. Leaves opposite.....15. *Clematis*

1. CALTHA L.—Marsh-marigold

C. palustris L. Wet ground, centr. and n. Ill. Apr.-May.

2. HYDRASTIS Ellis

H. canadensis L. Goldenseal. Woods, not common. Apr.-May.

3. ISOPYRUM L.

I. biternatum (Raf.) T. & G. False Rue Anemone. Moist woods, common throughout Ill., except the s. part. Apr.-May.

4. AQUILEGIA L.—Columbine

A. canadensis L. Wooded ravines, throughout Ill. Apr.-June.

5. ACTAEA L.—Baneberry

1. Pedicels in fruit nearly as thick as the peduncle; petals usually truncate at apex; fruit greenish white, tipped with the sessile purple stigma; seeds 3-10, each 4-5 mm. long; rich woods, common. Apr.-June. [*A. pachypoda* Ell.; *A. "brachypoda"* Rydb.] White Baneberry. Doll's Eyes
.....*A. alba* (L.) Mill.
1. Pedicels slender; petals spatulate, tapering to the tip; fruit red, poisonous; seeds 10-16, each 3-4 mm. long; woods, n. Ill. Apr.-June
.....*A. rubra* (Ait.) Willd.

6. CIMICIFUGA L.

C. racemosa (L.) Nutt. Black Cohosh. Bugbane. Woods, very rare, St. Clair and Wabash counties. June-July.

7. DELPHINIUM L.—Larkspur

1. Carpel 1; follicle erect, pubescent; flowers blue, pink, or white; annual, nat. from Eur., frequently cult. and occasionally escaped to roadsides, fields, and waste places. June-Aug.*D. ajacis* L.
1. Carpels 3; native perennials.
 2. Follicles erect, puberulent; roots elongate; racemes 10-20 cm. long.
 3. Flowers white or bluish white; racemes virgate; seeds wingless; prairies and open woods, w. Ill., rare. May-June. [*D. albescens* Rydb.; *D. penardi* of auth., not Huth] Prairie Larkspur*D. virescens* Nutt.
 3. Flowers blue; raceme lax; seeds winged; "banks of the Mississippi near Oquawka," *Patterson*. [*D. azureum* Michx.] Blue Larkspur
.....*D. carolinianum* Walt.
 2. Follicles widely divergent; roots short, tuberous; racemes lax; flowers blue (rarely white); woods, local; apparently absent from the n. part of the state. May-June. Dwarf Larkspur*D. tricornis* Michx.

8. MYOSURUS L.—Mousetail

M. minimus L. Moist ground in woods, local. Apr.-June.

9. RANUNCULUS L.—Buttercup

(Batrachium S. F. Gray)

1. Petals white; achenes transversely wrinkled; plants aquatic.
 2. Beak of achene 0.5-1 mm. long; leaves rigid, not collapsing when withdrawn from the water; ponds and slow streams. May-July. [*R. circinatus* sensu auth., non Sibth.]*R. longirostris* Godr.
 2. Beak of achene minute; leaves soft, usually collapsing when withdrawn from the water; ponds and slow streams. May-July. [*R. aquatilis* L., var. *capillaceus* DC.]*R. trichophyllus* Chaix
1. Petals yellow; achenes not transversely wrinkled.
 3. Plants stoloniferous, the cordate or reniform crenate glabrous leaves basal and at the nodes of the stolons; flowers 6-8 mm. in diameter, the 5-8 petals slightly shorter than the oval sepals; achenes thin-walled, distinctly striate or ribbed, minutely apiculate, in ellipsoid heads 5-15 mm. long; wet sandy soil, n. Ill., not common. May-July. [*Oxygraphis cymbalaria* (Pursh) Prantl; *Halerpestes cymbalaria* (Pursh) Greene]*R. cymbalaria* Pursh
 3. Plants not stoloniferous; achenes not thin-walled or striate.
 4. Plants aquatic, immersed in water or creeping on mud, the leaves palmately lobed or divided, or finely dissected into filiform divisions. June-Aug. [*R. delphinifolius* Torr.]*R. flabellaris* Raf.
 4. Plants not floating; if stems creeping in mud and rooting at the nodes, the leaves not finely dissected.
 5. Basal leaves merely denticulate or crenate.
 6. Leaves lanceolate or oblong-lanceolate, remotely denticulate.
 7. Achenes compressed, the body 1-2 mm. long, the beak subulate, 1 mm. long; head of achenes 6-8 mm. in diameter; plants perennial; swamps or ditches, local. June-Aug. [*R. obtusiusculus* Raf. and *R. laxicaulis* (T. & G.) Darby, are nomina dubia.]*R. ambigens* Wats.
 7. Achenes turgid, keeled, 0.7-1 mm. long, apiculate; head of achenes 3-4 mm. in diameter; plants annual; wet ground, s. Ill. May-June*R. oblongifolius* Ell.
 6. Basal leaves reniform or cordate, merely crenate (some of the later ones often lobed or cleft); stem-leaves cleft or lobed; achenes minutely beaked, in globose heads.
 8. Petals much longer than the sepals; flowers 1.5 cm. or more in diameter; plant more or less pubescent; prairies, Jo Daviess Co., May 1891, *Pepoon*. [*R. ovalis* Raf. (?); *R. brevicaulis* Hook.] Prairie Buttercup*R. rhomboideus* Goldie
 8. Petals shorter than the sepals; flowers less than 1 cm. in diameter; plant glabrous or nearly so; moist ground, very common. Apr.-May. Small-flowered Buttercup*R. abortivus* L.
 5. Leaves all lobed or divided.
 9. Petals not longer than the sepals; flowers less than 1 cm. in diameter.

10. Stem glabrous or nearly so, hollow; achenes merely apiculate, in ellipsoid heads; along ditches, in the n. half of the state. May-July. Celery-leaved Buttercup.....*R. sceleratus* L.
10. Stem pubescent.
11. Basal leaves slightly lobed; achenes with a short, recurved beak, in globose heads; woods, s. Ill., not common. Apr.-May*R. micranthus* Nutt.
11. Basal leaves deeply parted or divided.
12. Leaf-divisions merely serrate; heads of achenes globose, the achenes with slender, hooked beaks; woods. Apr.-June*R. recurvatus* Poir.
12. Leaf-divisions cleft or incised; heads of achenes ellipsoid, the achenes with short nearly straight beaks; wet ground. July-Aug.*R. pennsylvanicus* L. f.
9. Petals longer than the sepals; flowers 1.5-2.5 cm. in diameter.
13. Beak of the mature achene less than 1 mm. long, recurved.
14. Stem more or less cormose-thickened at base; leaves with the terminal division stalked; sepals reflexed; fields and roadsides, adv. from Europe. May-July. Bulbous Buttercup*R. bulbosus* L.
14. Stem not swollen at base; leaves with all the divisions sessile; sepals spreading; roadsides and fields, adv. from Europe. May-July. Tall Buttercup.*R. acris* L.
13. Beak of the mature achene 1 mm. or more in length.
15. Petals broadly obovate; plants stoloniferous.
16. Beak of the achene curved; mature achene 2-2.5 mm. in diameter; roadsides and fields, common; adv. from Europe. Apr.-June. Creeping Buttercup*R. repens* L.
16. Beak nearly straight; mature achene 3-3.5 mm. in diameter; wet woods, common. Apr.-June. Marsh Buttercup*R. septentrionalis* Poir.
15. Petals oval or narrowly obovate; achenes 2-2.5 mm. in diameter; plants not stoloniferous.
17. Stem strigose; leaf-lobes narrow; root tuberous-thickened; woods and meadows. Apr.-May. Tufted Buttercup*R. fascicularis* Muhl.
17. Stem villous; leaf-lobes oval to oblanceolate; roots not thickened; woods or roadsides. Apr.-May. Bristly Buttercup*R. hispidus* Michx.

10. THALICTRUM L.—Meadow-rue

1. Leaflets glabrous on both surfaces.
2. Leaflets thin, suborbicular in outline, obtusely 5-9-lobed; stem-leaves

- slender-petioled; rich woods. Apr.-May. Early Meadow-rue
 *T. dioicum* L.
2. Leaflets thick, oval, sharply 3-lobed, revolute-margined; stem-leaves sessile or nearly so; moist thickets and hedge-rows. June-July
 *T. hypoglaucum* Rydb.
1. Leaflets glandular or short-pubescent beneath; stem-leaves sessile.
3. Leaflets finely glandular with short-stipitate or sessile glands on the lower surface; woods and roadsides, local. May-June. Waxy Meadow-rue
 *T. revolutum* DC.
3. Leaflets finely short-pubescent on the lower surface, not glandular; moist ground, local. May-June. Purplish Meadow-rue
 *T. dasycarpum* Fisch. & Lall.

11. TRAUTVETTERIA Fisch. & Meyer

T. carolinensis (Walt.) Vail. False Bugbane. Possibly along the Wabash River in s.e. Ill.; near Beardstown, Cass Co., S. B. Mead. June-July.

12. ANEMONE L.

(*Pulsatilla* Adans.)

1. Styles elongate, plumose; plant villous; leaf-segments linear; sepals 5-7, bluish-purple, 2-3.5 cm. long; prairie soil, n. Ill. Mar.-Apr. [*Anemone patens* var. *wolfgangiana* of Gray, not Koch; *Pulsatilla hirsutissima* (Pursh) Britt.] Pasque Flower *A. ludoviciana* Nutt.
1. Styles shorter, glabrous or pubescent, not plumose; sepals white.
2. Achenes villous.
3. Stem-leaves sessile; stem arising from a small tuber; sepals 6-20, pubescent outside; bluffs, rare; centr. and n. Ill. Apr.-May
 *A. caroliniana* Walt.
3. Stem-leaves stalked; plants with rhizomes.
4. Fruiting heads cylindrical, more than twice as long as wide; style 1 mm. long; leaf-segments toothed above the middle; roadsides or open woods, centr. and n. Ill. May-July *A. cylindrica* Gray
4. Fruiting heads ellipsoid, not more than twice as long as wide; style 1.5-2 mm. long; leaf-segments sharply serrate to below the middle; woods, throughout Ill. June-Aug. Tall Anemone
 *A. virginiana* L.
2. Achenes not villous; plants with rhizomes.
5. Stem-leaves sessile; basal leaves simple, deeply lobed; achenes wing-margined when mature; flowers 1-3; alluvial soil, centr. and n. Ill. May-July. Meadow Anemone *A. canadensis* L.
5. Stem-leaves stalked; basal leaf solitary, compound, appearing later; achenes not wing-margined; flower solitary; rich woods, not common; chiefly n. and e.-centr. Ill. Apr.-May. Wood Anemone
 *A. quinquefolia* L.

13. ANEMONELLA Spach

(Syndesmon Hoffmg.)

A. thalictroides (L.) Spach. Rue-anemone. Dry open woods, local. Apr.-May. [*Thalictrum anemonoides* Michx.]

14. HEPATICA Hill

1. Leaf-lobes acute or acutish; flowers varying from purplish to white; woods, not uncommon. Apr.-May [*H. acuta* (Pursh) Britt.]
*H. acutiloba* DC.
1. Leaf-lobes rounded at the apex; woods, n.e. Ill. [*H. triloba* sensu auth., non Chaix]*H. americana* (DC.) Ker

15. CLEMATIS L.

(*Viorna* Reichenb.; *Atragene* L.)

1. Flowers solitary, nodding; sepals purplish.
2. Leaves conspicuously reticulate beneath; sepals thick, leathery, the tips recurved, marginless or only narrowly margined; fruiting styles glabrous or nearly so; moist woods and thickets, common. June-Aug. Leather-flower*C. pitcheri* T. & G.
2. Leaves thin, not conspicuously reticulate.
3. Sepals thick, leathery, 1.5-2.5 cm. long; fruiting styles plumose; thickets and stream banks, rare, s. Ill. June-July. [*Viorna ridgwayi* Standl.]*C. viorna* L.
3. Sepals thin, 3-4.5 cm. long, with wide undulate or crisped margins; fruiting styles pubescent but not plumose; s. Ill., not common. Pulas-ki Co., *Brendel**C. crispa* L.
1. Flowers paniced; sepals white, thin, spreading, 8-12 mm. long; moist ground, local. July-Aug. Virgin's Bower*C. virginiana* L.

63. NELUMBONACEAE Lindl.—Lotus Family

1. Petals and sepals each 3-4.
2. Leaves all peltate, entire, floating; stamens 12-18; carpels 4-18.....1. *Brasenia*
2. Submersed leaves dissected; stamens 6; carpels 2-3.....2. *Cabomba*
1. Petals and stamens numerous; sepals 4-5; leaves orbicular, 20-90 cm. broad; flowers pale yellow, 10-25 cm. in diameter; carpels immersed in a top-shaped receptacle 3. *Nelumbo*

1. BRASENIA Schreb.

B. schreberi Gmel. Watershield. Ponds and slow streams, rare. Lake and McHenry counties. June-July.

2. CABOMBA Aubl.

C. caroliniana Gray. Ponds, s. Ill., rare. Mt. Carmel, Oct. 12, 1876, *Schneck* 40.

3. NELUMBO Adans.

(*Nelumbium* Juss.)

N. lutea (Willd.) Pers. American Lotus. Shallow water and muddy shores, local. July-Aug. [*Nymphaea pentapetala* Walt., based on a monstrosity.]

64. NYMPHAEACEAE DC.—Waterlily Family

1. Leaves oval or ovate-lanceolate; flowers yellow; stamens hypogynous; sepals 5-7; petals 10-20, small, filament-like1. *Nuphar*
 1. Leaves orbicular; flowers white; stamens epigynous; sepals 4; petals numerous.....
2. *Nymphaea*

1. NUPHAR Smith

(*Nymphaea* L., ex p.; *Nymphozaanthus* Rich.)

1. Leaves oval; flowers 3-9 cm. in diameter; sepals 6; stamens in 5-7 rows; ponds and slow streams, rare. June-Aug. [*N. advena* var. *brevifolia* Standl.] Yellow Pond Lily*N. advena* Ait.
 1. Leaves ovate-lanceolate; flowers 2-3 cm. in diameter; sepals 5; stamens in 4-5 rows. Reported from the Lower Wabash Valley by J. Schneck in 1876.*N. sagittifolia* (Walt.) Pursh

2. NYMPHAEA L.—Waterlily

(*Castalia* Salisb.)

1. Flower not fragrant, 10-25 cm. in diameter; petals spatulate; leaves green beneath, prominently veined; rhizome with numerous self-detaching tubers; seeds 3-4.5 mm. long, globose-ovoid; ponds and slow streams, rare. June-Aug. White Waterlily*N. tuberosa* Paine
 1. Flower very fragrant, 6-12 cm. in diameter; petals elliptical; leaves purplish beneath, indistinctly veined; rhizome without tubers; seeds 1.5-2.5 mm. long, ellipsoid; lakes and shallow ponds, rare, n.e. Ill. June-Sept. Fragrant Waterlily*N. odorata* Ait.

65. CERATOPHYLLACEAE Gray—Hornwort Family

1. CERATOPHYLLUM L.—Hornwort

1. Leaf-divisions linear, rather rigid, flattened, serrate; achenes with a spine on each side at the base; ponds and slow streams, not uncommon
*C. demersum* L.
 1. Leaf-divisions filiform, flaccid, entire or with a few short bristles; achenes with 3-5 spines on each side; ponds and slow streams, local; Oquawka, Patterson; Kankakee De Selm; without locality, Mead in 1829
*C. echinatum* Gray

66. BERBERIDACEAE T. & G.—Barberry Family

1. Leaves simple; flowers solitary, white; petals 6-8.
 2. Leaves 7-9-lobed; berry yellowish green, pulpy, many-seeded, 4-5 cm. long.....
1. *Podophyllum*
 2. Leaves 2-cleft; capsule obconical, many-seeded, 1.5-2 cm. long, opening at the top by a lid.....2. *Jeffersonia*
 1. Leaf ternately compound; flowers yellowish green, in a terminal panicle; sepals 6; petals 6, small, thick, spatulate, gland-like; seeds bluish-black, berry-like, about 8 mm. in diameter.....3. *Caulophyllum*

1. PODOPHYLLUM L.

P. peltatum L. Mayapple or Mandrake. Woods, common, Apr.-May.

2. JEFFERSONIA Bart.

J. diphylla (L.) Pers. Twinleaf. Woods, local. Apr.-May.



3. CAULOPHYLLUM Michx.

C. thalictroides (L.) Michx. Blue Cohosh. Woods, common. Apr.-May.

67. MENISPERMACEAE DC.—Moonseed Family

- 1. Leaf-blades usually as broad as or broader than long; petioles 3-20 cm. long; drupe black.
- 2. Leaf-blades reniform in outline, slightly peltate near the base, palmately 3-7-angled or shallowly lobed, dark green and glabrous above, paler and sparsely pilosulous along the veins beneath; panicles 2-6 cm. long; petals 6-9; sepals 4-10; stigma flabellate; stamens 12-18, or 24; drupe bluish black, about 1 cm. in diameter....
.....1. *Menispermum*
- 2. Leaf-blades deeply palmately lobed, cordate at the base, the lobes acuminate; panicles 10-20 cm. long; sepals 9; petals 0; stamens 9 or 12; stigma radiate; drupe black, ovoid, 2-2.5 cm. long.....2. *Calycocarpum*
- 1. Leaf-blades usually somewhat longer than broad, ovate or deltoid, sinuately lobed or entire, softly pubescent beneath; petioles 1-5 cm. long; petals, sepals, and stamens each 6, or the stamens in the pistillate flowers reduced or lacking; stigma subulate; drupe red, 6-8 mm. long3. *Cocculus*

1. MENISPERMUM L.—Moonseed

M. canadense L. In alluvial soil in woods, thickets, or along fences, common. May-June.

2. CALYCOCARPUM Nutt.

C. lyoni (Pursh) Nutt. Cupseed. Moist thickets, rich woods, and river banks, s. Ill., rare. June-July.

3. COCCULUS DC.

(*Cebatha* Forsk.; *Epibaterium* Forst.)

C. carolinus (L.) DC. Carolina Snailseed. Banks of streams, s. Ill., rare. July-Aug.

68. LAURACEAE Lindl.—Laurel Family

- 1. Flowers appearing with the leaves in corymbose racemes; anthers 4-loculed; leaves often lobed; fruit blue-black.....1. *Sassafras*
- 1. Flowers in small roundish nearly sessile umbel-like clusters on bare twigs; anthers 2-loculed; leaves always entire; fruit red.....2. *Lindera*

1. SASSAFRAS Nees—Sassafras. Ague-tree

S. albidum (Nutt.) Nees. Rich woods, common throughout Ill., except the n. counties. May. Variable as to pubescence. [*S. variifolium* (Salisb.) Ktze; *S. officinale* Nees & Eberm.; *S. albidum* var. *molle* (Raf.) Fern.]

2. LINDERA Thunb.

L. benzoin (L.) Blume. Spice-bush. In moist woods and along streams, common. Mar.-Apr. Specimens with petioles and lower surface of blades more or less pubescent [*L. benzoin* var. *pubescens* (Palmer & Steyerl.) Rehd.], have been mistaken for *B. melissaefolium* (Walt.) Nees, a species of more southerly range which probably does not occur in our limits. [*Benzoin aestivale* (L.) Nees.]

69. PAPAVERACEAE B. Juss.—Poppy Family

- 1. Flower white, solitary; petals 4-15 (usually 8), fugacious; leaves basal, glabrous, roundish, palmately lobed, glaucous beneath; plants perennial with horizontal rhizomes; juice red1. *Sanguinaria*

1. Flowers not white; petals 4-6, fugacious.
2. Flowers yellow; leaves pinnatifid; capsules dehiscent from the base; juice yellow.
 3. Petals 18-25 mm. long; buds erect, ovoid; capsules ovoid, acute at each end, bristly-hirsute2. *Stylophorum*
 3. Petals 8-13 mm. long; buds nodding, obovoid; capsules linear, glabrous.....3. *Chelidonium*
2. Flowers red or pink; juice milky; capsules globose or pyriform, opening by 4-20 tooth-like lids under the margin of the discoid stigma.....4. *Papaver*

1. SANGUINARIA L.

S. canadensis L. Bloodroot. Woods, common. Apr.

2. STYLOPHORUM Nutt.

S. diphyllum (Michx.) Nutt. Celandine Poppy. Woods. Apr.-June.

3. CHELIDONIUM L.—Celandine

C. majus L. Occasionally found in waste places, roadsides, and woods, usually near towns; nat. from Eur. May-Aug.

4. PAPAVER L.—Poppy

1. Plant glaucous, glabrous; leaves lobed, clasping the stem; capsules globose; waste places, introd. from Eur. June-Aug. Opium Poppy
.....*P. somniferum* L.
1. Plant hirsute, not glaucous; leaves pinnate, tapering to the petioled base; capsules obovoid or turbinate; waste places, introd. from Eur. May-July. Corn Poppy
.....*P. rhoeas* L.

70. FUMARIACEAE DC.—Fumitory Family

1. Corolla with each of the two outer petals spurred or saccate at the base; capsules several-seeded1. *Dicentra*
1. Corolla with only one petal spurred.
 2. Flowers yellow or pinkish; capsules linear, several-seeded, dehiscent; style persistent2. *Corydalis*
 2. Flowers deep purple tipped with crimson; pods globose, 1-seeded, indehiscent, glabrous, minutely tuberculate; style deciduous.....3. *Fumaria*

1. DICENTRA Bernh.

(*Bicuculla* Adans.)

1. Corolla with 2 divergent spurs; inner petals minutely crested; flowers not fragrant; stem from a bulb-like corm; woods, common. Apr.-May. Dutchman's-breeches*D. cucullaria* (L.) Bernh.
1. Corolla heart-shaped, the spurs short and rounded; crests of the inner petals conspicuous, projecting; flowers fragrant; stem from a short horizontal rhizome bearing small whitish or yellowish corms; woods, usually less common than the preceding species, beginning to flower a week or ten days later. Squirrel-corn*D. canadensis* (Goldie) Walp.

2. CORYDALIS Vent.

(*Capnoides* Adans.)

1. Flowers 5-9 mm. long, pale yellow; outer petals crested on the back.
2. Crest of the petals dentate; capsules pendulous, on slender pedicels 1-1.5

- cm. long; seeds puncticulate, sharp-margined; moist woods, local. Apr.-May. [*C. aurea* of auth., not Willd.] Pale Corydalis
*C. flavula* (Raf.) DC.
2. Crest of the petals entire; capsules erect or ascending, the pedicels 2-3 mm. long; seeds smooth, round-margined; woods, local. May-July. Small-flowered Corydalis*C. micrantha* (Engelm.) Gray
1. Flowers 12-16 mm. long; outer petals not crested; capsules erect or ascending.
3. Flowers orange-yellow; spur one-third to one-half the length of the corolla; capsules 1-1.5 cm. long, the pedicels 2-3 mm. long; seeds smooth; rocky woods in the n. third of Ill. Apr.-May. Golden Corydalis
*C. montana* Engelm.
3. Flowers rose, tipped with yellow; spur short and rounded, less than 1/4 the length of the corolla; capsules 3-4 cm. long; pedicels 6-10 mm. long; seeds slightly puncticulate; rocky woods, extending southw. to Morgan Co. May-Aug. Pink Corydalis*C. sempervirens* (L.) Pers.

3. FUMARIA L.—Fumitory

F. officinalis L. Waste places, occasional; adv. from Eur. May-Aug.

71. CRUCIFERAE B. Juss.—Mustard Family

1. Petals yellow, yellowish, or cream (sometimes fading whitish).
2. Pods several times longer than wide.
3. Pubescence of simple hairs or plants glabrous.
4. Pods with a distinct flattened or conical beak.
5. Pods flattened, 2.5-4 cm. long, 2 mm. wide; petals twice as long as the sepals; leaves mostly basal, oblanceolate, sinuate-dentate or pinnatifid....
4. *Diplotaxis*
5. Pods terete, or slightly angular3. *Brassica*
4. Pods merely tipped with the style or stigma.
6. Leaves lobed to pinnatifid; petals yellow.
7. Pods 4-angled; seeds in 1 row in each locule; valves of the pod 1-nerved
5. *Barbarea*
7. Pods terete or nearly so.
8. Valves of the pod with 1-3 nerves; seeds in 1 row in each locule....
7. *Sisymbrium*
8. Valves nerveless; seeds in 2 rows in each locule.....6. *Rorippa*
6. Leaves entire, cordate-clasping the stem, glabrous, glaucous; petals cream, 8-10 mm. long; pods linear, ascending, 8-10 cm. long9. *Conringia*
3. Pubescence (at least of the leaves) of branched hairs.
9. Leaves entire to dentate; pubescence of appressed, 2-branched hairs which appear as if attached by the middle; petals more than 3 mm. long; pods 4-angled10. *Erysimum*
9. Leaves bipinnatifid or tripinnatifid, usually finely dissected, sparsely pubescent with short, branched hairs; petals 2-3 mm. long; pods terete or nearly so11. *Descurainia*
2. Pods short, not more than three times as long as wide.
10. Pods flattened parallel to the broad septum, orbicular, 3 mm. broad, shallowly notched at the apex; leaves linear-spatulate, entire, densely stellate-canescens
21. *Alyssum*
10. Pods turgid, not compressed, or only slightly so, ellipsoid, obovoid, or globose.
11. Leaves pinnately parted or lobed; pods ellipsoid.....6. *Rorippa*
11. Leaves entire or toothed, and except in *Lesquerella*, sagittate-clasping the stem.

- 12. Pods globose.
 - 13. Pods reticulate when dry, indehiscent, 1-2-seeded; plant hispid with branched hairs23. *Neslia*
 - 13. Pods smooth, dehiscent, 2-16-seeded; plant stellate-pubescent.....24. *Lesquerella*
 - 12. Pods obovoid25. *Camelina*
- 1. Petals white, pink, or purple (rarely absent), never yellow.
 - 14. Pods several times longer than wide (a silique).
 - 15. Pods indehiscent, cylindrical, several-seeded, with pith between the seeds but no true partitions, breaking at maturity into 1-seeded segments; petals purple or white.
 - 16. Pod 2-seeded, 2-jointed1. *Cakile*
 - 16. Pod several-seeded, several-jointed2. *Raphanus*
 - 15. Pods dehiscent by 2 valves, without transverse partitions.
 - 17. Pods more or less flattened parallel to the septum.
 - 18. Leaves palmately cleft and divided.....13. *Dentaria*
 - 18. Leaves otherwise.
 - 19. Pubescence of simple hairs or none; leaves simple or pinnately divided; valves of the pod nerveless, elastically dehiscent and recurving at maturity.....15. *Cardamine*
 - 19. Pubescence, at least in part, of branched hairs.
 - 20. Pods slightly flattened, or nearly terete, more than 1.5 cm. long; stem leafy.....16. *Arabis*
 - 20. Pods strongly flattened, 2-15 mm. long; leaves chiefly basal (except *D. brachycarpa*)12. *Draba*
 - 17. Pods terete or tetragonal, not at all flattened.
 - 21. Valves of the pod conspicuously keeled, 3-nerved; leaves deltoid-cordate, dentate, petiolate; plant with garlic odor.....8. *Alliaria*
 - 21. Valves of the pod rounded or flat.
 - 22. Leaves simple, pinnately lobed to entire.
 - 23. Petals white; plant sparsely pubescent with forked hairs; pods 1-1.5 cm. long; stigma 2-lobed.....17. *Arabidopsis*
 - 23. Petals purple; plant glabrous; lower leaves pinnatifid at the base, dentate, the upper ones lanceolate, dentate, tapering to an auriculate base; pods 2-3 cm. long; stigma entire.....14. *Iodanthus*
 - 22. Leaves odd-pinnate with 1-11 roundish or oval leaflets; petals white; mature pods 1-2 cm. long, somewhat curved; aquatic glabrous perennial.....18. *Nasturtium*
 - 14. Pods short, usually not more than three times as long as wide (a silicle).
 - 24. Pubescence, if any, of simple hairs.
 - 25. Pods terete, ellipsoid, or subglobose, not at all flattened; plants glabrous.
 - 26. Basal leaves 15-30 cm. long, oval or ovate, crenate; root large, thick, pungent; pods 2-loculed, seldom maturing, the style 0.5 mm. long20. *Armoracia*
 - 26. Basal leaves smaller, often finely divided (if in water); pods 1-loculed, the style 2-3 mm. long19. *Neobekchia*
 - 25. Pods more or less compressed or flattened.
 - 27. Plants grayish pubescent; upper leaves ovate, clasping, dentate; the lower oblanceolate; pods broadly ovate, indehiscent, papillose, 4 mm. broad, notched at the base, the style 1-2 mm. long.....26. *Cardaria*
 - 27. Plants green, pubescent or glabrous; pods suborbicular, dehiscent, notched at the apex.
 - 28. Pods 2-seeded, less than 5 mm. broad; branches puberulent.....27. *Lepidium*
 - 28. Pods several-seeded, 1-1.5 cm. broad; plants glabrous.....28. *Thlaspi*

24. Pubescence of forked or stellate hairs, at least on the stem.
 29. Petals deeply bifid; pods ellipsoid to nearly globose, scarcely flattened; seeds several in each locule.....22. *Berteroa*
 29. Petals entire or nearly so; pods strongly flattened.
 30. Plants densely stellate-pubescent; pods orbicular, 3 mm. broad, shallowly notched at the apex.....21. *Alyssum*
 30. Plants nearly glabrous; pods triangular.....29. *Capsella*

1. *CAKILE* Ludw.—Sea Rocket

C. edentula (Bigel.) Hook. Shore of L. Michigan, not common. July-Sept.

2. *RAPHANUS* L.—Radish

1. Pods conspicuously torulose and longitudinally ridged when dry, 3-4 mm. thick; petals yellowish, spatulate, clawed, veiny, fading whitish or purplish; fields and waste ground, nat. from Eur. June-Aug. [*Raphanistrum inocuum* Moench] Wild Radish*R. raphanistrum* L.
 1. Pods smooth, not torulose, 5-9 mm. thick; petals purple, less commonly white, 1.5-2 cm. long, conspicuously veined; fields and waste ground, escaped from cult. May-Sept. Radish*R. sativus* L.

3. *BRASSICA* L.

1. Leaves not clasping the stem.
 2. Pods hispid, 3 cm. long, with a flattened beak half the length of the pod; fields and waste places, nat. from Eur. Apr.-Aug. White Mustard*B. alba* (L.) Rabenh.
 2. Pods glabrous.
 3. Pods ascending, 3-5 cm. long, 2-3 mm. thick, the beak 4-8 mm. long; pedicels ascending, 6-10 mm. long.
 4. Flowering pedicels 3-6 mm. long, shorter than the flowers; beak of the pod more or less flattened, usually containing a seed in the basal part; fields and waste places, nat. from Eur. May-Sept. Field Mustard*B. arvensis* (L.) Rabenh.
 4. Flowering pedicels 7-10 mm. long, equalling or exceeding the flowers; beak of the pod terete, seedless; fields and waste places, nat. from Eurasia. July-Sept. Indian Mustard*B. juncea* (L.) Cosson
 3. Pods erect, 1-1.5 cm. long, 1-1.5 mm. thick; beak terete, 1.5-2 mm. long; pedicels erect, 3-5 mm. long; fields and waste places, nat. from Eur. Apr.-Sept. Black Mustard*B. nigra* (L.) Koch
 1. Upper leaves sessile and clasping by the auriculate base.
 5. Leaves glaucous; petals pale yellow; fields and waste places, nat. from Eur. Apr.-Oct. Yellow Mustard*B. campestris* L.
 5. Leaves not glaucous; petals bright yellow; waste places, escaped from cult., native of Eur. Turnip*B. rapa* L.

4. *DIPLOTAXIS* DC.

D. muralis (L.) DC. Sand Rocket. Waste places, occasional, adv. from Eur. June-Aug.

5. BARBAREA R. Br.—Wintercress

1. Petals bright yellow, 6-8 mm. long; basal leaves with 2-8 lateral leaflets; mature pods 1.5-2.5 cm. long, the pedicel not as thick as the pod; roadsides, fields, and waste places, very common; nat. from Eur. Apr.-June [*B. stricta* of auth., not Andr.; *B. barbarea* (L.) MacM.] Common Wintercress *B. vulgaris* R. Br.
1. Petals pale yellow, 4-6 mm. long; basal leaves with 8-16 lateral leaflets; mature pods 5-6 cm. long; pedicels about as thick as the pods; waste places, occasional; nat. from Eur. May-June. [*B. praecox* R. Br.] Early Wintercress *B. verua* (Mill.) Aschers.

6. RORIPPA Scop.—Yellow Cress

(*Radicula* Hill)

1. Petals 3-5 mm. long; perennials with rhizomes.
 2. Leaves pinnately divided, not auriculate at base; pods linear, the style 0.5 mm. long; moist ground, nat. from Eur. May-Sept. *R. sylvestris* (L.) Besser
 2. Leaves pinnately lobed, auriculate at base; mature pods cylindrical, the style 2-3 mm. long; river banks. Apr.-Aug. *R. sinuata* (Nutt.) Hitchc.
1. Petals 1.5-2 mm. long; leaves with small auricles at base; style on mature pod not more than 0.5 mm. long; annual or biennial native species.
 3. Mature pods 6-12 mm. long, on pedicels 0.5-2 mm. long; stem glabrous; muddy creek banks, common. May-Oct. *R. sessiliflora* (Nutt.) Hitchc.
 3. Mature pods 2-5 mm. long, on pedicels 3-10 mm. long.
 4. Stem glabrous or nearly so; wet ground or in water, common. May-Oct. *R. palustris* (L.) Besser
 4. Stem hirsute; wet soil. June-Aug. *R. hispida* (Desv.) Britt.

7. SISYMBRIUM L.

1. Pods 1-1.5 cm. long, on very short pedicels closely appressed to the stem; petals 3 mm. long; stem divaricately branched above; leaves pinnatifid into 5-13 lobes; waste ground, common, nat. from Eur. May-Sept. Hedge Mustard *S. officinale* (L.) Scop.
1. Pods 3-10 cm. long, spreading or ascending on slender pedicels; petals 5-8 mm. long.
 2. Lower part of stem spreading-hirsute; upper leaves with linear divisions; petals pale yellow, 6-8 mm. long; pods 7-10 cm. long, the ascending pedicels 5-8 mm. long; a common weed in fields and waste places, nat. from Eur. May-Aug. Tumble Mustard *S. altissimum* L.
 2. Lower part of the stem retrorsely hirsute; upper leaves with lanceolate divisions; petals bright yellow, 5-6 mm. long; pods 3 cm. long, on spreading pedicels 1-1.5 cm. long; fields and waste places, adv. from Eur. *S. loeselii* L.

8. ALLIARIA Adans.—Garlic Mustard

A. officinalis Andrz. Roadsides and waste places, adv. from Eur. May-June. [*Alliaria alliaria* (L.) Britt.]

9. CONRINGIA Link

C. orientalis (L.) Dum. Hare's-ear Mustard. Waste places, occasional; adv. from Eur. May-July.

10. ERYSIMUM L.

(*Cheirinia* Link)

1. Petals more than 1 cm. long; pods 4-8 cm. long; plant biennial; sandy soil, Cass, Mason, and La Salle counties. May-June. Western Wallflower
.....*E. asperum* DC.
1. Petals 4-9 mm. long; annuals.
 2. Petals 4-5 mm. long; pods erect 2-2.5 cm. long, on ascending pedicels; leaves entire or nearly so; fields and waste places; chiefly in the n. half of the state. June-Aug. Wormseed Mustard*E. cheiranthoides* L.
 2. Petals 6-9 mm. long; pods spreading, 4-8 cm. long; leaves repand-dentate or denticulate; waste places, roadsides, fields, etc.; adv. from Eur. May-June*E. repandum* L.

11. DESCURAINIA Webb. & Barth.—Tansy Mustard

(*Sophia* Adans.)

D. brachycarpa (Richards.) O. E. Schulz. Sandy soil or roadsides, common. Apr.-June. [*Sisymbrium canescens* Nutt., var. *brachycarpon* (Richards.) Wats.]

12. DRABA L.—Whitlowcress

1. Stem leafy-branched; pods narrowly oval, acute, 2-3 mm. long, 1 mm. wide, glabrous, 6-16 seeded, equalling or exceeding the pedicels; petals entire, whitish, sometimes minute or none; dry soil, s. Ill. Apr.-May
.....*D. brachycarpa* Nutt.
1. Stem scapose, the leaves chiefly basal; pods 15-60-seeded.
 2. Petals entire or emarginate, 3-5 mm. long; pods mostly longer than the pedicels.
 3. Pods linear, 8-12 mm. long, 1-2 mm. wide, glabrous or hispidulous; rachis and pedicels glabrous; leaves entire or nearly so; sandy soil, locally abundant. Apr.-May. [*D. caroliniana* Walt.]
.....*D. reptans* (Lam.) Fern.
 3. Pods oval to linear-elliptical, 6-15 mm. long, 2 mm. wide, pubescent; rachis and pedicels pubescent; leaves dentate above the middle; sandy soil, s. Ill. Mar.-May*D. cuneifolia* Nutt.
 2. Petals deeply 2-cleft; pods oval, glabrous, 4-10 mm. long, shorter than the pedicels; cultivated ground and waste places, occasional; nat. from Eurasia. Apr.-May*D. verna* L.

13. DENTARIA L.—Toothwort

D. laciniata Muhl. Woods, common. Mar.-May.

14. IODANTHUS T. & G.

I. pinnatifidus (Michx.) Steud. Woods, especially near streams, common. May-July.

15. CARDAMINE L.—Bittercress

1. Leaves toothed or entire; petals 7-12 mm. long; plants perennial; stem with a tuberous base.
2. Petals white; stem 15-50 cm. tall, puberulent at base, otherwise glabrous; basal leaves oval; cauline leaves 4-8; wet ground. May-June
.....*C. bulbosa* (Schreb.) BSP.
2. Petals pale lavender; stem 10-25 cm. tall, sparsely hirsute, varying to glabrous; basal leaves orbicular; cauline leaves 2-6; woods. Apr.-May
.....*C. douglassii* (Tort.) Britt.
1. Leaves pinnate or pinnatifid.
3. Petals white or pink, 8-13 mm. long; plants perennial; wet ground, n. Ill., rare. Apr.-May*C. pratensis* L.
3. Petals white, 2-3 mm. long; plants annual.
4. Leaves nearly all basal, more or less pubescent; stamens 4; an occasional weed in cultivated ground; nat. from Eur. Apr.-May*C. hirsuta* L.
4. Stem more or less leafy, the leaves glabrous; stamens usually 6; native plants.
5. Leaflets or leaf-segments of the median and upper leaves oblong to oval, often toothed, the terminal one larger; rachis narrowly winged; wet soil. Apr.-Aug.*C. pennsylvanica* Muhl.
5. Leaflets or leaf-segments of the median and upper leaves linear, entire, not decurrent, the terminal one similar; rachis not winged; moist soil. Apr.-May*C. arenicola* Britt.

16. ARABIS L.—Rockcress

1. Pods erect or ascending.
2. Stem-leaves and basal leaves pinnatifid; pods ascending, 2-2.5 cm. long; petals 1.5-3 mm. long; rocky woods in the s. half of Ill. Apr.-May [*Sibara virginica* (L.) Rollins]*A. virginica* (L.) Poir.
2. Stem-leaves entire or dentate.
3. Stem-leaves not auricled at the base, spatulate or linear, 1-3 cm. long; basal leaves pinnatifid; pods ascending, 2-3.5 cm. long; petals 6-8 mm. long; rocky or sandy soil in the n. third of Ill. May-July
.....*A. lyrata* L.
3. Stem-leaves auricled at the base; basal leaves entire or dentate.
4. Mature pods erect or appressed, not more than 1 mm. wide.
5. Pods 5-9 cm. long, nearly terete; seeds almost wingless, in two distinct rows; petals 3-4 mm. long, cream or pale yellowish; waste places, nat. from Eur. May-July. [*Turritis glabra* L.] Tower Mustard*A. glabra* (L.) Bernh.
5. Pods 4-5 cm. long, flat; seeds winged, in only 1 row; petals 4-5 mm. long, white or pale pink; among rocks near streams. May-June. [*A. hirsuta* Am. Auth.; *A. ovata* (Pursh) Poir. (?)]
.....*A. pycnocarpa* Hopkins

4. Mature pods spreading or ascending, 1.5-2 mm. wide, flat; seeds winged, in two rows; petals 5-8 mm. long, pink; river banks, rare. Dixon, Lee Co., *Vasey*. June-July. [*A. drummondii* of auth., not Gray; *A. divaricarpa* of auth., not A. Nels.]*A. confinis* Wats.
1. Pods divaricately spreading, or arcuate-recurved or pendulous at maturity.
6. Leaves not auricled at base, lanceolate or oblong-lanceolate, 3-12 cm. long; pods pendulous, falcate, 5-7 cm. long, 2-3 mm. wide; seeds winged; petals 5-6 mm. long, greenish white; sepals pilosulous; wooded slopes. May-July. Sicklepod*A. canadensis* L.
6. Leaves, at least the median and lower, auriculate at base; mature pods less than 2 mm. wide.
7. Mature pods 2-2.5 cm. long, straight, spreading; seeds wingless; petals white or pale lavender, 2-3 mm. long; stem-leaves oblanceolate, obtusish, unequally dentate; moist woods near streams, common. May-June*A. dentata* T. & G.
7. Mature pods 4-9 cm. long, arcuate-recurved; seeds winged; petals greenish white, 4-6 mm. long; plant glabrous throughout; gravelly soil in woods. Apr.-June. Smooth Rockcress*A. laevigata* (Muhl.) Poir.

17. ARABIDOPSIS Heynh.

(Stenophragma Celak.)

A. thaliana (L.) Heynh. Mouse-ear Cress. Waste places, nat. from Eur. Apr.-June. [*Arabis thaliana* L.; *Sisymbrium thalianum* (L.) J. Gay]

18. NASTURTIUM R. Br.—Watercress

N. officinale R. Br. In clear water, especially in or near springs; nat. from Eurasia. May-Sept. [*Sisymbrium nasturtium-aquaticum* L.; *Radicula nasturtium-aquaticum* (L.) Britten & Rendle]

19. NEOBECKIA Greene

N. aquatica (Eaton) Greene. Ditches, ponds, or slow streams. June-Aug. [*Rorippa americana* (Gray) Britt.; *Radicula aquatica* (Eaton) B. L. Robins.; *Rorippa aquatica* (Eaton) Palmer & Steyerl.; *Nasturtium lacustre* Gray; *Armoracia aquatica* (Eaton) Wieg.]

20. ARMORACIA Gaertn.—Horseradish

A. rusticana Gaertn. Waste places, ditches, roadsides, escaped from cult.; native of Eur. May-June.

21. ALYSSUM L.—Sweet Alyssum

A. alyssoides L. Fields and waste places, nat. from Eur. May-June.

22. BERTEROA DC.

B. incana (L.) DC. Hoary Alyssum. Occasionally found in waste places, adv. from Eur. June-Sept.

23. NESLIA Desv.

N. paniculata (L.) Desv. Ball Mustard. Waste ground, occasional; adv. from Eur. May-Sept.

24. LESQUERELLA Wats.—Bladder-pod

- 1. Pods, as well as the whole plant, densely stellate-pubescent; plants perennial; in sand or sandy soil, w. Ill., rare. Havana, Mason Co., Aug. 22, 1904, Gleason [*L. ludoviciana* (Nutt.) Wats.]*L. argentea* (Pursh) MacM.
- 1. Pods glabrous; plants annual, sparsely stellate-pubescent. "By the Chicago & Alton R.R. near Rock Bridge, s. of Willow Springs, June 9, 1894," Hill; east of Sag Bridge, June 9, 1894, Moffatt 172 ("only two plants found; fruit immature."); native in Okla. and Tex. [*L. nuttallii* Wats.]*L. gracilis* (Hook.) Wats.]

25. CAMELINA Crantz

- 1. Stem glabrous; leaves auriculate at base; petals yellow, 5-6 mm. long; pods 6-9 mm. long, 5-6 mm. broad; pedicels 12-25 mm. long; an occasional weed in fields and waste places, adv. from Eur. June-July*C. sativa* (L.) Crantz
- 1. Stem hirsute below; leaves sagittate at base; petals pale yellow, 3-4 mm. long; pods 4-6 mm. long, 4-5 mm. broad; pedicels 8-15 mm. long; fields and roadsides, nat. from Eur. May-July*C. microcarpa* Andr.

26. CARDARIA Desv.

- C. draba* (L.) Desv. Fields and waste places. nat. from Eur. Apr.-June. [*Lepidium draba* L.]

27. LEPIDIUM L.—Peppergrass

- 1. Stem-leaves sagittate at base, oblanceolate, pubescent, dentate to entire; pods oval, papillose, 5-6 mm. long, in dense elongated racemes; pedicels puberulent, divaricate, 4-8 mm. long; fields and waste places, nat. from Eur. May-July. Field Peppergrass*L. campestre* (L.) R. Br.
- 1. Stem-leaves merely sessile, not sagittate at base; stamens 2 or 4; pods sub-orbicular, 2-3 mm. in diameter; waste places, very common. May-Nov. Common Peppergrass*L. virginicum* L.

28. THLASPI L.

- T. arvense* L. Field Pennycress. Fields and waste places, nat. from Eur. May-Aug.

29. CAPSELLA Medic.

(*Bursa* Weber)

- C. bursa-pastoris* (L.) Medic. Shepherd's Purse. Fields and waste places, very common; nat. from Eur. Mar.-Oct.

72. CAPPARIDACEAE Lindl.—Caper Family

- 1. Petals entire, or notched at the apex.
- 2. Petals notched; pod sessile or nearly so on its pedicel; stamens more than 6..... 1. *Polanisia*
- 2. Petals entire; pod long-stipitate on its pedicel; stamens 6 2. *Cleome*
- 1. Petals laciniate, unequal; stamens 6-14; pod long-stipitate on its pedicel.... 3. *Cristatella*

1. POLANISIA Raf.

1. Petals whitish, 4-5 mm. long; stamens 9-12; sandy soil, often along railroads. July-Aug. Clammyweed*P. graveolens* Raf.
 1. Petals pale yellow, 8-10 mm. long; stamens 12-16; sandy soil, not common; probably has spread eastw. into Ill. along railroads. June-Aug.
*P. trachysperma* T. & G.

2. CLEOME L.

- C. serrulata* Pursh. Dry soil, w. Ill.; Henderson Co., *Patterson*; adv. from w. U.S. July-Sept. [*C. integrifolia* T. & G.]

3. CRISTATELLA Nutt.

- C. jamesii* T. & G. Sandy soil, Mason and Jo Daviess counties. June-Aug.

73. SARRACENIACEAE LaPyl.—Pitcher-plant Family

1. SARRACENIA L.—Pitcher-plant

- S. purpurea* L. Peat bogs, Lake and McHenry counties. May-June. [*S. purpurea* subsp. *gibbosa* (Raf.) Wherry]

74. DROSERACEAE S. F. Gray—Sundew Family

1. DROSERA L.—Sundew

1. Leaf-blades suborbicular; seeds fusiform, striate, glossy, 1-1.5 mm. long; bogs, n. Ill. July-Sept. Round-leaved Sundew*D. rotundifolia* L.
 1. Leaf-blades linear-spatulate; seeds ellipsoid, papillose, 0.7-1 mm. long; bogs rare, n.e. Ill. July-Sept. [*D. longifolia* of auth.] Long-leaved Sundew
*D. intermedia* Hayne

75. CRASSULACEAE DC.—Stonecrop Family

1. Petals 5, acute; plants succulent; pistils 5 or 4, distinct or nearly so, becoming follicles in fruit1. *Sedum*
 1. Petals none or linear and inconspicuous; plants scarcely succulent; pistils becoming united, and forming a 5-loculed capsule2. *Penthorum*

1. SEDUM L.—Stonecrop

1. Leaves thick, terete or nearly so.
 2. Petals yellow; leaves obovate, densely imbricated, about 3 mm. long; follicles 3-4 mm. long; plants perennial; rocky places and roadsides, occasionally escaped from cult.; native of Eur. June-Aug. Mossy Stonecrop*S. acre* L.
 2. Petals rose-purple, pink, or white; leaves linear, crowded, 5-25 mm. long, about 2 mm. wide; follicles 4-6 mm. long; on rocks, s. Ill. May-July
*S. pulchellum* Michx.
 1. Leaves flat, broad.
 3. Petals white; leaves roundish-obovate, entire, chiefly in whorls of 3 or the upper alternate; rocky woods, and in moist soil in wooded ravines, local. May*S. ternatum* Michx.

3. Petals pink; leaves oval, dentate or entire, alternate 2.5 cm. long; cliffs, not common; chiefly in s. Ill. Aug.-Sept. *S. telephioides* Michx.

2. PENTHORUM

P. sedoides L. Ditch Stonecrop. Wet ground, common, July-Sept.

76. PARNASSIACEAE Dum.—Grass-of-Parnassus Family

1. PARNASSIA L.—Grass-of-Parnassus

P. glauca Raf. Wet ground in the n. half of the state, rare. July-Sept. [*P. caroliniana* of auth., not Michx.]

77. SAXIFRAGACEAE Dum.—Saxifrage Family

1. Ovary-1-loculed; placentae parietal or nearly basal.
 2. Petals 5; stamens 5.
 3. Petals entire; inflorescence paniculate; leaves all basal.....1. *Heuchera*
 3. Petals fringed; inflorescence racemose; stem with a pair of opposite, sessile leaves
2. *Mitella*
 2. Petals 0; stamens 10 or 8; flowers sessile, axillary, usually solitary.....
3. *Chrysosplenium*
 1. Ovary 2-loculed; placentae axial.
 4. Stamens 5; seeds wing-margined.....4. *Sullivantia*
 4. Stamens 10; seeds wingless5. *Saxifraga*

1. HEUCHERA L.—Alumroot

1. Calyx in anthesis 6-8 mm. long, decidedly oblique; river banks, cliffs, or dry woods, not uncommon, extending southw. to Macoupin and Effingham counties. May-June. [*H. ciliata* Rydb.; *H. richardsonii* var. *grayana* Rosend., Butters, & Lakela] *H. hispida* Pursh
 1. Calyx in anthesis 2-5 mm. long.
 2. Calyx in anthesis 2-2.5 mm. long, nearly regular; petals white; shaded cliffs, s. Ill. July-Sept. [*H. rugelii* Shuttlw.] *H. parviflora* Bartl.
 2. Calyx in anthesis 4-5 mm. long, oblique; petals greenish or purplish; bluffs and rocky banks, not common. May-June
 *H. hirsuticaulis* (Wheelock) Rydb.

2. MITELLA L.—Miterwort

M. diphylla L. Bishop's-cap. Wooded ravines, not common; chiefly in the n. half of the state. May.

3. CHRYSOSPENIUM L.—Golden Saxifrage

C. americanum Schw. Wet ground, n. Ill., rare. May-June.

4. SULLIVANTIA T. & G.

S. renifolia Rosend. Cliffs, rare. Jo Daviess, Carroll, and Ogle counties. June-July.

5. SAXIFRAGA L.—Saxifrage

(*Micranthes* Haw.)

1. Sepals becoming reflexed; plants 30-90 cm. tall; leaves 10-30 cm. long, entire or nearly so.

2. Leaves pilose beneath; petals white, longer than the elliptical sepals; filaments filiform; moist shaded sandstone cliffs, rare. Jackson Co.; La Salle, Ogle, and Jo Daviess counties. May. *S. forbesii* Vasey
2. Leaves glabrous or nearly so beneath; petals greenish, equalling the deltoid sepals; filaments subulate; meadows, local. May-June.
..... *S. pennsylvanica* L.
1. Sepals ascending; plants 8-30 cm. tall; leaves 2-10 cm. long, dentate or crenate; rocky bluffs. Reported from s. Ill. *S. virginiensis* Michx.

78. ESCALLONIACEAE Dum.—Escallonia Family
(*Itaceae* Agardh)

1. ITEA L.

I. virginica L. Virginia Willow. Swamps, rare, s. Ill. May-June.

79. HYDRANGEACEAE Dum.—Hydrangea Family

1. Flowers all fertile, solitary, or in cymes or racemes; stamens 15-60. 1. *Philadelphus*
1. Flowers in terminal corymbs, of 2 kinds, the marginal ones usually enlarged and sterile; stamens usually 10 2. *Hydrangea*

1. PHILADELPHUS L.—Mock-orange

1. Sepals glabrous outside.
2. Flowers usually solitary or 2 or 3 together, scentless; sepals 5-7 mm. long, about equalling the calyx-tube; twigs glabrous; cult. and occasionally escaped; native southeastw. May. Scentless Mock-orange
..... *P. inodorus* L.
2. Flowers in 5-9-flowered cymes, very fragrant; sepals 12-15 mm. long, exceeding the calyx-tube; twigs pubescent; commonly cult., and sometimes escaped; native of Eur. May-June. Sweet Mock-orange
..... *P. coronarius* L.
1. Sepals pubescent outside; flowers scentless or slightly fragrant, in 5-7-flowered cymes; indigenous on the rocky bluffs of the Ohio River near Golconda, Pope Co., *E. J. Palmer* 15438, 19581; collected in June 1919, and Oct. 1920; not otherwise known *P. verrucosus* Schrad.

2. HYDRANGAEA L.

H. arborescens L. Wild Hydrangea. Ravines and wooded banks, throughout Ill., except the n. part. As here treated including var. *oblonga* T. & G. with leaf-blades tapering at base, and var. *deanii* St. John (*H. cinerea* Small), with the blades more pubescent beneath.

80. GROSSULARIACEAE Dum.—Gooseberry Family

1. RIBES L.—Gooseberry. Currant
(*Grossularia* Mill.)

1. Branches usually with spines or prickles.
2. Ovary and fruit setose; calyx-lobes shorter than the tube; woods and river banks. Apr.-May. [*R. gracile* Michx.] Pasture Gooseberry
..... *R. cynosbati* L.

- 2. Ovary and fruit smooth; calyx-lobes equalling or exceeding the tube.
- 3. Stamens exerted; flowers greenish white; spines 5-15 mm. long; woods and river banks, centr. and n. Ill. Apr.-May. The common gooseberry in Ill. [*R. gracile* sensu Pursh, non Michx.]
.....*R. missouriense* Nutt.
- 3. Stamens included; flowers green or purplish; spines 3-8 mm. long; swamps and bogs, n. Ill. May-June. [*R. oxyacanthoides* sensu auth., non L.] Wild Gooseberry*R. hirtellum* Michx.
- 1. Branches not at all spiny or prickly.
- 4. Leaves minutely resinous dotted and more or less pubescent beneath; flowers greenish white; calyx campanulate; fruit black; thickets and moist woods, common as far s. as Christian Co. May-June. [*R. floridum* L'Her.] American Black Currant*R. americanum* Mill.
- 4. Leaves not resinous dotted; shrubs escaped from cultivation.
- 5. Flowers greenish; calyx saucer-shaped; fruit red; native of Eur. [*R. rubrum* sensu auth., non L.] Garden Currant*R. sativum* Syme
- 5. Flowers yellow; calyx tubular; fruit black; cultivated ground and roadsides, occasional; native of centr. U.S. [*R. aureum* sensu auth., non Pursh] Buffalo Currant*R. odoratum* Wendl.

81. HAMAMELIDACEAE Lindl.—Witch-hazel Family

- 1. Leaves palmately veined and lobed; flowers apetalous.....1. *Liquidambar*
- 1. Leaves pinnately veined, wavy-toothed; petals linear, yellow.....2. *Hamamelis*

1. LIQUIDAMBAR L.—Sweet-gum

L. styraciflua L. Swampy woods, s. Ill., extending northw. to Crawford Co. Apr.-May.

2. HAMAMELIS L.—Witch-hazel

H. virginiana L. Woods, local; n. Ill., extending southw. to Peoria and Tazewell counties. Oct.

82. PLATANACEAE Lindl.—Plane-tree Family

1. PLATANUS L.—Plane-tree

P. occidentalis L. Sycamore. In woods and along streams, common throughout Ill. May.

83. ROSACEAE Juss.—Rose Family

(*Malaceae* Small; *Drupaceae* DC.)

- 1. Trees and shrubs.
- 2. Pistils several to many, simple, or pistil one, compound.
- 3. Pistils 2-many, simple, superior; fruits achenes, drupelets, or follicles.
- 4. Pistils 2-5, each becoming a 2-4-seeded follicle; shrubs with simple, serrate to entire, or slightly lobed leaves.
- 5. Leaves palmately shallowly lobed; carpels 2-5, somewhat inflated at maturity; pubescence of stellate hairs.....1. *Physocarpus*
- 5. Leaves serrate to entire; carpels 5-8, not inflated; pubescence of simple hairs, or plant glabrous2. *Spiraea*

4. Pistils numerous, or rarely few, each becoming a 1-seeded achene or drupelet.
6. Branches usually with prickles; leaflets serrate.
7. Flowers white (in our species); leaves palmately compound, the stipules not adnate to the petiole; fruit an aggregate of 1-seeded drupelets forming a blackberry or raspberry.....11. *Rubus*
7. Flowers rose (in our species); leaves pinnate (rarely 3-foliolate), the stipules adnate to the petiole; fruit of seed-like achenes enclosed in the hypanthium (calyx-tube)12. *Rosa*
6. Branches not prickly; leaflets entire, silky-pubescent; flowers yellow (species of)6. *Potentilla*
3. Pistil 1, compound, inferior, enclosed by the calyx-tube; styles 2-5; fruit a pome.
8. Leaves simple.
9. Flowers in racemes; petals narrow; fruit small, berry-like, sweet, with thin pulp, its locules twice as many as the styles; branches not spiny.....13. *Amelanchier*
9. Flowers in cymes or corymbs; petals roundish; locules of the fruit (carpels) the same number as the styles.
10. Midvein of the leaves with small dark colored glands on the upper surface; margins glandular-crenulate; flowers in compound cymes; anthers purple; styles united below; fruit small, berry-like; endocarp of the ripe carpels leathery.....15. *Aronia*
10. Midvein not glandular; margins not glandular-crenulate; fruit large, fleshy.
11. Inflorescence cymose; endocarp of the ripe carpels cartilaginous.
12. Styles free; orifice of the receptacle closed by the disk; anthers pink or red; fruit containing numerous stone-cells.....16. *Pyrus*
12. Styles united below the middle; orifice of the receptacle open; anthers white or yellow; fruit without stone-cells.....17. *Malus*
11. Inflorescence corymbose; styles free; endocarp of the ripe carpels hard and bony; branches usually with spines.....18. *Crataegus*
8. Leaves pinnate; flowers in terminal compound cymes; petals roundish; styles 3, free; anthers white; pome small, berry-like, red, acid, 3-loculed; branches not spiny.....14. *Sorbus*
2. Pistil 1, simple, superior, 2-ovuled; style 1; fruit a 1-seeded drupe; leaves simple19. *Prunus*
1. Herbs; pistils several to many, simple, superior; fruit achenes, drupelets, or follicles.
13. Pistils 2-5, becoming 2-4-seeded follicles.
14. Leaves trifoliolate or 3-parted, nearly sessile; stipules large; flowers white or pinkish, in loose terminal panicles4. *Gillenia*
14. Leaves pinnately compound.
15. Leaves 2-3-pinnate; stipules minute or none; flowers numerous, unisexual, in a large panicle; petals white, about 1 mm. long; follicles reflexed, usually 2-seeded.....3. *Arunicus*
15. Leaves pinnately 3-9-lobed or -foliolate; flowers perfect, pink or purple, in dense cymose panicles.....7. *Filipendula*
13. Pistils one to many, becoming 1-seeded achenes or drupelets.
16. Pistils ripening into pulpy drupelets, forming a red raspberry; style terminal or nearly so; leaves 3-5-foliolate; petals white or pink.....11. *Rubus*
16. Pistils ripening into achenes.
17. Calyx not bristly.
18. Pistils several to many; petals present; calyx usually with 5 sepal-like bractlets alternating with the sepals.
19. Style deciduous from the mature achene.
20. Receptacle becoming succulent, red (or white), and edible in fruit (a strawberry); petals white (or pink), obtuse; leaves trifoliolate5. *Fragaria*
20. Plants not as above.....6. *Potentilla*

19. Style persistent on the achene, jointed or plumose.....8. *Ceum*
 18. Pistils 1-3; sepals 4, petaloid; petals none; achene usually solitary,
 enclosed in the 4-angled calyx-tube; flowers (in our species) white,
 in a dense cylindrical spike.....9. *Sanguisorba*
 17. Calyx-tube with hooked bristles; flowers yellow, in spike-like racemes;
 achenes 210. *Agrimonia*

1. PHYSOCARPUS Maxim.

(*Opulaster* Medic.; *Physocarpa* Raf.)

P. opulifolius (L.) Maxim. Ninebark. River banks, local, n. Ill. May-June. Carpels 3-5, glabrous or pubescent. [*P. intermedius* (Rydb.) Schneid.]

2. SPIRAEA L.

1. Leaves tomentose beneath; sepals reflexed; wet ground. July-Aug.; known to occur in Lake, Cook, Kankakee, and Iroquois counties. Hardhack
*S. tomentosa* L.
 1. Leaves glabrous or nearly so beneath; sepals spreading or erect; moist ground. July-Aug. [*S. salicifolia* of auth., not L.]*S. alba* DuRoi

3. ARUNCUS Adans.—Goat's-beard

A. dioicus (Walt.) Fern. Wooded ravines. May-June. Of local occurrence throughout most of Ill., but apparently absent from the n. part of the state. [*Aruncus aruncus* of auth., not *Spiraea aruncus* L.; *A. sylvester* of auth., not Kostel.; *A. pubescens* Rydb.; *A. allegheniensis* Rydb.]

4. GILLENIA Moench—Indian Physic

G. stipulata (Muhl.) Trel. American Ipecac. Rich woods; extending northw. to La Salle Co., more frequent southw. June-July.

5. FRAGARIA L.—Strawberry

1. Robust, thick-leaved garden plants, often 20-40 cm. tall, sometimes escaped from cult.; petals 9-12 mm. long; fruit ovoid-globose, 2-3 cm. in diameter; achenes set in shallow pits; roadsides and waste places. May
*F. chiloensis* Duch. var. *ananassa* (Duch.) Hort. ex Bailey
 1. Native wild plants; fruit 6-15 mm. in diameter; plants usually smaller.
 2. Leaflets firm, dull green above, petiolulate; flowers in corymbs; petals 5-10 mm. long; fruit ovoid or subglobose, 1-1.5 cm. in diameter at maturity, the achenes set in pits; calyx-lobes not reflexed; grassy banks and roadsides, or in open woods, very common. Apr.-June. [*F. grayana* Vilm.] Wild Strawberry*F. virginiana* Duch.
 2. Leaflets thin, light green, sessile; inflorescence irregular, the branches unequal; petals 3-6 mm. long; fruit ovoid or conical, 6-9 mm. in diameter, 1-1.5 cm. long, the calyx-lobes spreading or reflexed; achenes superficial; rocky banks and open woods, n. Ill., local. May-June.
*F. americana* (Porter) Britt.

6. POTENTILLA L.—Cinquefoil

1. Shrubs 30-100 cm. tall, the bark shreddy; leaflets 5-7, elliptical, 1-2 cm. long, silky-pubescent, the margins entire, revolute; flowers 1.5-3 cm. broad, yel-

low; in swamp, sandy, or limy soil, local, n.e. Ill.; also in Jo Daviess Co. June-Aug. [*Dasiophora fruticosa* (L.) Rydb.] Shrubby Cinquefoil
*P. fruticosa* L.

1. Herbs; leaflets not entire.

2. Petals maroon-purple, acute, shorter than the sepals; leaves pinnate, 5-7-foliolate, the leaflets oblanceolate, serrate, 3-8 cm. long, glaucous beneath; receptacle becoming spongy; bogs and swamps, Lake Co. June-July. [*Comarum palustre* L.] Purple Cinquefoil*P. palustris* (L.) Scop.

2. Petals yellow, white, or cream, obtuse or retuse; receptacle not becoming enlarged and spongy.

3. Leaves pinnate.

4. Flowers solitary on long pedicels; petals yellow; plants stoloniferous; leaflets 7-21, with smaller intermediate ones, sharply serrate, whitish silky-pubescent beneath; wet ground, Lake and Cook counties. May-Aug. [*Argentina anserina* (L.) Rydb.] Silverweed
*P. anserina* L.

4. Flowers cymose; leaflets not whitish pubescent beneath; plants not stoloniferous.

5. Petals white or cream; flowers 12-20 mm. in diameter; stamens 30; style nearly basal; stem stout, 1-2 m. tall, glandular-pubescent; gravelly soil, not common. June-July. [*Drymocallis agrimonioides* (Pursh) Rydb.; *D. arguta* (Pursh) Rydb.] Tall Cinquefoil*P. arguta* Pursh

5. Petals yellow; flowers 6-10 mm. in diameter; stamens 20; style terminal; stem decumbent at base, 20-40 cm. tall; wet ground, rare. St. Clair Co., *Brendel**P. paradoxa* Nutt.

3. Leaves palmate.

6. Flowers cymose.

7. Leaflets silvery-pubescent beneath; petals 4-5 mm. long; sandy or gravelly soil. May-Sept. Silvery Cinquefoil*P. argenta* L.

7. Leaflets green on both sides.

8. Leaflets 5-9; petals pale yellow, longer than the sepals; stamens about 30; mature achenes reticulate; waste places and along roads; native of Eur. May-July. [*P. sulphurea* Lam.]
*P. recta* L.

8. Leaflets 3; petals deep yellow, shorter than the sepals; stamens 10-25; moist ground, common. June-July. Rough Cinquefoil*P. monspeliensis* L.

6. Flowers solitary, axillary, long-peduncled, 10-15 mm. in diameter; leaflets 5, oblanceolate, serrate; stem slender, ascending or trailing; roadsides, gravelly soil, etc., common. May-June. [*P. canadensis* of auth., ex p.] Common Cinquefoil*P. simplex* Michx.

7. FILIPENDULA Mill.

F. rubra (Hill) B. L. Robins. Prairie Meadowsweet. Moist ground, not

common. June-July. Known from Vermilion, Tazewell, and Peoria counties; probably occurring elsewhere in Ill.

8. GEUM L.—Avens

1. Sepals becoming reflexed; petals yellow or white; styles jointed, bent near the middle, the upper part deciduous, the lower persistent, hooked.
2. Receptacle stalked in the calyx; petals yellow, 2 mm. long; fruiting heads at maturity about 1 cm. in diameter; achenes puberulent; woods, common. Apr.-May. Spring Avens*G. vernum* (Raf.) T. & G.
2. Receptacle sessile; calyx with 5 bractlets alternating with the sepals.
3. Petals white or cream, as long as the sepals or shorter.
 4. Peduncles softly velutinous-pubescent or puberulent; petals 5-7 mm. long, equalling or slightly exceeding the sepals; mature fruiting heads 1-1.5 cm. in diameter; receptacle copiously villous-hispid; woods, thickets, and roadsides, common. June-Aug. [*G. album* Gmel.] White Avens*G. canadense* Jacq.
 4. Peduncles hirsute; petals 3-4 mm. long, shorter than the sepals; mature fruiting heads 1.5-2 cm. in diameter; receptacle glabrous or nearly so; wet ground in woods and thickets. June-July. [*G. virginianum* sensu auth., non L.]*G. laciniatum* Murr.
3. Petals golden yellow, 5-8 mm. long, exceeding the sepals; receptacle pubescent; moist thickets and roadsides. June-July. Yellow Avens*G. strictum* Ait.
1. Sepals not reflexed; petals purplish, shorter than the sepals; styles persistent, plumose, not jointed; dry ground n. Ill. May-June. [*Sieversia triflora* (Pursh) R. Br.]*G. triflorum* Pursh

9. SANGUISORBA L.

S. canadensis L. Moist ground, rare. Ottawa, Sept. 28, 1882, *Seymour*; Joliet, Sept. 25, 1907, *Hill*; Troy, Sept. 25, 1907, *Hill*.

10. AGRIMONIA L.—Agrimony

1. Principal leaflets 5-9, oval to obovate.
2. Axis of raceme and lower surface of leaflets pubescent; fruiting calyx turbinate.
3. Axis of raceme finely glandular and with a few long spreading hairs; leaflets glabrous beneath or merely sparsely hirsute on the veins; fruiting calyx 4-5 mm. long, with numerous radiating bristles; roots not tuberous; woods and thickets, centr. and n. Ill. June-Aug. [*A. hirsuta* (Muhl.) Bickn.]*A. gryposepala* Wallr.
3. Axis of raceme softly appressed-pubescent, not glandular, and without longer spreading hairs; leaflets softly pubescent beneath, especially along the veins; fruiting calyx 2.5-3 mm. long, with few ascending or erect bristles; roots tuberous-thickened; open woods. July-Sept. [*A. mollis* (T. & G.) Britt.]*A. pubescens* Wallr.
2. Axis of raceme glandular and puberulent, but not pubescent; lower surface of leaflets glabrous or nearly so, gland-dotted; fruiting calyx hemi-

spherical, about 2 mm. long; roots tuberous-thickened; woods, chiefly in s. and w. Ill. July-Sept. [*A. striata* sensu Bickn., non Michx.]
 *A. rostellata* Wallr.

1. Principal leaflets 11-17, lanceolate, pubescent and glandular-granuliferous beneath; fruiting calyx 4-5 mm. long; moist ground. July-Sept.
 *A. parviflora* Wallr.

11. RUBUS L.—Bramble

1. Stems herbaceous, not at all prickly; leaflets 3, rarely 5; fruit red, globose; bogs, n.e. Ill. May-June. [*R. triflorus* Richards.] Dwarf Raspberry
 *R. pubescens* Raf.
1. Stems more or less woody, biennial or perennial, usually prickly or bristly.
2. Leaves whitish-tomentulose beneath; petals 5-6 mm. long, not longer than the sepals; fruit red or purplish, easily separating from the receptacle. (Raspberries).
3. Stems glaucous, recurved, rooting at the tips, not stoloniferous, with stout hooked prickles; inflorescence corymbiform, the pedicels prickly; fruit purplish black; moist ground, common. May-June. Black Raspberry
 *R. occidentalis* L.
3. Stems not glaucous, bristly-prickly, stoloniferous; inflorescence racemose; fruit red.
4. Pedicels and calyx glandular-setose; wet ground and thickets, n. Ill. May-June. [*R. idaeus* L. var. *aculeatissimus* (C. A. Mey.) Regel & Tiling] Wild Red Raspberry
 *R. strigosus* Michx.
4. Pedicels and calyx tomentulose and often with small recurved prickles, not glandular; roadsides and near dwellings; occasionally persisting; nat. from Eur. May-June. Cultivated Raspberry
 *R. idaeus* L.
2. Leaves variously pubescent or glabrous, but not whitish-tomentulose beneath; fruit black when ripe, adhering to the cone-like receptacle.
5. Stems erect or arching, mostly 1-2 m. tall; petals 1-1.5 cm. long. (Blackberries).
6. Stems more or less prickly, not bristly, the prickles not numerous, confined to the angles of the stem.
7. Leaflets lacinate; panicle 5-30-flowered, prickly and pubescent. Of European origin; cult., and sometimes escaped to roadsides and waste places. Urbana, G. N. Jones 16419. June-July. Evergreen Blackberry
 *R. laciniatus* (West.) Willd.
7. Leaflets serrate or lobed, not lacinate.
8. Peduncles and pedicels with stalked glands, also usually pubescent, and sometimes bearing small prickles; inflorescence racemose, not leafy, usually standing well beyond the foliage, each pedicel subtended by a bract; open woods, pastures, roadsides, and along fences, common. May-June. [*R. nigrobaccus* Bailey]
 *R. allegheniensis* Porter

8. Peduncles and pedicels pubescent and sometimes prickly, but without stalked glands.
9. Inflorescence elongate-racemose, leafy-bracted only at the base; young stems (primocanes) angled and grooved; thickets. May-June. Tall Blackberry*R. argutus* Link
9. Inflorescence short-corymbiform, conspicuously leafy-bracted throughout; primocanes nearly terete; thickets. May-June. [*R. recurvans* Blanch.]*R. frondosus* Bigel.
6. Stems setose or hispid, not or only weakly prickly; sometimes nearly unarmed.
10. Leaflets glabrous, or sparsely pubescent on veins on lower surface; pedicels smooth or nearly so; sepals glandless; in sandy swales eight miles e. of St. Anne, Kankakee Co., *R. A. Schneider* 1661 (not seen)*R. affectus* Bailey
10. Leaflets softly pubescent beneath; pedicels and calyx setulose and glandular; seven miles s.e. of Momence, Kankakee Co., *R. A. Schneider* 1689 (not seen)*R. schneideri* Bailey
5. Stems trailing or decumbent, slender, only the floral branches erect (Dewberries).
11. Stems retrorsely bristly (or nearly unarmed), not prickly; leaflets firm, oblanceolate, glabrous on both sides, glossy above, paler and dull beneath; petals 5-8 mm. long; meadows or low woods, n. Ill. June-July. Swamp Dewberry*R. hispidus* L.
11. Stems usually with weak curved prickles; petals 10-15 mm. long; fields, roadsides and woods, common. Apr.-June. [*R. villosus* Ait., non Thunb.; *R. procumbens* Muhl., nom. nud.]
.....*R. flagellaris* Willd.

12. ROSA L.—Rose

1. The leaflets 3 (or 5), ovate or lanceolate, acute, sharply serrate, glabrous above; stems trailing or climbing; flowers corymbose; styles cohering in an exerted column; hypanthium globose.
2. Leaflets glabrous beneath, glossy above; moist thickets and hedgerows. June-July. Climbing Rose*R. setigera* Michx.
2. Leaflets softly pubescent beneath, dull above; pastures and borders of woods, common. June-July. [*R. setigera* var. *tomentosa* T. & G.]
.....*R. rubifolia* R. Br.
1. The leaflets 5-11; stems erect or arching; styles separate, not exerted or only slightly so.
3. Leaflets glandular beneath, fragrant, the margins doubly serrate with gland-tipped teeth; sepals glandular-setose on the back, more or less lobed, in fruit spreading or reflexed and tardily deciduous; prickles curved, flattened; roadsides and fields, nat. from Eur. May-June. [*R. rubiginosa* L.] Sweetbriar*R. eglanteria* L.
3. Leaflets pubescent or glabrous beneath but not noticeably glandular or fragrant; margins simply serrate.

4. Leaflets not rugose or strongly reticulate; sepals more or less glandular on the back; native species.
5. Tall shrubs 1-2 m. high.
 6. Hypanthium glandular-setose; leaflets closely serrulate, acute at each end; stipules narrow, more or less involute; prickles straight or usually more or less curved, flattened at the base; moist thickets, or swampy ground, local. June-July. [*R. carolina* of auth., not L.] Swamp Rose*R. palustris* Marsh.
 6. Hypanthium usually smooth; stipules flat; leaflets sharply serrate; branches usually without prickles; thickets and open woods, local. May-June. Meadow Rose*R. blanda* Ait.
5. Low shrubs 20-75 cm. tall; leaflets rather coarsely serrate; prickles straight, or none.
 7. Stems woody; leaflets 5 or 7; dry soil along roads or edges of woods; the common species throughout Ill. May-July. [*R. humilis* Marsh.] Pasture Rose*R. carolina* L.
 7. Stems semi-herbaceous, weak and bristly; leaflets usually 9, sometimes 7 or 11; roadsides and hedgerows, chiefly in n. and centr. Ill. June-July. [*R. praticola* sensu Greene, non A. Br.; *R. heliophila* Greene]*R. suffulta* Greene
4. Leaflets rugose, thick, strongly reticulate, dark green above, grayish pubescent beneath; sepals 2.5-3 cm. long, tomentose, not glandular; pedicels velutinous; shrub 1-2 m. tall, the branches densely prickly and bristly; roadsides, escaped from cult.; native of e. Asia
.....*R. rugosa* Thunb.

13. AMELANCHIER Medic.—Shadbush. Serviceberry

1. Blades short-acuminate or decidedly acute; petals 12-18 mm. long; trees or tall shrubs.
2. Young leaves and racemes densely white-tomentose, soon glabrous; sepals triangular, acute; fruit somewhat dry and mealy, insipid and falling early; lowest fruiting pedicels 1-2.5 cm. long; wooded hillsides and banks throughout Ill., not uncommon. Apr.-May [*A. canadensis* sensu auth., non L.]*A. arborea* (Michx. f.) Fern.
2. Young leaves and racemes nearly or quite glabrous from the first; sepals lanceolate, acuminate; fruit sweet and juicy; lowest fruiting pedicels mostly 2.5-5 cm. long; wooded hillsides, n. Ill. Apr-May
.....*A. laevis* Wieg.
1. Blades rounded at the apex, or merely acutish or mucronate, oval, tomentose beneath at flowering time; petals 7-10 mm. long; shrubs 0.5-1.5 m. tall; rocky or sandy soil, n. Ill. May. [*A. humilis* Wieg.] Low Shadbush
.....*A. spicata* (Lam.) K. Koch

14. SORBUS L.—Mountain-ash

1. Winter-buds densely whitish villous, 5-10 mm. long; leaflets elliptical, acute, 3-5 cm. long; flowers 8-9 mm. broad; fruits 9-11 mm. in diameter; native of Eur., cult., and occasionally escaping to woods or roadsides. European

Mountain-ash. Often mistaken for the following species.
*S. aucuparia* L.

1. Winter buds glabrous, glutinous, 1-2 cm. long; leaflets lanceolate, acuminate, finely serrate, 5-9 cm. long; flowers 5-6 mm. broad; fruits 4-6 mm. in diameter; rocky woods, rare; near Oregon, Ogle Co., June 2, 1888, *M. B. Waite*. American Mountain-ash*S. americana* Marsh.

15. ARONIA Medic.—Chokeberry

A. melanocarpa (Michx.) Ell. Moist sandy woods, and bogs, n. Ill. May-June. Other species have been recorded from Ill., but all specimens we have seen are of this species.

16. PYRUS L.—Pear

P. communis L. Cult. and found occasionally as an escape in woods or along roads; native of Eur. May.

17. MALUS Mill.—Apple

1 Calyx glabrous outside (rarely somewhat villous); leaves glabrous or nearly so; mature fruit 1-3 cm. in diameter; woods. Apr.-May. [*Pyrus coronaria* L.; *M. glaucescens* Rehd.; *M. lancifolia* Rehd.] Wild Sweet Crab-apple*M. coronaria* (L.) Mill.

1. Calyx tomentose; leaves pubescent beneath, at least along the veins.
 2. Leaves irregularly toothed, notched, or lobed, narrowed at the base; calyx-lobes erect or spreading; fruit 2-4 cm. in diameter; woods, common. May. [*Pyrus ioensis* (Wood) Bailey] Iowa Crab-apple*M. ioensis* (Wood) Britt.
 2. Leaves crenate-serrate, rounded or cordate at base; calyx-lobes usually reflexed at anthesis; fruit larger; cult., and not infrequently wild; native of Eur. and w. Asia. Apr.-May. [*Pyrus malus* L.; *M. sylvestris* of auth., not Mill.] Apple*M. punila* Mill.

18. CRATAEGUS L.—Hawthorn

1. Leaves cuneate at the base, widest near the middle or toward the apex.
 2. Blades usually widest above the middle, mostly obovate or spatulate, the margins merely serrate or only obscurely lobed; calyx-lobes entire.
 3. Leaves firm, glabrous, glossy above, not impressed-veined.
 4. Pedicels glabrous; nutlets 8-9 mm. long; pastures and open woods, especially near streams, common. May-June. [*C. arduennae* Sarg.; *C. attenuata* Ashe; *C. stronglyphylla* Sarg.; *C. trabax* Ashe] Cockspear Thorn*C. crusgalli* L.
 4. Pedicels pubescent; nutlets 4-5 mm. long; low ground. Type loc.: Wady Petra, Stark Co.; known also from Peoria and Marion counties. [*C. palmeri* Sarg.] *C. pratensis* Sarg.
 3. Leaves thinner, dull, impressed-veined above.
 5. Pedicels and leaves glabrous; open woods, usually along streams, n.-centr. Ill. May-June. [*C. dispersa* Ashe; *C. pausiaca* Ashe; *C. peoriensis* Sarg.; *C. praestans* Sarg.]
*C. cuneiformis* (Marsh.) Egglest.

5. Pedicels and leaves pubescent; blades obovate, irregularly serrate; pastures and open woods, throughout Ill. May-June
.....*C. punctata* Jacq.
2. Blades prevailingly widest near the middle.
6. Blades more or less pubescent beneath, at least in the axils of the veins; pedicels pubescent; calyx-lobes usually glandular-serrulate.
7. Lower surface of mature leaves sparsely pubescent along the sides of the veins with short, somewhat stiff hairs; corymbs sparingly pubescent; stamens mostly 10, the filaments short; thorns usually numerous, stout, 5-9 cm. long; banks of streams, chiefly in the n. half of Ill. May. [*C. corporea* Sarg.; *C. divida* Sarg.; *C. ensifera* Sarg.; *C. gaultii* Sarg.; *C. laxiflora* Sarg.; *C. longispina* Sarg.; *C. rutila* Sarg.; *C. vegeta* Sarg.; *C. illinoensis* Ashe; *C. neofluvialis* Ashe; *C. occidentalis* Britt.; *C. macracantha* of auth., not Loud.]
.....*C. succulenta* Schrad.
7. Lower surface of leaves softly pubescent, especially on the veins; petioles wing-margined; corymbs tomentose; stamens mostly 20, the filaments slender; thorns few, slender, or none; thickets and open woods, generally distributed in Ill., flowering in the latter part of May and early part of June. [*C. structilis* Ashe; *C. tomentosa* sensu DuRoi, non L.]*C. calpodendron* (Ehrh.) Medic.
6. Blades glabrous or essentially so; pedicels glabrous; calyx-lobes entire or nearly so.
8. Leaves oval or rhombic, acute or acutish, serrate, the base cuneate; lower surface with tufts of tomentum in the axils of the veins; fruit 5-8 mm. in diameter; alluvial soil, w. and s. Ill. [*C. nitida* sensu Egglest., ex p., non Sarg.; *C. ovata* Sarg.; *C. acutifolia* Sarg.]*C. viridis* L.
8. Leaves short-obovate to suborbicular, usually incised with shallow lobes, these crenate; styles and nutlets usually 2; fruit 1-1.5 cm. in diameter; thickets and open woods, not uncommon. May-June. [*C. brownii* Britt.]*C. margaretta* Ashe
1. Leaves prevailingly widest below the middle or toward the subcordate, truncate, rounded, or broadly cuneate base.
9. Leaves glabrous or nearly so at maturity, or only slightly pubescent beneath.
10. Leaves deltoid-cordate (often conspicuously 3-5-lobed); calyx-lobes deltoid, entire; fruit 5-7 mm. in diameter, the calyx deciduous; chiefly s. Ill., but extending northw. to Peoria Co. [*C. cordata* Ait.]
.....*C. phaenopyrum* (L. f.) Medic.
10. Leaves otherwise; calyx-lobes lanceolate; fruiting calyx usually persistent.
11. Calyx-lobes entire or nearly so; inflorescence glabrous.
12. Leaves thin, scabrellous on the upper surface when young, soon glabrous; stamens 10 or fewer; fruiting calyx sessile; thickets,

- pastures, or open woods, usually near streams, n.e. Ill. May. [*C. apiomorpha* Sarg.; *C. bella* Sarg.; *C. colorata* Sarg.; *C. cyanophylla* Sarg.; *C. depilis* Sarg.; *C. egani* Ashe; *C. ferrissii* Ashe; *C. ignea* Sarg.; *C. lucorum* Sarg.; *C. magniflora* Sarg.; *C. otiosa* Ashe; *C. paucispina* Sarg.; *C. sextilis* Sarg.; *C. taetrica* Sarg.; *C. tenera* Ashe; *C. trachyphylla* Sarg.; *C. uber* Ashe]*C. macrosperma* Ashe
12. Leaves glabrous on both surfaces, firm to subcoriaceous at maturity; stamens about 20; fruiting calyx with a distinct neck; common throughout Ill. May. [*C. dissona* Sarg.; *C. conjuncta* Sarg.; *C. patrum* Sarg.]*C. pruinosa* (Wendl.) K. Koch
11. Calyx-lobes glandular-serrate throughout.
13. Inflorescence glabrous; Wabash Co., *Schneck*. [*C. eggertii* Britt.] *C. coccinioides* Ashe
13. Inflorescence with pubescent pedicels; thickets and borders of woods, usually near streams, in the n. half of Ill. [*C. accliva* Sarg.; *C. arcuata* Sarg.; *C. assurgens* Sarg.; *C. corusca* Sarg.; *C. delecta* Sarg.; *C. elongata* Sarg.; *C. pura* Sarg.; *C. sertata* Sarg.]*C. pedicellata* Sarg.
9. Leaves persistently softly pubescent beneath; pedicels villous; anthers yellow; fruit usually more or less pubescent, at least toward the base, 12-20 mm. in diameter; open woods, usually near streams, apparently the commonest species in Ill. May. [*C. lanigera* Sarg.; *C. lasiantha* Sarg.; *C. umbrosa* Sarg.; *C. valens* Sarg.]*C. mollis* (T. & G.) Scheele

19. PRUNUS L.—Plum. Cherry

1. Flowers nearly sessile, solitary, large, pink; ovary and fruit densely tomentose; stone deeply pitted; leaves appearing later, lanceolate, acuminate, serrulate, glabrous, the upper surface glossy; cult. and sometimes spontaneous; native of Asia. Apr.-May. Peach [*Amygdalus persica* L.]*P. persica* (L.) Batsch.
1. Flowers pedicelled, white; ovary and fruit glabrous.
2. Flowers in small umbels or corymbs, usually 2-5 or solitary, or in 6-10-flowered racemes in *P. mahaleb*.
3. Flowers small, the petals only 3-6 mm. long.
4. Small trees or tall shrubs with relatively broad lanceolate to oval or obovate leaves toothed to the base, usually appearing after the flowers.
5. Leaves lanceolate to ovate-lanceolate, acuminate.
6. Pedicels 3-6 mm. long, puberulent; fruit globose, 12-15 mm. in diameter; forming thickets in sandy soil, chiefly s. Ill.; native southw. May. Chickasaw Plum*P. angustifolia* Marsh.
6. Pedicels 8-14 mm. long, glabrous; fruit 6-7 mm. in diameter; wet woods, or in bogs, n. Ill. Apr. Wild Red Cherry*P. pennsylvanica* L.f.

- 5. Leaves ovate to suborbicular, apiculate, crenate, glandular between the teeth; fruit ovoid, black or nearly so, 7-10 mm. long; roadsides, occasionally escaped from cult.; introd. from Eur. May. Mahaleb Cherry*P. mahaleb* L.
- 4. Dwarf shrubs; leaves oblanceolate, acute, serrate except toward the cuneate base; fruit nearly globose, black, acid, 1-1.5 cm. in diameter at maturity; sandy soil, n. Ill. Apr.-May. Sand Cherry*P. pumila* L.
- 3. Flowers larger, the petals 7-16 mm. long.
 - 7. Leaves serrate, the sharp teeth not ending in a gland; petals 8-10 mm. long; calyx-lobes not glandular-serrulate.
 - 8. Petioles glabrous beneath; lower surface of mature blades glabrous except along the veins; young twigs glabrous; borders of woods, common. May. Wild Plum*P. americana* Marsh.
 - 8. Petioles pubescent all around; blades usually more or less softly pubescent beneath; young twigs puberulent; woods, and roadsides, common. Apr.-May. [*P. americana* var. *mollis* T. & G.]*P. lanata* (Sudw.) Mack. & Bush
 - 7. Leaves crenate, the blunt teeth ending in a gland; calyx-lobes more or less glandular-serrulate; petioles glabrous beneath; twigs glabrous.
 - 9. Calyx-lobes pubescent on both sides; petals 8-10 mm. long; leaves lanceolate; roadsides and edges of woods, common. Apr.-May. Hortulan Plum*P. hortulana* Bailey
 - 9. Calyx-lobes glabrous within; petals 12-15 mm. long; leaves broadly obovate or oval; river banks, woods, and roadsides thickets, n. Ill. May. Canada Plum*P. nigra* Ait.
- 2. Flowers several to many, in elongate racemes.
 - 10. Leaves thin, obovate, sharply serrate with erect or spreading teeth; sepals nearly orbicular, glandular-serrate, deciduous; woods and thickets, chiefly in the n. and centr. parts of the state. May. [*P. nana* DuRoi] Common Chokecherry. The form with the lower surface of the leaves, young twigs, and rachis of inflorescence pubescent is f. *deamii* G. N. Jones*P. virginiana* L.
 - 10. Leaves firm, oval or lanceolate, crenulate-serrate with incurved teeth; sepals obscurely glandular, persistent; woods, and along fences, common throughout Ill. May. [*P. virginiana* sensu Ehrh., non L.; *Padus virginiana* (L.) Mill.] Wild Black Cherry*P. serotina* Ehrh.

84. LEGUMINOSAE Juss.—Pea Family

- 1. Trees or shrubs.
 - 2. Leaves simple, entire, suborbicular to reniform; flowers pink, perfect, in sessile umbels, appearing before the leaves; pods 6-8 cm. long, pointed at each end... 3. *Cercis*
 - 2. Leaves compound.
 - 3. Erect shrubs or trees.
 - 4. Shrubs; flowers in racemes.

- 5. Twigs and petioles hispid; petals 5; pods linear, hispid, several-seeded..... 20. *Robinia*
- 5. Twigs and petioles not hispid; corolla of one purple petal; pods short, 1-2-seeded 16. *Amorpha*
- 4. Trees; petals 5.
 - 6. Leaves odd-pinnate, with 5-17 leaflets; flowers white, 1-2.5 cm. long.
 - 7. Stipules spiny, woody; stipels setaceous; bark rough; stamens diadelphous; racemes 7-15 cm. long 20. *Robinia*
 - 7. Stipules and stipels none; bark smooth; wood yellow; stamens distinct; inflorescence 15-50 cm. long 7. *Cladrastis*
 - 6. Leaves 1-2-pinnate.
 - 8. Leaflets ovate, entire, acute or acuminate; flowers pinkish white, 1.5 cm. long, in many-flowered racemes; pods woody; trees without spines..... 4. *Gymnocladus*
 - 8. Leaflets oval, remotely denticulate, obtuse; flowers small, greenish yellow, in axillary spikes; pods leathery; trees usually with spines on the trunk and branches 5. *Gleditsia*
- 3. Twining or climbing shrubs, not prickly; flowers purple, showy, racemose; petals 5; leaflets 9-13; pods many-seeded..... 21. *Wisteria*
- 1. Herbs.
 - 9. Leaves simple; petals yellow 9. *Crotalaria*
 - 9. Leaves compound (rarely 1-foliolate).
 - 10. Leaves even-pinnate (or bipinnate), or leaflets only 2.
 - 11. Leaves ending in a tendril; flowers papilionaceous.
 - 12. Style terete, pubescent near the apex..... 27. *Vicia*
 - 12. Style flattened, pubescent along the inner side..... 28. *Lathyrus*
 - 11. Leaves not ending in a tendril; leaflets numerous, small; flowers not at all papilionaceous, in globose heads.
 - 13. Leaves bipinnate.
 - 14. Plants glabrous or nearly so; flowers greenish white; petals distinct or nearly so; pods flat, smooth..... 1. *Desmanthus*
 - 14. Plants with recurved prickles; flowers rose colored; corolla funnel-form; pods prickly, 4-angled, or nearly terete..... 2. *Schrankia*
 - 13. Leaves pinnate; flowers yellow..... 6. *Cassia*
 - 10. Leaves not even-pinnate.
 - 15. Leaves trifoliolate, or digitate with usually not more than 5 leaflets (rarely unifoliolate).
 - 16. Leaves (and other parts of the plant) more or less glandular-punctate; leaflets 3-5, entire 15. *Psoralea*
 - 16. Leaves not at all glandular-punctate.
 - 17. Leaflets toothed.
 - 18. Flowers in heads or spikes.
 - 19. Pods straight 11. *Trifolium*
 - 19. Pods curved or coiled..... 13. *Medicago*
 - 18. Flowers reflexed in long slender racemes, white or yellow; pods small, straight, reflexed 12. *Melilotus*
 - 17. Leaflets entire.
 - 20. Fruit a loment, i.e., breaking transversely into 1-seeded, indehiscent segments.
 - 21. Pods 1-several-jointed and -seeded; leaflets usually stipellate; flowers purple or white..... 24. *Desmodium*
 - 21. Pods of a single 1-seeded joint (the lower joint when present empty and stalk-like); leaflets without stipels, usually prominently veined.
 - 22. Flowers purplish or yellowish white; stamens diadelphous (9 + 1); anthers all alike; pods not longitudinally ribbed 25. *Lespedeza*
 - 22. Flowers yellow; stamens monadelphous; anthers in 2 series; pods longitudinally ribbed..... 26. *Stylosanthes*

20. Fruit a legume.
23. Leaflets not stipellate.
24. Flowers in heads; pods small, often included in the calyx, 1-6-seeded, not stipitate; stamens diadelphous..... 11. *Trifolium*
24. Flowers in racemes, or solitary.
25. Flowers whitish (or yellow) in racemes; stamens distinct; pods stipitate, turgid or inflated; plants tending to turn black in drying..... 8. *Baptisia*
25. Flowers pink, solitary; stamens diadelphous; pods linear, somewhat compressed, not stipitate..... 14. *Hosackia*
23. Leaflets stipellate.
26. Style glabrous; plants twining; flowers purplish or white.
27. Calyx usually 5-toothed, not bracteolate; leaflets ovate..... 35. *Amphicarpa*
27. Calyx deeply 4-cleft, subtended by a pair of bractlets; leaflets oval..... 36. *Galactia*
26. Style pubescent on the upper surface.
28. Flowers yellow; stems twining; leaflets ovate; pods 10-20 cm. long..... 32. *Vigna*
28. Flowers bluish or nearly white.
29. Flowers 4-5 cm. long, solitary or in pairs in the axils, pale blue and lilac, delicately veined; stem ascending or twining..... 34. *Clitoria*
29. Flowers smaller, racemose or umbellate.
30. Flowers in short sessile axillary racemes; stem erect; pods straight or nearly so, almost sessile, somewhat flattened..... 31. *Glycine*
30. Flowers in racemes or umbels on long axillary peduncles; stems twining or trailing.
31. Flowers in long loose racemes; keel of the corolla spirally coiled; pods falcate..... 30. *Phaseolus*
31. Flowers few, in umbel-like clusters; keel of the corolla strongly incurved but not spirally coiled; pods straight or nearly so..... 33. *Strophostyles*
15. Leaves with 5 or more leaflets.
32. Leaves punctate; corolla indistinctly or imperfectly papilionaceous; pods 1-seeded, indehiscent, enclosed in the calyx.
33. Stamens 5; leaflets (in our species) 6-35 mm. long..... 18. *Petalostemum*
33. Stamens 10 or rarely 9; leaflets (in our species) 4-6 mm. long..... 17. *Dalea*
32. Leaves not punctate; corolla papilionaceous; pods several-seeded.
34. Leaflets 5-11.
35. Stems twining or climbing; leaflets 5-7 (rarely 3), ovate or ovate-lanceolate; flowers brownish purple, in axillary racemes..... 29. *Apios*
35. Stem erect; leaflets 7-11, oblanceolate; flowers blue (or pink or white), in terminal racemes..... 10. *Lupinus*
34. Leaflets 11-31.
36. Plants hoary-pubescent; flowers in terminal racemes..... 19. *Tephrosia*
36. Plants strigose to glabrous; flowers in axillary racemes or head-like umbels.
37. Flowers racemose; pods not 4-angled or jointed..... 22. *Astragalus*
37. Flowers umbellate, rose colored; pods linear, 4-angled, jointed..... 23. *Coronilla*

1. DESMANTHUS Willd.

D. illinoensis (Michx.) MacM. Illinois Mimosa. River banks or along railroads, local. [*Acuan illinoensis* (Michx.) Ktze.] Known from Cook, Kan-
kakee, Grundy, La Salle, and Peoria counties; also in s. Ill. July-Aug.

2. SCHRANKIA Willd.

(*Leptoglottis* DC.; *Morongia* Britt.)

S. uncinata Willd. Sensitive-brier. Dry sandy soil, rare. Peoria, Aug. 1901,
and June 1903, McDonald. [*L. nuttallii* DC.; *M. uncinata* Britt.; *S. nuttallii*
(DC.) Standl.]

3. CERCIS L.—Redbud

C. canadensis L. Woods, common throughout Ill., except the n.w. counties.
Apr.-May.

4. GYMNOCLADUS Lam.—Kentucky Coffee-tree

G. dioica (L.) K. Koch. Woods, common throughout Ill. May-June.

5. GLEDITSIA L.

1. Pods 10-50 cm. long, many-seeded, indehiscent; spines stout, often com-
pound, rarely absent; woods, common throughout Ill. May-June. Honey
Locust. The spineless form is *f. inermis* (Pursh) Fassett
.....*G. triacanthos* L.
1. Pods obliquely oval, 2-4 cm. long, 1-seeded, at length dehiscent; spines
slender, mostly simple; borders of swamps, s. Ill., rare; known from Alex-
ander, Johnson, Pulaski, Massac, Calhoun, Gallatin, and Lawrence coun-
ties. Water Locust*G. aquatica* Marsh.

6. CASSIA L.

(*Chamaecrista* Moench; *Ditremexa* Raf.)

1. Corolla regular, the petals nearly equal; leaves not sensitive to the touch;
stipules deciduous; leaflets 2-6 cm. long; calyx-lobes obtuse; stamens 10,
the upper 3 imperfect.
2. Leaflets 8-20; petiole with a gland near the base; pods 6-13 cm. long, 5-
10 mm. wide.
3. Leaflets lanceolate, acuminate; stipules lanceolate; petiolar gland glo-
bose; petals 1.5-2 cm. long; plants annual; waste ground, occasional;
native of the tropics. Chicago, Moffatt in 1897. Coffee-weed
.....*C. occidentalis* L.
3. Leaflets elliptical, mucronate; stipules setaceous; petals 10-12 mm. long;
plants perennial, native.
4. Ovary villous; petiolar gland clavate; pods loosely villous, the seg-
ments about as long as broad; seeds flat, suborbicular; alluvial soil,
roadsides, or in open woods. July-Aug. [*C. marilandica* of auth.,
not L.]*C. hebecarpa* Fern.
4. Ovary strigose; petiolar gland ovoid; pods glabrous or sparsely hir-
tellous, the segments much shorter than broad; seeds plump, ellip-
soid or obovoid; roadsides and alluvial soil. July-Aug. [*C. med-
geri* Shafer]*C. marilandica* L.

2. Leaflets 4-6, obtuse; gland between the lowest pair of leaflets; pods 10-15 cm. long, 2-5 mm. wide; waste ground, occasional; native of the tropics. July-Sept. *C. tora* L.
1. Corolla irregular, the petals unequal; calyx-lobes acuminate; anthers all perfect; stipules persistent; leaves sensitive to the touch; leaflets 12-28.
5. Flowers 2-4 cm. broad, slender-pedicelled; anthers 10, unequal; fields and meadows, common. July-Sept. Partridge-pea. [*C. chamaecrista* of auth., not L.; *C. robusta* Pollard] *C. fasciculata* Michx.
5. Flowers 5-10 mm. broad, short-pedicelled; anthers 5, nearly equal; woods and fields, Cass Co., and southw. July-Sept. *C. nictitans* L.

7. CLADRASTIS Raf.—Yellow-wood

C. lutea (Michx. f.) K. Koch. Rich woods, s. Ill., rare. Alexander Co., R. B. Miller in 1928.

8. BAPTISIA Vent.—Wild Indigo

1. Leaves glabrous; racemes bractless or the bracts minute; calyx 6-8 mm. long; pods ellipsoid, 2-3 cm. long; prairie soil and open woods throughout Ill., common. June-July *B. leucantha* T. & G.
1. Leaves pubescent; racemes conspicuously bracted; calyx 8-10 mm. long; pods ovoid, 4-5 cm. long at maturity; prairie soil and open woods, throughout Ill. May-June. *B. leucophaea* Nutt.

9. CROTALARIA L.—Rattle-box

C. sagittalis L. Dry soil, locally throughout Ill.; more common southw. June-Sept.

10. LUPINUS L.—Lupine

L. perennis L. Sandy soil, local; n.e. Ill., Lake, Cook, Kankakee, Grundy, and Ogle counties. May-June.

11. TRIFOLIUM L.—Clover

1. Flowers white, purple, or pink.
2. Flowers short-pedicelled, becoming reflexed in age.
3. Heads 2.5-3 cm. broad.
4. Leaves pubescent; plants annual or biennial; woods and fields, local. May-June. Buffalo Clover *T. reflexum* L.
4. Leaves glabrous; plants perennial, producing runners; roadsides and open woods, occasional. May-July. *T. stoloniferum* Muhl.
3. Heads less than 2.5 cm. broad.
5. Flowers white; stems creeping and rooting, the peduncles arising from near the ground; fields, roadsides, waste places, lawns, open woods, common; nat. from Eur. May-June. White Clover *T. repens* L.
5. Flowers pink or purple-tinged; stems erect or ascending, not rooting from the nodes; fields, roadsides, and waste places; nat. from Eur. June-Sept. Alsike Clover *T. hybridum* L.
2. Flowers sessile or nearly so, not becoming reflexed.
6. Heads cylindrical; calyx-teeth plumose-pubescent.

- 7. Corolla white, shorter than the calyx; gravelly soil, roadsides, fields, or open woods; nat. from Eur. June-Sept. Rabbit-foot Clover
.....*T. arvense* L.
- 7. Corolla crimson, longer than the calyx; cult. and occasionally spont. in fields and waste places; introd. from Eur. June-July. Crimson Clover
.....*T. incarnatum* L.
- 6. Heads subglobose or ovoid, 2-3 cm. in diameter; calyx sparsely pilose, the teeth subulate; corolla magenta (or white), 12-15 mm. long; leaflets usually with a pale mark; roadsides, fields, and waste places, common; nat. from Eur. May-Aug. Red Clover*T. pratense* L.
- 1. Flowers yellow, shortly pedicellate, becoming reflexed in age.
 - 8. Leaflets sessile; stipules linear; heads 1-2 cm. in diameter; roadsides, fields, and open woods; nat. from Eur. June-July. Yellow Hop-clover
.....*T. agrarium* L.
 - 8. Terminal leaflet petiolulate; stipules ovate-lanceolate; heads 4-12 mm. in diameter.
 - 9. Heads 20-40-flowered; standard distinctly striate; roadsides, fields, and waste places; nat. from Eur. June-Aug. Low Hop-clover
.....*T. procumbens* L.
 - 9. Heads 3-15-flowered; standard faintly striate; roadsides and waste places; nat. from Eur. June-July. Little Hop-clover
.....*T. dubium* Sibth.

12. MELILOTUS Hill—Sweet Clover

- 1. Corolla yellow, 5-7 mm. long; standard about as long as the wing-petals; pods 3-4 mm. long; waste places, fields, and roadsides; nat. from Eur. June-Sept. Yellow Sweet Clover
.....*M. officinalis* (L.) Lam.
- 1. Corolla white, 3-4.5 mm. long; standard slightly longer than the wing-petals; pods 2-3 mm. long; waste places and roadsides; nat. from Eur. May-Sept. White Sweet Clover
.....*M. alba* Desr.

13. MEDICAGO L.

- 1. Flowers bluish purple, 7-9 mm. long; pods spirally coiled, pubescent; leaflets oblanceolate, 1.5-3 cm. long; perennial; fields and roadsides, common; nat. from Eur. May-Sept. Alfalfa
.....*M. sativa* L.
- 1. Flowers yellow, 2-3 mm. long; pods 1-seeded, reniform, curved, reticulate, pubescent, black when ripe; prostrate or ascending annual; fields and waste places, common; nat. from Eurasia. May-July. Black Medic
.....*M. lupulina* L.

14. HOSACKIA Dougl.

(*Acmispon* Raf.)

H. americana (Nutt.) Piper. Dry soil, rare. Greene Co., *McDonald*; and westw. June-Aug.

15. PSORALEA L.

- 1. Leaves pinnately 1-3-foliolate; pods rugose-reticulate.

- 2. Leaflets ovate, acuminate; pods 1 cm. long; stem 1-1.5 m. tall; river banks, not common. June-July. [*Orbexilum onobrychis* (Nutt.) Rydb.]
.....*P. onobrychis* Nutt.
- 2. Leaflets elliptical; pods 4 mm. long; stem 30-60 cm. tall; wooded ridges and slopes, s. Ill., not common. June-July. [*Orbexilum pedunculatum* (Mill.) Rydb.] The plants of the Central States are less glandular and have been named *P. psoralioides* var. *eglandulosa* (Ell.) F. L. Freeman*P. psoralioides* (Walt.) Cory
- 1. Leaves digitately 3-5-foliolate; leaflets oblanceolate; pods about 8 mm. long, not rugose-reticulate; dry soil, not common; McHenry, Kane, Cook, Will, and Peoria counties. June-Oct. [*Psoralidium floribundum* (Nutt.) Rydb.; *P. floribunda* Nutt.]*P. tenuiflora* Pursh

16. AMORPHA L.

- 1. Leaflets 2-5 cm. long; shrubs 1.5-6 m. tall; pods usually 2-seeded, 6-8 mm. long; river banks and alluvial soil, locally throughout Ill. May-June. False Indigo*A. fruticosa* L.
- 1. Leaflets 9-18 mm. long; densely canescent shrubs less than 1 m. tall; pods 1-seeded, 3-4 mm. long; prairie soil and hillsides, locally throughout Ill., except the s. counties. June-July. Lead-plant*A. canescens* Pursh

17. DALEA Juss.

D. alopecuroides Willd. Fields and roadsides, occasional. Aug.-Sept. [*Parosela dalea* (L.) Britt.]

18. PETALOSTEMUM Michx.—Prairie-clover

- 1. Calyx-tube densely silky-velutinous; leaflets 3-9; corolla rose-purple, rarely white; in sandy or gravelly soil along roads or in open woods, local. July-Aug. Purple Prairie-clover*P. purpureum* (Vent.) Rydb.
- 1. Calyx-tube glabrous.
 - 2. Leaflets 5-9; flowers white; in habitats similar to the preceding species, but of less frequent occurrence. June-Aug. White Prairie-clover
.....*P. candidum* (Willd.) Michx.
 - 2. Leaflets 13-31; flowers rose-purple; river banks and gravelly soil, rare; Kan-kakee Co., Hill; Kane Co., G. D. Fuller. July-Sept.*P. foliosum* Gray

19. TEPHROSIA Pers.

(*Cracca* L.)

T. virginiana (L.) Pers. Goat's-rue. Dry sandy soil. June-July.

20. ROBINIA L.—Locust

- 1. Tree 5-30 m. tall; twigs and petioles glabrous; flowers white, in pendulous racemes; pods glabrous; commonly cult., and abundantly naturalized throughout Ill.; native of e. U.S. May-June. Common Locust
.....*R. pseudo-acacia* L.
- 1. Shrub 0.3-3 m. tall; twigs and usually the petioles glandular-hispid; flowers rose-purple, in erect racemes; pods hispid; cult., and occasionally spont.; native of the mts. of Va. and Ga. May-June. Bristly Locust
.....*R. hispida* L.

21. WISTERIA Nutt.

(Kraunhia Raf.)

1. Pods glabrous; pedicels 6-10 mm. long, glandular-pubescent; swampy woods, s. Ill., rare. Known from Pulaski, Alexander, Pope, and St. Clair counties. June-July *W. macrostachya* Nutt.
1. Pods velutinous; pedicels 1-3 cm. long, short-villous; cult.; native of China. May-June. [*W. chinensis* DC.] *W. sinensis* (Sims) Sweet

22. ASTRAGALUS L.—Milk-vetch

1. Corolla purplish blue, 8-10 mm. long; leaflets oval, 4-10 mm. long; calyx minutely pubescent; pods glabrous, about 1.5 cm. long; dry soil, local. Cook, Cass, and St. Clair counties. [*Holcophacos distortus* (T. & G.) Rydb.] *A. distortus* T. & G.
1. Corolla whitish or cream or greenish yellow, 1-2.5 cm. long; calyx pubescent, the teeth subulate or deltoid.
 2. Calyx-teeth subulate.
 3. Leaflets 1.5-4 cm. long; pods ellipsoid, glabrous; river banks and hill-sides throughout Ill., but not common. June-Aug. *A. canadensis* L.
 3. Leaflets 5-15 mm. long; pods ovoid, pubescent; prairies, Will and Ogle counties. May-June *A. plattensis* Nutt.
 2. Calyx-teeth deltoid; leaflets 5-15 mm. long; pods glabrous, subglobose; prairies, rare. Macoupin Co. (?), Andrews. [*Geoprunnon trichocalyx* (Nutt.) Rydb.] *A. trichocalyx* Nutt.

23. CORONILLA L.—Crown-vetch

- C. varia* L. Roadsides and waste places, occasional; adv. from Eur. June-Aug.

24. DESMODIUM Desv.—Tick-clover

(Meibomia Heist.)

1. Pods conspicuously long-stipitate, the stipe 2-3 times the length of the calyx; stipules small, inconspicuous, setaceous, deciduous.
2. Panicle on a leafy stem; fruiting pedicels 5-8 mm. long.
 3. Leaves scattered along the stem; corolla white, 5-6 mm. long; woods, s. Ill. July-Sept. *D. pauciflorum* (Nutt.) DC.
 3. Leaves clustered at the base of the peduncle; corolla rose-purple, 6-7 mm. long; rich woods, common. June-Aug. [*D. acuminatum* DC.; *D. grandiflorum* sensu Robins. & Fern., non DC.; *M. grandiflora* sensu auth., non Ktze.] *D. glutinosum* (Muhl.) Wood
2. Panicle on a long leafless peduncle; fruiting pedicels 1-2 cm. long; corolla rose-purple, 6-11 mm. long; leaflets oval or ovate, acute, glabrous or sparingly pubescent; woods, common. July-Aug. *D. nudiflorum* (L.) DC.
1. Pods short-stipitate or sessile.
 4. Stipules conspicuous, persistent, lanceolate to ovate, acuminate.

5. Stems trailing, pilose; leaflets nearly orbicular, obtuse; stipules ovate-lanceolate, ciliate; woods, s. Ill., extending northw. to Clark and St. Clair counties. Aug.-Sept. [*M. michauxii* Vail]
*D. rotundifolium* (Michx.) DC.
5. Stems erect or ascending.
6. Joints of the pods rhombic, longer than broad.
7. Leaflets obtusish, ovate or oval, somewhat rough-pubescent on both surfaces, pale and reticulate beneath, about the same length as the petiole; stem pubescent; open woods. July-Aug.
*D. canescens* (L.) DC.
7. Leaflets acuminate, longer than the petiole.
8. Leaves and stem glabrous; bracts of the inflorescence not ciliate; woods throughout Ill., except the n. counties. July-Sept.
*D. bracteosum* (Michx.) DC.
8. Leaves and stem glabrous; bracts of the inflorescence not ciliate; open woods. July-Aug.*D. longifolium* (T. & G.) Smyth
6. Joints of the pods oval; leaflets lanceolate or ovate-lanceolate, reticulate beneath, pilosulous; stem uncinately-pubescent; in woods and along roads throughout Ill. July-Aug.*D. illinoense* Gray
4. Stipules small, inconspicuous, setaceous, usually soon deciduous.
9. Leaves sessile or nearly so, the leaflets linear or lanceolate, obtusish, thickish, reticulate, pubescent beneath; stem puberulent; pods 1-3-jointed; open woods. July-Sept.*D. sessilifolium* (Torr.) T. & G.
9. Leaves petioled.
10. Pods distinctly stipitate, the stipe exceeding the calyx.
11. Stem and leaves glabrous or nearly so.
12. Leaflets ovate or broadly oval, pale beneath; flowers pink, 9-14 mm. long; woods, chiefly in s. Ill. Aug.-Sept.
*D. laevigatum* Nutt.
12. Leaflets elliptical-lanceolate; flowers violet-purple, 5-8 mm. long; open woods, common. July-Sept.
*D. paniculatum* (L.) DC.
11. Stem and leaves pubescent; flowers purple, 6-9 mm. long.
13. Leaflets ovate, thick, coriaceous, velutinous beneath; wooded slopes and ridges, s. Ill., not common. Aug.-Sept.
*D. viridiflorum* (L.) Beck
13. Leaflets elliptical or oval, appressed-pubescent beneath; dry soil, usually in open woods. Aug.-Sept.*D. dillenii* Darl.
10. Pods short-stipitate or sessile, the stipe not exceeding the calyxlobes.
14. Flowers showy, 8-12 mm. long, in dense paniced racemes; joints of the pods 3-5; prairie soil. July-Sept.
*D. canadense* (L.) DC.
14. Flowers small, 2-6 mm. long, in loose paniced racemes; joints of the pods 1-3.

- 15. Leaflets scabrous, softly pubescent, pale green and reticulate beneath, 2.5-5 cm. long; stem puberulent; corolla 5-6 mm. long; sandy soil in open woods, chiefly in w. and s. Ill. Aug.-Sept. *D. rigidum* (Ell.) DC.
- 15. Leaflets not scabrous, 1-2.5 cm. long, glaucous beneath; corolla 2-4 mm. long.
- 16. Stem and leaves glabrous; wooded slopes and ridges, local; known from Peoria, Menard, and Macoupin counties. July-Sept. *D. marilandicum* (L.) DC.
- 16. Stem pubescent; leaves more or less pubescent; open woods in the s. half of the state. July-Sept. [*D. obtusum* (Muhl.) DC.; *M. obtusa* (Muhl.) Vail]
..... *D. ciliare* DC.

25. LESPEDEZA Michx.—Bush-clover

- 1. Perennials with subulate stipules, minute bracts, and narrow calyx-lobes.
- 2. Corolla purple; flowers of two kinds, some without petals.
- 3. Flower-clusters on slender peduncles that are conspicuously longer than the subtending leaves.
- 4. Stems trailing; inflorescence capitate or spicate.
- 5. Stems glabrous or finely appressed-pubescent; sandy soil in woods, local. June-Sept. Creeping Bush-clover *L. repens* (L.) Bart.
- 5. Stems softly pubescent with spreading hairs; wooded slopes and ridges, s. Ill., extending northw. to Perry and Wabash counties. July-Sept. Trailing Bush-clover *L. procumbens* Michx.
- 4. Stems erect, sparsely appressed-pubescent; inflorescence loosely paniculate; in oak woods throughout the state except in the n. counties. July-Sept. *L. violacea* (L.) Pers.
- 3. Flower-clusters sessile or nearly so.
- 6. Leaflets densely velutinous beneath; woods, local. Aug.-Sept.
..... *L. stuvei* Nutt.
- 6. Leaflets glabrous, or strigose beneath.
- 7. Leaflets oval; sandy soil in woods, s. Ill. Aug.-Sept.
..... *L. intermedia* (Wats.) Britt.
- 7. Leaflets linear; sandy soil in woods throughout Ill., except the n.w. counties. Aug.-Sept. Slender Bush-clover
..... *L. virginica* (L.) Britt.
- 2. Corolla white or yellowish white, with a purple spot on the standard; flowers all alike.
- 8. Leaflets oblong or oval to suborbicular.
- 9. Stem villous; peduncles conspicuously longer than the subtending leaves; spikes cylindrical, dense, 1-3.5 cm. long; sandy soil on wooded slopes and ridges, local; known in Ill. from Lake, Cook, Jackson, Union, and Pope counties. Aug.-Sept.
..... *L. hirta* (L.) Hornem.
- 9. Stem tomentose; peduncles not longer than the subtending leaves; spikes subglobose; sandy soil along roads and in open woods throughout Ill. Aug.-Sept. *L. capitata* Michx.

8. Leaflets linear.

10. Spikes dense, capitate; open woods in the n. half of the state. Aug.-Sept. *L. longifolia* DC.

10. Spikes slender, loose; prairie soil, rare; known in Ill. from Mc-McHenry and Winnebago counties. Aug.-Sept.
..... *L. leptostachya* Engelm.

1. Annuals with scarious ovate-lanceolate stipules and bracts; calyx-lobes as broad as long; stems erect; flowers solitary or 2 or 3 in the axils; roadsides and fields; introd. from Asia. Aug.-Oct. Japanese Bush-clover
..... *L. striata* (Thunb.) H. & A.

26. STYLOSANTHES Sw.—Pencil-flower

S. biflora (L.) BSP. Dry soil in woods, s. Ill.; known from Saline, Galatin, Johnson, and Pope counties. June-Aug.

27. VICIA L.—Vetch

1. Flowers solitary or in pairs, axillary, nearly sessile; annuals.
2. Flowers 2-2.5 cm. long; leaflets oblanceolate to oval; pods brown; fields, and waste places, escaped from cult.; introd. from Eur. July-Aug. Spring Vetch *V. sativa* L.
2. Flowers 10-18 mm. long; leaflets linear to linear-oblong; pods black when mature; fields and waste places, escaped from cult.; introd. from Eur. July-Aug. Common Vetch *V. angustifolia* (L.) Reich.
1. Flowers in 3-40-flowered racemes on axillary peduncles.
3. Flowers 1-2 cm. long.
4. Racemes 15-40-flowered, dense, unilateral.
5. Calyx gibbous at base; leaflets narrowly elliptical; flowers 14-18 mm. long, crimson, fading to blue; pods 2.5-3.5 cm. long; seeds 3-4 mm. in diameter, dark brown; roadsides and fields, common; nat. from Eur. June-Aug. Winter Vetch *V. villosa* Roth
5. Calyx not gibbous; leaflets linear-oblong; flowers 9-12 mm. long, bluish-purple; pods 1.5-2 cm. long; seeds 2.5 mm. in diameter, black; roadsides and fields, occasional; introd. from Eur. June-Aug. Tufted Vetch *V. cracca* L.
4. Racemes 3-20-flowered, loose; leaflets oval or elliptical.
6. Corolla 1.5-2 cm. long, bluish purple; meadows and thickets, chiefly in the n. half of the state. June-July. American Vetch
..... *V. americana* Muhl.
6. Corolla about 1 cm. long, white; woods in the n. part of the state; known from Lake, McHenry, Cook, and La Salle counties. May-June. Carolina Vetch *V. caroliniana* Walt.
3. Flowers 3-4 mm. long, pale bluish; pods 1-2-seeded; leaflets linear; waste places, occasional; nat. from Eur. May-Aug. *V. hirsuta* (L.) Koch

28. LATHYRUS L.—Wild Pea

1. Flowers purple, or purplish to pink or white.
2. Leaflets 4-14.
3. Stipules much smaller than the leaflets; corolla 1-1.5 cm. long.

- 4. Racemes 2-8-flowered; leaflets 4-8.
 - 5. Stem distinctly winged; leaflets linear to elliptical; flowers 1.5-2.5 cm. long; moist ground and open woods. May-July. [*L. palustris* var. *linearifolius* Ser.]*L. palustris* L.
 - 5. Stem merely angled; leaflets elliptical to oval; flowers 10-15 mm. long; moist ground and thickets. June-July*L. myrtifolius* Muhl.
- 4. Racemes 10-24-flowered; leaflets 8-14, oval; stem 4-angled, puberulent or glabrous; open woods and moist thickets, n. and e. Ill. May-June. [*L. venosus* var. *intonsus* Butters & St. John]*L. venosus* Muhl.
- 3. Stipules broad, foliaceous, nearly as large as the adjacent leaflets; stem glabrous; leaflets 6-10, thick, oval; racemes 6-10-flowered; flowers about 2 cm. long; sandy soil near Lake Michigan, rare. June-Aug. Beach Pea. [*L. japonicus* Willd. var. *glaber* (Ser.) Fern.]*L. maritimus* (L.) Bigel.
- 2. Leaflets 2; stem and petioles winged; frequently cult. and sometimes spont. in waste places and along roads; introd. from Eur. Everlasting Pea*L. latifolius* L.
- 1. Flowers yellowish white or yellow; stipules large.
 - 6. Leaflets 4-6, ovate or broadly oval; corolla yellowish white; peduncles 2-5 cm. long; stem terete; woods, n. Ill. May-July*L. ochroleucus* Hook.
 - 6. Leaflets 2, lanceolate; corolla yellow; peduncles 5-10 cm. long; stem angled; fields and waste places, occasional; adv. from Eur. July-Aug.*L. pratensis* L.

29. APIOS Ludw.—Groundnut

A. americana Medic. Woods and thickets. July-Aug. [*Glycine apios* L.; *A. tuberosa* Moench; *A. apios* (L.) MacM.]

30. PHASEOLUS L.—Kidney Bean

P. polystachyus (L.) BSP. Woods and thickets, s. Ill. July-Sept.

31. GLYCINE L.—Soy Bean

G. soja (L.) Sieb. & Zucc. Extensively cult., and sometimes spont.; native of Asia. [*Soja max* Piper; *G. max* Merrill]

32. VIGNA Savi

V. sinensis (L.) Endl. Cow Pea. Cult., and occasionally spont.; native of Asia. July-Sept.

33. STROPHOSTYLES Ell.—Wild Bean

1. Leaflets rhombic-ovate to 3-lobed; flowers 7-10 mm. long; calyx-tube 2-2.5 mm. long; pods 5-9 cm. long, strigose to nearly glabrous; seeds 5-8 mm. long; sandy soil along roads or in open woods. July-Sept. [*S. angulosa* Eil.; *S. missouriensis* (Wats.) Small]*S. helvola* (L.) Britt.

1. Leaflets lanceolate to elliptical; flowers 5-6 mm. long; calyx-tube 1-1.5 mm. long; pods 2.5-3.5 cm. long, strigose; seeds 2.5-3 mm. long; river banks. July-Sept. [*S. pauciflora* (Benth.) Wats., not *Phaseolus pauciflorus* Don] *S. leiosperma* (T. & G.) Piper

34. CLITORIA L.—Butterfly Pea

- C. mariana* L. Dry banks, s. Ill. June-Aug. [*Martusia mariana* (L.) Small]

35. AMPHICARPA Ell.—Hog-peanut

(*Falcata* Gmel.)

1. Stem with closely reflexed hairs or glabrate; leaflets thin; inflorescence simple, 1-8-flowered; pods pubescent on the margins; woods, common. Aug.-Sept. [*A. monoica* (L.) Ell.; *Falcata comosa* sensu Britt., not *Glycine comosa* L.] *A. bracteata* (L.) Fern.
1. Stem brownish hirsute-villous; leaflets firm; inflorescence branched, 7-17-flowered; pods pubescent throughout; woods, common. Aug.-Sept. [*A. bracteata* var. *comosa* (L.) Fern.; *Falcata pitcheri* (T. & G.) Ktze.] *A. comosa* (L.) G. Don

36. GALACTIA P. Br.—Milk Pea

- G. mississippiensis* (Vail) Rydb. Dry soil, Union, Johnson, and Gallatin counties. July-Aug.

85. GERANIACEAE J. St. Hil.—Geranium Family

1. Leaves palmately veined and lobed or divided; antheriferous stamens 10, rarely 5..... 1. *Geranium*
1. Leaves pinnately veined and dissected; antheriferous stamens only 5..... 2. *Erodium*

1. GERANIUM L.—Cranesbill. Wild Geranium

1. Petals 14-22 mm. long; plants perennial; moist woods, and along roads, throughout Ill. May-June *G. maculatum* L.
1. Petals 2-10 mm. long; plants annual or biennial.
2. Leaves palmately lobed; carpels attached to the styles; petals 2-7 mm. long.
3. Sepals awn-tipped (the tips 1-3 mm. long); seeds reticulate.
4. Fruiting pedicels much longer than the calyx; beak of mature style-column 4-6 mm. long; fields and open woods, occasional. June-Aug. *G. bicknellii* Britt.
4. Fruiting pedicels shorter, or scarcely longer than the calyx; beak of mature style-column 1-2 mm. long; roadsides, fields, and open woods. May-July *G. carolinianum* L.
3. Sepals merely callus-tipped; seeds smooth or nearly so.
5. Carpels pubescent, not rugose; style-column beakless; waste places; nat. from Eur. May-Aug. *G. pusillum* Burm. f.
5. Carpels glabrous, rugose; beak of the style-column 1-2 mm. long; waste places; nat. from Eur. May-July *G. molle* L.

2. Leaves 3-divided; carpels deciduous from the styles; petals 8-10 mm. long; moist ground, occasional; adv. from Eur. June-Sept.
*G. robertianum* L.

2. ERODIUM L'Her.

E. cicutarium (L.) L'Her. Storksbill. Waste places, occasional; nat. from Eur. May-Aug.

86. OXALIDACEAE Lindl.—Wood-sorrel Family

1. OXALIS L.

(*Xanthoxalis* Small; *Ionoxalis* Small)

1. Flowers purple (rarely white), 14-20 mm. long; plants scapose, with a thick bulb-like or scaly rhizome; woods, common. Apr.-June. Violet Wood-sorrel*O. violacea* L.
1. Flowers yellow; stems leafy; rhizomes slender.
2. Stems creeping, rooting at the nodes, the pubescence of spreading hairs; pedicels strigillose; a weed in greenhouses and gardens; native of Eur. [*O. repens* Thunb.] Creeping Wood-sorrel*O. corniculata* L.
2. Stems erect, or decumbent at the base.
3. Pedicels and stems strigillose; capsules finely grayish-pubescent, abruptly pointed, the styles 1-2 mm. long; fruiting pedicels becoming deflexed but the capsules erect; common in fields, also on roads, or in open woods. May-Sept. Upright Yellow Wood-sorrel*O. stricta* L.
3. Pedicels and stems with spreading hairs, or the latter nearly glabrous; capsules sparsely glandular-pilose to nearly glabrous, gradually pointed, the styles 2-3 mm. long; fruiting pedicels ascending or divergent.
4. Petals 3-10 mm. long; seeds about 1.5 mm. long, with nearly continuous ridges; roadsides and open woods, common. June-Nov. [*O. rufa* Small; *O. corniculata* sensu Robins. & Fern., non L.; *O. europaea* Jord. (?); *O. europaea* var. *lanulosa* Benke] Common Wood-sorrel*O. cymosa* Small
4. Petals 12-16 mm. long; capsules 6-10 mm. long; seeds 2 mm. long, the ridges discontinuous; woods, s.e. Ill., near the Wabash River, rare. Mt. Carmel, *Schneck**O. grandis* Small

87. LINACEAE Dumort.—Flax Family

1. LINUM L.—Flax

(*Cathartolinum* Reichenb.)

1. Petals blue (or white), 1-1.5 cm. long; capsules 8-12 mm. in diameter.
2. Perennial; flowers 2-3 cm. in diameter; sepals obtusish, ciliate; occasionally found as an escape from cult.; introd. from Eur. June-Aug.
*L. perenne* L.
2. Annual; flowers 10-15 mm. in diameter; sepals acute, the inner often ciliate; roadsides and waste places, occasional; introd. from Eur. June-Aug.
*L. usitatissimum* L.

1. Petals yellow, 4-8 mm. long; capsules 3-6 mm. in diameter.
3. Styles distinct; leaves without dark stipular glands; false septa of the capsule nearly complete, not ciliate; plants perennial.
4. Inner sepals minutely glandular-ciliolate; sandy soil, local. July-Aug. [*L. medium* var. *texanum* (Planch.) Fern.]
.....*L. medium* (Planch.) Britt.
4. Sepals entire.
5. Outer sepals 3-3.5 mm. long at maturity; dry open woods, local. June-Aug.*L. virginianum* L.
5. Outer sepals 2-2.5 mm. long at maturity; damp ground, s. Ill., rare. July-Aug.*L. striatum* Walt.
3. Styles united below; outer sepals 4-6 mm. long, lanceolate, acuminate, strongly glandular-ciliolate; leaves with dark stipular glands; false septa of the capsule incomplete, conspicuously ciliate; plants annual; dry soil, local. July-Sept.*L. sulcatum* Riddell

88. BALSAMINACEAE Lindl.—Jewel-weed Family

1. IMPATIENS L.—Jewel-weed

1. Flowers orange, thickly red-dotted; spur strongly incurved; moist woods, common. June-Sept. Spotted Touch-me-not*I. biflora* Walt.
1. Flowers pale yellow, sparingly red-dotted; spur bent at a right angle to the sac; moist woods, common. July-Sept. Pale Touch-me-not
.....*I. pallida* Nutt.

89. LIMNANTHACEAE Lindl.

1. FLOERKEA Willd.—False Mermaid

F. proserpinacoides Willd. Wet ground, local. Apr.-June.

90. ZYGOPHYLLACEAE Lindl.—Caltrop Family

1. Flowers (in our species) 1-1.5 cm. in diameter; carpels five, several-ovuled, at maturity bearing 2-4 prickles1. *Tribulus*
1. Flowers (in our species) 2-2.5 cm. in diameter; carpels ten, 1-ovuled, tuberculate, not spiny2. *Kallstroemia*

1. TRIBULUS L.—Caltrop

T. terrestris L. Puncture-weed. Waste places and sandy soil, occasional; nat. from s. Eur. June-Sept.

2. KALLSTROEMIA Scop.

K. intermedia Rydb. Railroad yards, occasional; adv. from s. U.S. or trop. Am. Blue Island, near Chicago, *Babcock*. [*K. maxima* sensu auth., non T. & G.]

91. RUTACEAE Juss.—Rue Family

1. Leaves pinnate; branches often prickly; fruit of 1-5 two-valved follicles.....
.....1. *Zanthoxylum*
1. Leaves trifoliolate; branches not prickly; fruit a 2-seeded, suborbicular samara
.....2. *Ptelea*

1. ZANTHOXYLUM L.

Z. americanum Mill. Prickly-ash. Woods and thickets, common throughout Ill., except the s. counties. Apr.-May.

2. PTELEA L.

P. trifoliata L. Hop-tree. Wafer-ash. Along streams and at the edges of woods, not uncommon. May-July. Plants with pubescent branchlets have been named var. *deamiana* Nieuwl. [*P. trifoliata* var. *mollis* sensu auth., non T. & G.]

92. SIMARUBACEAE DC.—Quassia Family

1. AILANTHUS Desf.

A. altissima (Mill.) Swingle. Tree of Heaven. Waste ground and edges of woods, common; native of China. June-July. [*A. glandulosa* Desf.]

93. POLYGALACEAE Reichenb.—Milkwort Family

1. POLYGALA L.—Milkwort

1. Plants perennial or biennial, usually several-stemmed (except *P. paucifolia*); leaves alternate.
 2. Flowers 1-3, terminal, rose-purple to white, 1.5-2 cm. long; leaves oval, near the summit of the stem, the lower scale-like; rhizomes slender, bearing inconspicuous cleistogamous flowers; moist woods, n.e. Ill., rare; without locality, *Moffatt*; *Vasey*. May-June. Fringed Polygala *P. paucifolia* Willd.
 2. Flowers several or many, 3-6 mm. long, in terminal racemes.
 3. Leaves lanceolate to ovate, acuminate, 5-20 mm. wide; flowers greenish white; racemes compact; wings orbicular-ovate, 2-3 mm. long; plants perennial; cleistogamous flowers absent; wooded banks, or roadsides, locally throughout Ill. May-Sept. Seneca Snakeroot *P. senega* L.
 3. Leaves linear-ob lanceolate, acutish, 2-6 mm. wide; flowers rose-purple to pink; racemes loose; wings obovate, 4-6 mm. long; plants biennial, with small cleistogamous flowers usually present at base; sandy soil, n. Ill. June-Aug. *P. polygama* Walt.
1. Plants annual, single-stemmed; leaves linear or linear-ob lanceolate.
 4. Racemes capitate, obtuse, more than 5 mm. thick.
 5. Leaves alternate.
 6. Stem glaucous; leaves linear-subulate, distant; petals united into a tube about 5 mm. long; wings linear, less than half the length of the keel; prairie soil, in the n. half of the state, rare. July-Sept. *P. incarnata* L.
 6. Stem leafy, not glaucous; petals not united into a long tube; wings oval, equalling or exceeding the keel; fields, meadows, and open woods. July-Sept. [*P. viridescens* L.] *P. sanguinea* L.
 5. Leaves in whorls of four, linear-ob lanceolate; wings acuminate; sandy soil in the n. half of the state. July-Sept. *P. cruciata* L.
 4. Racemes slender, cylindrical or linear, tapering, less than 5 mm. thick.

- 7. Branches mostly opposite or whorled; racemes short-peduncled; flowers green or greenish; dry soil throughout Ill., except the s. counties. July-Sept. *P. verticillata* L.
- 7. Branches mostly alternate; racemes long-peduncled; flowers purplish or greenish purple; woods and fields, s. Ill. June-Aug. *P. ambigua* Nutt.

94. EUPHORBIACEAE J. St. Hil.—Spurge Family

- 1. Flowers not in an involucre; calyx of 3-5 sepals; sap watery.
 - 2. Pubescence of stellate hairs.
 - 3. Flowers in spikes or glomerules; ovary 3-(2-4)-loculed.....1. *Croton*
 - 3. Flowers scattered on the branchlets; ovary 1-loculed.....2. *Crotonopsis*
 - 2. Pubescence, if any, of simple hairs.
 - 4. Leaves serrate; stamens usually 8; styles many-cleft; bracts of the pistillate flowers cleft3. *Acalypha*
 - 4. Leaves entire; stamens usually 3; styles simple; bracts of the pistillate flowers not cleft4. *Phyllanthus*
- 1. Flowers in a cup-shaped calyx-like involucre; sepals rudimentary; sap milky.
 - 5. Leaves opposite, oblique at base.....5. *Chamaesyce*
 - 5. Leaves not oblique at base, alternate or opposite.
 - 6. Inflorescences in a several-rayed umbel; stipules none6. *Euphorbia*
 - 6. Inflorescences cymose; stipules gland-like7. *Poinsettia*

1. CROTON L.

- 1. Leaves serrate; staminate flowers with a 4-parted calyx, 4 petals, a 4-rayed disk, and 8 stamens; pistillate flowers with a 5-parted calyx; styles 3, bifid; sandy soil, adv. from s. U.S. Aug.-Oct. Sand Croton *C. glandulosus* L.
- 1. Leaves entire.
 - 2. Capsules clustered, erect, depressed-globose, 7-9 mm. in diameter; styles 3, bifid or trifid; stamens 10-14; sandy soil, probably adv. from s. U.S. Aug.-Sept. *C. capitatus* Michx.
 - 2. Capsules mostly solitary, pendent, ovoid, 3-4 mm. long; style none, the stigmas 2, bifid; stamens 3-8; roadsides and fields, chiefly in the s. half of Ill. July-Oct. *C. monanthogynus* Michx.

2. CROTONOPSIS Michx.

- 1. Leaves lanceolate; fruit ovoid; fields and open woods, local. July-Sept. *C. elliptica* Willd.
- 1. Leaves linear-lanceolate; fruit ellipsoid; dry sandy soil, s. Ill., rare. July-Sept. *C. linearis* Michx.

3. ACALYPHA L.—Three-seeded Mercury

- 1. Leaves slender-petioled; pistillate bracts with lanceolate, acute lobes.
 - 2. Stem with short, curved hairs, or nearly glabrous; bracts of the pistillate flowers 5-7- (or rarely 9-) -lobed, bearing a few whitish stipitate glands (at least when young), or nearly glabrous; woods, fields, and roadsides, common. July-Oct. [*A. virginica* sensu auth., ex p.] *A. rhomboidea* Raf.

- 2. Stem with straight spreading hairs in addition to the short curved ones; bracts with 9-15 lobes, hispid-pubescent on the veins and margins, not glandular; fields, roadsides, and wooded slopes, local. July-Oct. [*A. digyneia* Raf.] *A. virginica* L.
- 1. Leaves short-petioled (petiole $\frac{1}{8}$ - $\frac{1}{4}$ the length of the blade), elliptic-lanceolate to lanceolate, or linear; bracts with 9-11 ovate to deltoid teeth; stem with short, curved hairs; woods, fields, and roadsides, chiefly in the s. third of the state. June-Sept. [*A. gracilens* var. *fraseri* (Muell. Arg.) Weatherby] *A. gracilens* Gray

4. PHYLLANTHUS L.

P. caroliniensis Walt. Sandy soil; Peoria, Menard, Macoupin, St. Clair, and Wabash counties. May-Oct.

5. CHAMAESYCE S. F. Gray

(*Euphorbia* ex p.)

- 1. Leaves entire; stems prostrate; whole plant glabrous.
 - 2. Leaves roundish-oval, 1-3 mm. long; sandy soil, local. July-Sept. *C. serpens* (HBK.) Small
 - 2. Leaves oblong, longer than broad, 4-20 mm. in length.
 - 3. Seeds 2-3 mm. long; sandy soil, Lake and Cook counties. July-Sept. *C. polygonifolia* (L.) Small
 - 3. Seeds 1.5 mm. long; sandy soil. June-Sept.; known from Jo Daviess, Lee, Henry, Henderson, Mason, and Cass counties. First collected at Beardstown, Cass Co., by C. A. Geyer in 1842 .. *C. geyeri* (Engelm.) Small
- 1. Leaves toothed, at least at the apex.
 - 4. Capsules glabrous; seeds wrinkled.
 - 5. Capsules 2 mm. long; leaves obliquely oblong-lanceolate, often red-marked, the larger ones 1-3 cm. long; stems erect or ascending; fields and roadsides, common throughout Ill. July-Sept. [*E. preslii* Guss.; *E. nutans* Lag.; *E. hypericifolia* sensu Am. auth., non L.; *C. lansingii* Millsp.] Nodding Spurge *C. maculata* (L.) Small
 - 5. Capsules 1.5 mm. long; leaves linear-oblong, the larger ones 4-10 mm. in length; stems spreading or prostrate; sandy or gravelly soil, not common; known from Cook, Lee, Henry, Peoria, and St. Clair counties. June-Sept. *C. glyptosperma* (Engelm.) Small
 - 4. Capsules pubescent; stems prostrate, villous.
 - 6. Leaves usually somewhat pubescent beneath; seeds 0.8-0.9 mm. long, minutely pitted and inconspicuously transversely rugose; cult. ground and roadsides, common. July-Oct. [*E. maculata* of auth., not L.] Milk Spurge *C. supina* (Raf.) Moldenke
 - 6. Leaves glabrous beneath; seeds 1 mm. long, papillose, obscurely wrinkled; sandy soil, local. July-Sept. *C. humistrata* (Engelm.) Small

6. EUPHORBIA L.—Spurge

- 1. Glands of the involucre with petal-like appendages.

2. Leaves not white-margined; plants perennial with a deep root; roadsides, fields, and open woods, common throughout Ill. June-Sept. [*Tithymalopsis corollata* (L.) Small]*E. corollata* L.
2. Upper leaves conspicuously white-margined; plants annual; waste ground, escaped from cult.; native westw. July-Sept. [*Lepadena marginata* (Pursh) Nieuwl.] Snow-on-the-mountain*E. marginata* Pursh
1. Glands of the involucre without petal-like appendages.
3. Leaves entire.
4. Plants perennial, with a rhizome; stems clustered; capsules granular; seeds smooth (seldom developing).
5. Leaves lanceolate to linear, 4-15 mm. wide; waste places; nat. from Eur. June-Sept.*E. esula* L.
5. Leaves linear, 1-3 mm. wide; roadsides and cemeteries; nat. from Eur. May-Sept. Cypress Spurge*E. cypris* L.
4. Plants annual or biennial; capsules smooth; seeds pitted.
6. Seeds finely pitted, 1-1.5 mm. long; lobes of the capsules 2-crested; waste places; nat. from Eur. June-Sept.*E. pepus* L.
6. Seeds coarsely pitted, 2 mm. long; lobes of the capsules rounded; wooded slopes and gravelly soil, local. May-June*E. commutata* Engelm.
3. Leaves serrulate.
7. Leaves spatulate; capsules warty; seeds smooth; moist ground in the n. half of the state. May-June*E. obtusa* Pursh
7. Leaves obovate; capsules smooth; seeds reticulate; waste places; nat. from Eur. June-Oct. Wart Spurge*E. helioscopia* L.

7. POINSETTIA Graham

1. Leaves chiefly opposite; plants pubescent, dull green; glands of the involucre stipitate; roadsides and fields, probably adv. from w. U.S. July-Sept.
.....*P. dentata* (Michx.) Small
1. Leaves alternate; plants glabrous or nearly so, bright green; glands sessile; roadsides and waste places. June-Aug.*P. heterophylla* (L.) Small

95. CALLITRICHACEAE Lindl.—Water-starwort Family

1. CALLITRICHE L.—Water Starwort

1. Fruit short-peduncled; bracts absent; plants terrestrial, growing on moist soil, local; known from Champaign, Macoupin, St. Clair, and Wabash counties*C. austini* Engelm.
1. Fruits sessile; plants aquatic or amphibious.
2. Bracts present.
3. Fruit oval, flat, longer than the styles; known from Cook, Menard, and St. Clair counties*C. palustris* L.
3. Fruit obovate, convex, shorter than the styles; local, throughout Ill.
.....*C. heterophylla* Pursh
2. Bracts absent; leaves all linear, submerged; St. Clair Co.
.....*C. autumnalis* L.

96. CELASTRACEAE Lindl.—Staff-tree Family

- 1. Leaves opposite; flowers axillary, cymose or solitary; capsules 4-5-loculed, usually lobed1. *Euonymus*
- 1. Leaves alternate; flowers in terminal racemes; capsules 3-loculed, subglobose.....2. *Celastrus*

1. EUONYMUS L.

- 1. Erect shrubs.
 - 2. Leaves petioled; flower-parts commonly in fours; capsules smooth; woods near streams, throughout Ill. May-July. Wahoo*E. atropurpureus* Jacq.
 - 2. Leaves nearly sessile; flower-parts commonly in fives; capsules rough-warty; woods, rare and local. May*E. americanus* L.
- 1. Decumbent shrubs, rooting at the nodes; woods, local*E. obovatus* Nutt.

2. CELASTRUS L.

C. scandens L. Climbing Bittersweet. Rich soil, common. May-June.

97. AQUIFOLIACEAE DC.—Holly Family

- 1. Leaves usually entire; sepals minute, deciduous; petals linear.....1. *Nemopanthus*
- 1. Leaves (in our species) toothed; sepals persistent; petals oval.....2. *Ilex*

1. NEMOPANTHUS Raf.—Mountain Holly

N. mucronata (L.) Trel. Swamps, rare. Cook and La Salle counties. May.

2. ILEX L.—Holly

- 1. Leaves obovate, rounded at the apex, crenate; calyx-lobes not ciliate; nutlets ribbed; edges of ponds and swamps, in the counties bordering the Mississippi, Wabash, and Ohio rivers. May. Possumhaw. Swamp Holly*I. decidua* Walt.
- 1. Leaves elliptical, acuminate, serrate; calyx-lobes ciliate; nutlets smooth; swamps, more frequent in the n. counties. Winterberry*I. verticillata* (L.) Gray

98. ANACARDIACEAE Lindl.—Sumac Family

1. RHUS L.

(*Toxicodendron* Mill.; *Schmaltzia* Desv.)

- 1. Leaves with 7-31 leaflets.
 - 2. Leaflets decurrent on the rachis, which is therefore conspicuously winged; fruit red, pubescent; roadsides, fields, and open woods, s. Ill., extending northwestw. to Pike Co., and northeastw. to Lawrence Co.; also in Kankakee Co. July-Aug. Shining Sumac. Dwarf Sumac*R. copallina* L.
 - 2. Leaflets not decurrent; rachis not winged.
 - 3. Leaflets serrate; fruit red, in terminal clusters.

4. Twigs and leaves glabrous; along roads and fences, and in open woods, common throughout Ill. June-July. Smooth Sumac *R. glabra* L.
4. Twigs and petioles villous-hirsute; woods, n. Ill., extending southw. to La Salle, Cass, Morgan, and Hancock counties, occasionally introd. elsewhere June-July. [*R. hirta* (L.) Sudw.] Staghorn Sumac *R. typhina* L.
3. Leaflets entire or nearly so; fruit glabrous, whitish or pale greenish, in axillary panicles; plants poisonous to the touch; tamarack bogs and swampy ground, Lake and Kankakee counties. June-July. Poison Sumac *R. vernix* L.
1. Leaves with 3 leaflets.
5. Flowers in loose axillary panicles, appearing after the leaves; fruit glabrous, greenish white; plants erect, trailing, or climbing, poisonous to the touch; along fences and in woods, or on sand dunes, common. May-July. [*R. toxicodendron* of auth., not L.] Poison Ivy *R. radicans* L.
5. Flowers in short dense paniced spikes, catkin-like before opening, appearing before or with the leaves; fruit red, pubescent; foliage not poisonous, fragrant when bruised.
6. Flowers nearly sessile, appearing before the leaves; leaflets 2-6 cm. long, rhombic-obovate to ovate, acute; petioles villosulous to nearly glabrous; gravelly or rocky banks locally throughout Ill., except the n. counties; more frequent southw. May. [*R. canadensis* Marsh.; *R. crenata* of Rydb., not Thunb.; *Schmaltzia formosa* Greene; *S. illinoensis* Greene] Fragrant Sumac *R. aromatica* Ait.
6. Flowers on pedicels 2-3 mm. long, on leafy twigs; leaflets 1-2.5 cm. obtusish, crenately few-lobed or -toothed above the middle; petioles puberulent or tomentulose; sandy banks and dunes; known from Cook, Jo Daviess, Mason, and Hancock counties; also n. Ind. May. [*Schmaltzia arenaria* Greene, Leaflets 1:130. 1905] *R. arenaria* (Greene) n. comb.

99. STAPHYLEACEAE DC.—Bladdernut Family

1. STAPHYLEA L.

S. trifolia L. American Bladdernut. Moist woods and thickets, common. Apr.-May.

100. ACERACEAE Lindl.—Maple Family

1. ACER L.—Maple

1. Leaves simple, palmately lobed; floral disk present; anthers ellipsoid, not apiculate.
2. Leaves silvery whitish on the lower surface; flowers in dense sessile clusters, appearing before the leaves.
3. Leaves 5-lobed, the lobes serrate or cleft or parted; petals none; ovary tomentose; samaras divergent, pubescent; chiefly in alluvial soil, common. Mar.-Apr. Silver Maple *A. saccharinum* L.

- 3. Leaves 3-5-lobed, the lobes unequally crenate-serrate; petals 5; ovary glabrous; samaras incurved, glabrous at maturity.
- 4. Leaves glabrous or nearly so on the lower surface at maturity; mature twigs glabrous; samaras 18-25 mm. long, the wing 6-8 mm. wide; woods, local. Mar.-Apr. Red Maple*A. rubrum* L.
- 4. Leaves permanently tomentose beneath; twigs more or less pubescent at maturity; samaras 3.5-6 cm. long, the wing 1-2 cm. broad at the middle; swamps, rare, s. Ill.*A. drummondii* H. & A.
- 2. Leaves not silvery-white beneath; flowers corymbose, unfolding with the leaves.
 - 5. Leaves flat, 3-5-lobed, the lobes coarsely dentate, more or less glabrous; stipules absent; woods, common. Apr.-May. [*A. barbatum* Michx.; *A. saccharophorum* K. Koch.; *Saccharodendron barbatum* Nieuwl.] Sugar Maple*A. saccharum* Marsh.
 - 5. Leaves with drooping sides, usually with 3 main lobes, the lobes acuminate, entire or undulate or obtusely toothed; lower surface yellowish green and softly pubescent, at least along the veins, varying to nearly glabrous in age; stipules often present, large, enclosing the bud; woods, local. May. Black Maple*A. nigrum* Michx. f.
- 1. Leaves 3-7-foliolate; flowers dioecious, drooping, appearing before the leaves; anthers linear, apiculate; disk none; petals none; alluvial soil, common. Apr.-May. [*Negundo nuttallii* (Nieuwl.) Rydb.] Box-elder*A. negundo* L.

101. HIPPOCASTANACEAE T. & G.—Horse-chestnut Family

1. AESCULUS L.—Horse-chestnut

- 1. Ovary and capsule soft-spiny; flowers 12-18 mm. long, finely pubescent, greenish yellow; stamens exserted; calyx campanulate, 6-8 mm. long; woods, common. Apr.-May. Ohio Buckeye*A. glabra* Willd.
- 1. Ovary and capsule smooth; flowers about 3 cm. long, reddish purple or yellowish; stamens included; woods, s. Ill. Apr.-May. Yellow or Sweet Buckeye*A. octandra* Marsh.

102. RHAMNACEAE Dum.—Buckthorn Family

- 1. Leaves pinnately veined; flowers greenish yellow; fruit a drupe.....1. *Rhamnus*
- 1. Leaves triple-veined; flowers (in our species) white, fragrant; fruit a capsule..... 2. *Ceanothus*

1. RHAMNUS L.—Buckthorn

- 1. Winter buds scaly.
 - 2. Leaves opposite or subopposite, ovate, abruptly acute; twigs rigid, often spine-like; flowers usually 4-merous; petals present; drupe with 3 or 4 nutlets; roadsides and edges of woods, occasional in n. Ill.; nat. from Eurasia. May-June*R. cathartica* L.
 - 2. Leaves alternate; native shrubs 1-2 m. tall; twigs not at all spine-like.

3. Leaves elliptical, serrulate, pubescent beneath; twigs puberulent; flowers 4-merous; petals present; drupe with 2 nutlets; alluvial soil, bluffs, river banks, the common species in Ill. May*R. lanceolata* Pursh
3. Leaves oval or obovate, strongly veined, glabrous, crenate-serrate; twigs glabrous; flowers 5-merous; petals none; drupe with 3 nutlets; wooded swamps, n. Ill., in Lake and Peoria counties. Alder Buckthorn*R. alnifolia* L'Her.
1. Winter buds naked; leaves alternate; flowers 5-merous; shrubs or small trees 3-10 m. tall.
4. Leaves serrate or serrulate; flowers in peduncled cymes, the pedicels pubescent; calyx-lobes lanceolate, acuminate; drupe 8-10 mm. in diameter, with 3 nutlets; wooded slopes, s. Ill., rare; known from Jackson and Gallatin counties. May-June. Carolina Buckthorn*R. caroliniana* Walt.
4. Leaves entire or undulate; flowers fascicled; pedicels glabrous; calyx-lobes ovate, acute; drupe 6-8 mm. in diameter, with 2 nutlets; woods and roadsides, nat. from Eurasia. Known in Ill. from Lake, Cook, Sangamon, and Champaign counties. May-June. Alder Buckthorn*R. frangula* L.

2. CEANOTHUS L.

1. Leaves ovate, acute; seeds smooth; thickets and open woods, common. June-July. New Jersey Tea*C. americanus* L.
1. Leaves elliptic-lanceolate; seeds pitted; sandy soil in the n. third of Ill., not common. May-June.*C. ovatus* Desf.

103. VITACEAE Lindl.—Grape Family

1. Leaves simple, or pinnately compound.
2. Inflorescence longer than broad; petals united in a cap, falling away without separating; pith interrupted at the nodes; fruit edible; leaves simple, palmately lobed or dentate1. *Vitis*
2. Inflorescence broader than long; petals separate, spreading; pith not interrupted at the nodes; fruit not edible2. *Ampelopsis*
1. Leaves palmately compound with usually 5-leaflets.....3. *Parthenocissus*

1. VITIS L.—Grape

1. Mature leaves grayish arachnoid-pubescent beneath.
2. Twigs terete or nearly so, glabrate; fruit glaucous, about 1 cm. in diameter; woods, thickets, and river banks in the n. two-thirds of the state. June-July. [*V. bicolor* LeConte] Summer Grape*V. aestivalis* Michx.
2. Twigs distinctly angular, permanently pubescent; fruit black, 6-8 mm. in diameter; woods and stream banks. June-July. Winter Grape*V. cinerea* Engelm.
1. Mature leaves green beneath, short-pubescent along the veins, or nearly glabrous.
3. Leaves coarsely dentate or slightly 3-lobed; fruit glaucous; in woods and along fences, common. May-June. [*V. cordifolia* Lam.] Frost Grape*V. vulpina* L.

3. Leaves sharply 3-5-lobed.

4. Lobes acuminate, the sinuses rounded; fruit black, not glaucous; alluvial soil in the s., e., and n.e. parts of the state. June-July. Catbird Grape *V. palmata* Vahl

4. Lobes and sinuses acute; fruit glaucous; alluvial soil throughout Ill. May-June. [*V. vulpina* of auth., not L.] Riverbank Grape
.....*V. riparia* Michx.

2. AMPELOPSIS Michx.

1. Leaves simple, ovate, serrate or slightly 3-lobed; woods, thickets, and along fences, s. Ill., extending northw. along the river valleys to Hancock and Wabash counties. June-July. [*Cissus ampelopsis* Pers.] Racoon-grape
.....*A. cordata* Michx.

1. Leaves bipinnate, the leaflets ovate, toothed; moist woods, s. Ill., known from Alexander, Pulaski, Union, and Jackson counties. July-Aug. [*A. bipinnata* Michx.; *Vitis arborea* L.; *Cissus stans* Pers.] Pepper-vine
.....*A. arborea* (L.) Koehne

3. PARTHENOCISSUS Planch.

(*Psedera* Neck.)

1. Leaflets dull above, pale beneath; tendrils with 5-8 branches ending in adhesive tips; cymes usually crowded into terminal panicles; fruit 5-7 mm. in diameter, 1-3-seeded; plants high-climbing; woods, and along fences, common. June-July. Virginia Creeper*P. quinquefolia* (L.) Planch.

1. Leaflets somewhat glossy above, scarcely paler beneath; tendrils with 3-5 branches, usually without adhesive disks; cymes solitary; fruit 8-10 mm. in diameter, 3-4-seeded; plants usually low and trailing; thickets and along fences, local; chiefly in the n. half of the state. June-July. [*P. vitacea* (Knerr) Hitchc.] Woodbine*P. inserta* (Kern.) K. Fritsch

104 TILIACEAE Juss.—Linden Family

1. TILIA L.—Linden

1. Leaves glabrous beneath except for tufts of hairs in the axils of the lateral veins, coarsely serrate, abruptly short-acuminate; woods, common. June-July. [*T. glabra* Vent.] American Linden. Basswood*T. americana* L.

1. Leaves tomentose beneath, finely serrate, gradually short-acuminate; woods, s. Ill. June-July. White Basswood*T. heterophylla* Vent.

105. MALVACEAE Neck.—Mallow Family

1. Calyx subtended by an involucre of bracts.

2. Bracts 2 or 3.

3. Flowers pink or purple; leaves not linear.

4. Petals obcordate; stigmas linear; leaves roundish in outline, obtusely lobed or rarely dissected; carpels 1-seeded1. *Malva*

4. Petals obtuse or truncate at the apex.

5. Leaves triangular-hastate; stigmas linear; carpels 1-seeded.....3. *Callirhoe*

5. Leaves 5-7-lobed, maple-like in appearance; stigmas capitate; carpels 2- or 3-seeded6. *Sphaeralcea*

3. Flowers yellow; leaves linear; stigmas capitate; carpels 1-seeded...5. *Malvastrum*
 2. Bracts 6-9.
 6. Stigmas linear; carpels 1-seeded.....2. *Althaea*
 6. Stigmas capitate; carpels united into a 5-valved capsule.....9. *Hibiscus*
1. Calyx without bracts.
 7. Petals yellow; flowers perfect; leaves not lobed.
 8. Leaves less than 3 cm. broad, ovate-lanceolate, serrate, and with a small tubercle at the base; petals less than 1 cm. long; carpels 5, each 1-seeded7. *Sida*
 8. Leaves 6-30 cm. broad, cordate, acuminate, velvety-pubescent, long-petioled; petals 10-15 mm. long; carpels 12-15, each several-seeded.....8. *Abutilon*
 7. Petals white; plants dioecious; leaves orbicular, palmately 7-11-lobed; carpels 8-10, rugose-reticulate, each 1-seeded.....4. *Napaea*

1. MALVA L.—Mallow

1. Petals not more than twice as long as the sepals.
 2. Leaves crisped on the margins; carpels reticulate; stem stout, erect, 0.5-2 m. tall; escaped from cult.; native of Eur. July-Sept.*M. crispa* L.
 2. Leaves not crisped.
 3. Stems erect; petals 5 mm. long; carpels 8-11, more or less pubescent and rugose on the back; weed in waste places, native of Eur. July-Aug. [*M. pusilla* With.] Round-leaved Mallow ..*M. rotundifolia* L.
 3. Stems prostrate or ascending; petals 10-12 mm. long; carpels 12-15, pubescent; waste places, adventive from Eur. May-Sept. [*M. rotundifolia* of auth., not L.]*M. neglecta* Wallr.
1. Petals 3-8 times as long as the sepals.
 4. Leaves 3-7-lobed; petals purple; carpels wrinkled; occasional in waste places as a garden escape. Aug.-Sept.*M. sylvestris* L.
 4. Leaves deeply dissected; petals pink; carpels pubescent; roadsides, escaped from cult.; native of Eur. June. Musk Mallow.*M. moschata* L.

2. ALTHAEA L. Hollyhock

A. rosea Cav. Roadsides and waste ground; native of China.

3. CALLIRHOE Nutt.—Poppy Mallow

1. Leaves triangular or halberd-shaped, crenate; plants stellate-pubescent; carpels pubescent, not rugose; petals 2-2.5 cm. long; sandy soil, rare. June-Sept.*C. triangulata* (Leavenw.) Gray
 1. Leaves round-cordate, palmately 5-7-parted; plants glabrous, or sparingly pubescent at the base; carpels rugose, scarcely pubescent; petals 1.5-2 cm. long; dry gravelly soil, rare. Peoria (*Brendel, McDonald*), where probably adv.*C. digitata* Nutt.

4. NAPAEA L.—Glade Mallow

N. dioica L. Alluvial soil, local, throughout the n. half of Ill. July-Aug.

5. MALVASTRUM Gray

(*Sidopsis* Rydb.)

M. angustum Gray. Dry ground, rare. La Salle Co. July-Aug. [*Sidopsis hispida* (Pursh) Rydb.; *Sphaeralcea angusta* (Gray) Fern.]

6. SPHAERALCEA St. Hil.

S. remota (Greene) Fern. Kankakee Mallow. On an island in the Kankakee River; also in western Virginia; not otherwise known. June-July.

7. SIDA L.

S. spinosa L. Prickly Sida. Fields and waste ground, common; native of Trop. Am. July-Oct.

8. ABUTILON Mill.—Indian Mallow

A. theophrasti Medic. Velvet-leaf. Butterprint. Fields and roadsides, common; native of India. Aug.-Oct.

9. HIBISCUS L.—Rose Mallow

- 1. Stems 1-2 m. tall; native species.
- 2. Leaves glabrous throughout; muddy shores of streams and ponds locally throughout Ill., except the n. counties. July-Oct.*H. militaris* Cav.
- 2. Leaves pubescent at least beneath.
- 3. Leaves glabrous or nearly so on the upper surface; borders of streams, ditches, and ponds, rare; n.e. Ill. July-Aug.*H. moscheutos*
- 3. Leaves velvety-pubescent above; shores of ponds and streams, chiefly in the s. half of the state. Aug.-Oct.*H. lasiocarpus* Cav.
- 1. Stem 10-40 cm. tall; leaves 3-7-lobed; plants annual; roadsides, fields, and waste places; adv. from s. Eur. Aug.-Oct. Flower-of-an-hour
.....*H. trionum* L.

106. HYPERICACEAE Lindl.—St. John's-wort Family

- 1. Petals yellow.
- 2. Sepals 4, in unequal pairs, the outer pair larger and bract-like; petals 4.....
.....1. *Ascyrum*
- 2. Sepals 5; petals 5.
- 3. Leaves with ordinary flat blades, not reduced to scales.....2. *Hypericum*
- 3. Leaves scale-like or subulate.....3. *Sarothra*
- 1. Petals pink or greenish purple; sepals 5; leaves oval.....4. *Triadenum*

1. ASCYRUM L.

A. multicaule Michx. Thickets, s. Ill. July-Aug. [*A. crux-andrae* and *A. hypericoides* of auth., not L.] St. Andrew's Cross.

2. HYPERICUM L.—St. John's-wort

- 1. Stamens numerous (15-40).
- 2. Shrubs, 0.5-1.5 m. tall.
- 3. Styles 5; capsules ovoid, 6-9 mm. long; flowers 2-3 cm. broad; sandy soil, local; known from Lake, Cook, and Livingston counties; also in St. Clair and Pope counties. June-Aug. Kalm's St. John's-wort
.....*H. kalmianum* L.
- 3. Styles 3; capsules ellipsoid, 11-13 mm. long; flowers 1.5-2 cm. broad; moist woods. July-Aug. Shrubby St. John's-wort*H. prolificum* L.
- 2. Herbs, rarely shrubby at base.
- 4. Petals not at all black-dotted.

5. Flowers 4-6 cm. broad, the petals 2-2.5 cm. long; capsules 1.5-2 cm. long; cyme few-flowered; stamens united into 5 sets; styles 5; banks of streams, locally throughout Ill., except the s. counties. July-Aug. Giant St. John's-wort*H. ascyron* L.
5. Flowers 1-2 cm. broad, the petals 6-10 mm. long; capsules 4-6 mm. long; stamens distinct.
6. Stems somewhat woody at base; sepals oval or ovate-lanceolate, plane or nearly so; capsules unilocular, ovoid, 4-6 mm. long; seeds rugulose and pitted; roadsides, open woods, river banks, throughout Ill. June-Aug. [*H. cistifolium* of auth., not Lam.]*H. sphaerocarpum* Michx.
6. Stem herbaceous throughout, from a slender, creeping, stoloniferous base; sepals lanceolate, the margins more or less revolute; capsules incompletely 3-5-loculed by the projecting placentae; wet ground, s. Ill., rare. July-Aug.*H. adpressum* Bart.
4. Petals black-dotted, at least along the margin.
7. Flowers 1.5-2.5 cm. broad; petals black-dotted along the margin; sepals lanceolate; leaves linear or oblong, 1-2 cm. long, 2-8 mm. wide, numerous, pellucid-dotted; stem with numerous basal sterile shoots; roadsides and fields, common; adv. from Eur. June-Aug. Common St. John's-wort*H. perforatum* L.
7. Flowers 8-15 mm. broad; petals with several lines of black dots; sepals ovate; leaves oval, 2-8 cm. long, 8-16 mm. wide, conspicuously black-dotted; roadsides and open woods. July-Aug. [*H. pseudo-maculatum* Mack. & Bush]*H. punctatum* Lam.
1. Stamens few (5-20); flowers small, the petals 3-6 mm. long.
8. Capsules 3-3.5 mm. long; sepals linear, obtusish; leaves oval, obtuse, 5-veined; plants often diffusely branched; moist soil, local. July-Sept.*H. mutilum* L.
8. Capsules 4-6 mm. long; sepals narrowly lanceolate, acuminate; branching strict, erect.
9. Leaves elliptic-lanceolate, 3-7-veined, acutish at the apex, somewhat rounded at the clasping base, 3-10 mm. wide; sepals 5-6 mm. long, nearly equalling the capsule; moist ground, rare; n.e. Ill., extending southwestw. to Peoria Co. July-Aug.*H. majus* (Gray) Britt.
9. Leaves linear or linear-ob lanceolate, obtusish, 1-3-veined, slightly tapered at the sessile base, 1-3 mm. wide; sepals 2.5-3 mm. long, noticeably shorter than the capsule; moist sandy soil, rare; known from Kankakee and Cook counties. July-Sept.*H. canadense* L.

3. SAROTHTRA L.—Pineweed

1. Leaves scale-like, 2-3 mm. long; capsules much longer than the sepals; flowers 4-8 mm. in diameter, nearly sessile; sandy soil, local. Aug.-Oct. [*Hypericum gentianoides* (L.) BSP.]*S. gentianoides* L.
1. Leaves subulate, 5-20 mm. long; capsules about as long as the sepals; flowers 10-12 mm. in diameter, pedicelled; sterile soil in the s. half of the state. July-Sept. [*Hypericum drummondii* (Grev. & Hook.) T. & G.]*S. drummondii* Grev. & Hook.

4. TRIADENUM Raf.—Marsh St. John's-wort

T. virginicum (L.) Raf. Swamps, local. July-Sept. [*Hypericum virginicum* L.]

107. CISTACEAE Lindl.—Rockrose Family

- 1. Low shrubs; leaves subulate; petals 5, yellow, fugacious; styles slender, elongate.....
.....1. *Hudsonia*
- 1. Herbs; leaves not subulate.
 - 2. Petals 5, yellow, fugacious; style short; pubescence stellate.....2. *Helianthemum*
 - 2. Petals 3, greenish or red, persistent; style none; pubescence not stellate.....3. *Lechea*

1. HUDSONIA L.

H. tomentosa Nutt. Sandy soil, local. Jo Daviess, Lee, and Fulton counties. May-July.

2. HELIANTHEMUM Mill.—Frostweed

(*Crocanthemum* Spach)

- 1. Petaliferous flowers 5-12, pale yellow, in a short terminal cymose raceme, their capsules 3-5 mm. in diameter; seeds reticulate; sandy soil in open woods, local. June-July. [*H. majus* sensu Bickn., non (L.) BSP.]
.....*H. bicknellii* Fern.
- 1. Petaliferous flowers solitary (or rarely 2), bright yellow, their capsules 6-9 mm. in diameter; seeds papillose; in similar habitats. June. [*Lechea major* L.; *Cistus canadensis* L.; *H. majus* (L.) BSP.]
.....*H. canadense* (L.) Michx.

3. LECHEA L.—Pinweed

- 1. Stem with spreading (villous) pubescence; leaves of the basal shoots oval; stem leaves oval, 10-25 mm. long, 6-12 mm. wide; sandy soil. July-Aug.
.....*L. villosa* Ell.
- 1. Stem with appressed (strigose) pubescence, or sometimes nearly glabrous.
 - 2. The narrow outer sepals longer than the inner ones.
 - 3. Stem 25-70 cm. tall; leaves narrowly elliptical; sandy soil. July-Aug.
.....*L. minor* L.
 - 3. Stems usually 10-20 cm. tall; leaves linear; sandy or sterile soil in woods. July-Aug. [*L. tenuifolia* var. *occidentalis* Hodgdon]
.....*L. tenuifolia* Michx.
 - 2. The narrow outer sepals shorter than or equalling the inner ones.
 - 4. Plants pale green, finely canescent; panicle strict, virgate; sandy soil. July-Aug.
.....*L. stricta* Leggett
 - 4. Plants dark green, more or less pubescent, but not canescent.
 - 5. Panicle strict, virgate; capsules globose, 2-3 mm. in diameter; sandy soil, rare. July-Aug.
.....*L. intermedia* Leggett
 - 5. Panicle-branches spreading; capsules ellipsoid, 1-1.5 mm. in diameter; sandy soil, n.e. Ill.; known from Winnebago, Lake, Cook, Kankakee, and Iroquois counties. July-Aug. [*L. moniliformis* Bickn.]
.....*L. leggettii* Britt. & Hollick

108. VIOLACEAE DC.—Violet Family

1. Corolla merely gibbous at the base; sepals not auricled; stamens united into a sheath 1. *Hybanthus*
 1. Corolla spurred; sepals more or less auricled at the base; stamens distinct or slightly cohering 2. *Viola*

1. HYBANTHUS Jacq.—Green Violet

H. concolor (Forst.) Spreng. Moist ravines and rich woods. Apr.-June.
 [*Cubelium concolor* (Forst.) Raf].

2. VIOLA L.—Violet

1. Plants acaulescent, or without manifest stems at flowering time, the leaves and pedicels arising directly from the rhizome or from stolons.
 2. Rhizome short, thick, stout (3-10 mm. in diameter); petals violet to white.
 3. Leaves more or less lobed or dissected.
 4. Leaves dissected into narrow divisions.
 5. Petals all glabrous within, lilac, or the upper two dark violet; style clavate, beakless, oblique at apex; plants without cleistogamous flowers; prairies and borders of woods, locally throughout Ill. Apr.-June. Bird-foot Violet *V. pedata* L.
 5. Lateral petals hirsute within; corolla violet; style capitate, with a conical beak on the lower side; plants producing cleistogamous flowers; prairies or dry open woods, locally throughout Ill., except the s. counties. May. Prairie Violet *V. pedatifida* Don
 4. Leaves usually lobed or cleft; plants producing cleistogamous flowers.
 6. Leaves all 5-11-lobed or -parted; woods and prairie soil, n. Ill., extending southw. to Peoria and Kankakee counties. Apr.-May. [*V. papilionacea* × *pedatifida* ?; *V. palmata* sensu auth.; *V. perpensa* Greene] × *V. bernardi* Greene
 6. Leaves usually of two kinds, the earliest and latest not lobed, the others 5-7-parted; woods, s. Ill., extending northw. to Macon and Peoria counties. May. [*V. triloba* var. *dilatata* Brainerd]
 *V. falcata* Greene
 3. Leaves merely crenate-serrate, not lobed.
 7. Leaves ovate-cordate to reniform or deltoid.
 8. Leaves glabrous or nearly so.
 9. Hairs of the lateral petals not clavate; cleistogamous flowers on short prostrate or ascending pedicels.
 10. Leaves ovate-cordate to reniform, acute or obtuse; flowers violet-purple (except albinos).
 11. Leaf-blades obtuse or obtusish, broadly cordate or reniform at maturity; spurred petal glabrous or nearly so within; cleistogamous flowers on short prostrate pedicels; capsules 10-15 mm. long; seeds dark brown; woods and roadsides, common throughout Ill. Apr.-May. Butterfly Violet *V. papilionacea* Pursh

11. Leaf-blades acutish, narrowly cordate, usually longer than broad; spurred petal hirsute within; cleistogamous flowers on ascending pedicels; seeds light brown; moist soil, not common; known from Cook, Henry, and Macon counties. May-June *V. affinis* Le Conte
10. Leaves deltoid, acuminate; petals lilac; spurred petal glabrous within; open woods. Apr.-May
..... *V. missouriensis* Greene
9. Hairs of the lateral petals conspicuously clavate-capitate; cleistogamous flowers on slender erect pedicels; wet ground, not common. May-June. Marsh Blue Violet *V. cucullata* Ait
8. Leaves decidedly pubescent; petals violet or lavender, rarely white; sepals ciliate; woods, common throughout Ill. Apr.-May. Downy Blue Violet *V. sororia* Willd.
7. Leaves sagittate-lanceolate.
12. Leaves glabrous or nearly so; open woods. Apr.-May. Arrow-leaved Violet *V. sagittata* Ait.
12. Leaves pubescent; hillsides, not common; known from Cook, Lee, Stark, and Grundy counties. Apr.-May. [*V. ovata* Nutt.]
..... *V. fimbriatula* Sm.
2. Rhizome slender (1-2 mm. in diameter); plants usually stoloniferous.
13. Flowers small, white, the lower petals purple-veined; style not hooked; seeds brown or black; native species.
14. Leaves tapering or truncate at base.
15. Leaves lanceolate or elliptical-lanceolate, several times as long as broad and usually less than 2 cm. wide, tapering at the base; borders of swamps, local. May-June. Lance-leaved Violet *V. lanceolata* L.
15. Leaves ovate, not more than twice as long as wide, usually more than 2 cm. broad, truncate at base; borders of swamps; known from Cook and Kankakee counties. May-June. Primrose Violet *V. primulifolia* L.
14. Leaves cordate, glabrous; pedicels usually somewhat longer than the leaves; springy ground, n. Ill., rare. Apr.-May. [*V. blanda* of auth., not Willd.] Smooth White Violet
..... *V. pallens* (Banks) Brainerd
13. Flowers large (1-2 cm. broad), violet, or sometimes white, very fragrant; style hooked; leaves broadly ovate, cordate, crenate, finely pubescent; stolons rooting at the nodes; seeds cream colored; roadsides and waste places, occasional; introd. from Eur. and often cult. Apr.-June. Sweet Violet *V. odorata* L.
1. Plants caulescent at flowering time; flowers axillary.
16. Plants perennial; stipules small, toothed or entire.
17. Petals yellow.
18. Plants nearly glabrous; basal leaves usually present at flowering time; seeds 2-2.5 mm. long; woods, common. Apr.-May. [*V. scabriuscula* Schw.] Common Yellow Violet
..... *V. eriocarpa* Schw.

18. Plants decidedly pubescent; basal leaves usually absent at flowering time; seeds 2.6-3 mm. long; moist woods, rare. Apr.-May.
Downy Yellow Violet *V. pubescens* Ait.
17. Petals violet or white.
19. Stipules entire, scarious; petals violet or white; woods, rare. Apr.-June. Canada Violet *V. canadensis* L.
19. Stipules dentate or fimbriate.
20. Petals creamy white; sepals ciliolate; upper leaves acute; stipules 1.5-2.5 cm. long; alluvial soil, common. Apr.-June.
Cream Violet *V. striata* Ait.
20. Petals pale violet; sepals glabrous; leaves obtuse; stipules usually less than 1.5 cm. long; woods, Cook Co., *A. Chase*.
Apr.-May. Dog Violet *V. conspersa* Reichenb.
16. Plants annual; stipules large, pectinate; style enlarged at the hollow apex.
21. Upper leaves entire or nearly so; flowers 7-10 mm. long; petals twice the length of the sepals; sandy soil in fields and open woods, common. Apr.-June. Wild Pansy *V. rafinesquii* Greene
21. Upper leaves crenate-serrate.
22. Petals shorter than or barely exceeding the sepals; fields and roadsides, occasional; adv. from Eur. May-July. Field Pansy
..... *V. arvensis* Murr.
22. Petals much longer than the sepals; occasionally found as an escape from cult.; native of Eur. Garden Pansy
..... *V. tricolor* L.

109. PASSIFLORACEAE Dum.—Passion-flower Family

1. PASSIFLORA L.—Passion-flower

1. Leaves deeply 3-5-lobed, the lobes serrate; flowers subtended by a conspicuous involucre of 3 bracts; petals lavender or whitish; dry soil, s. Ill. May-July *P. incarnata* L.
1. Leaves obtusely 3-lobed above the middle, the lobes entire; flowers without an involucre; petals greenish yellow; thickets, s. Ill., extending northw. to Pike and Wabash counties. May-July *P. lutea* L.

110. CACTACEAE Lindl.—Cactus Family

1. OPUNTIA Mill.—Prickly-pear

- O. rafinesquii* Engelm. Sandy soil, locally abundant; known from Lake, Cook, Mason, Adams, Jackson, Union, Johnson, and Pope counties. [(?) *O. humifusa* Raf.]

111. THYMELEACEAE Reichenb.—Mezereum Family

1. DIRCA L.

- D. palustris* L. Leatherwood. Woods and thickets, local. Apr.-May.

112. ELAEAGNACEAE Lindl.—Oleaster Family

1. SHEPHERDIA Nutt.

- S. canadensis* L. Canadian Buffalo-berry. Dry bluffs and banks or ravines, near L. Michigan; Lake Forest, Hill in 1904; Glencoe, G. D. Fuller in 1943.

113. LYTHRACEAE Lindl.—Loosestrife Family

1. Flowers regular; petals equal.
2. Flowers small, axillary, solitary or few.
3. Calyx-tube campanulate or hemispherical, not striate.
4. Petals 4; calyx-tube with appendages in the sinuses.
5. Flowers solitary, sessile, axillary; capsules 4-loculed, septical.....1. *Rotala*
5. Flowers usually more than 1 in each axil; capsules 2-4-loculed, irregularly dehiscent2. *Ammannia*
4. Petals absent; calyx-tube without appendages.....3. *Peplis*
3. Calyx-tube cylindrical, striate; petals 5-7, usually 6.....4. *Lythrum*
2. Flowers large (2 cm. in diameter), in axillary clusters, trimorphous; petals usually 5; plants semi-shrubby.....5. *Decodon*
1. Flowers irregular and unsymmetrical; petals unequal; plants glandular-pubescent.....6. *Cuphea*

1. ROTALA L.

R. ramosior (L.) Koehne. Wet ground, throughout Ill. July-Sept.

2. AMMANNIA L.

A. coccinea Rottb. Muddy banks and shores, locally common throughout Ill. July-Aug.

3. PEPLIS L.—Water-purslane

(*Didiplis* Raf.)

P. diandra Nutt. Wet ground or shallow water, rare. June-Aug. Known from Cook, Hancock, Henderson, Menard, Wabash, and St. Clair counties. [*Ammannia nuttallii* Gray; *D. diandra* (Nutt.) Wood]

4. LYTHRUM L.—Loosestrife

L. alatum Pursh. Meadows and moist ground, common June-Aug.

5. DECODON J. F. Gmel.—Swamp Loosestrife

D. verticillatus (L.) Ell. Swamps, not common; known in Ill. from Lake, Cook, Woodford, and Mason counties.

6. CUPHEA P. Br.—Waxweed

C. petiolata (L.) Koehne. Dry soil, throughout Ill., except the n.w. counties. July-Oct.

114. MELASTOMACEAE R. Br.—Melastoma Family

1. RHEXIA L.—Meadow-beauty

R. virginica L. Moist sand-barrens, or in peaty soil, locally throughout Ill.; known from Cook, Kankakee, La Salle, Mason, Cass, and Richland counties. July-Sept.

115. ONAGRACEAE Dum.—Evening-primrose Family

1. Flowers with 4 petals (rarely 0); sepals 4-6 (rarely apparently only 2); stamens 4-12.
2. Fruit a many-seeded capsule.
3. Seeds with a tuft of silky hairs; flowers (in our species) not yellow.....1. *Epilobium*
3. Seeds without hairs.
4. Hypanthium scarcely or not at all extended beyond the ovary.
5. Stamens 8-12, in two series.....2. *Jussiaea*
5. Stamens 43. *Ludwigia*

4. Hypanthium conspicuously extended beyond the ovary into a tube.....4. *Oenothera*
 2. Fruit indehiscent, deciduous; flowers pink5. *Gaura*
 1. Flowers with 2 notched white petals, 2 sepals, and 2 stamens; fruit indehiscent,
 obovoid, with hooked bristly hairs6. *Circaea*

1. EPILOBIUM L.—Willow-herb

1. Petals 1-2 cm. long; stigma 4-lobed; edges of woods and burned-over
 ground, local; known from Lake, McHenry, Cook, and La Salle counties.
 June-Aug. Fireweed [*Chamaenerion spicatum* (Lam.) S. F. Gray]
*E. angustifolium* L.
 1. Petals 3-8 mm. long; stigmas entire.
 2. Leaves lanceolate, denticulate.
 3. Seeds beakless, 1-1.5 mm. long; coma reddish brown; moist ground,
 local. Aug.-Sept.*E. coloratum* Muhl.
 3. Seeds short-beaked, 0.5-1 mm. long; coma whitish; moist ground, not
 common; chiefly in the n. and w. parts of the state. July-Sept.
*E. adenocaulon* Haussk.
 2. Leaves linear, or linear-lanceolate, mostly entire.
 4. Stems, leaves, and capsules copiously soft-pubescent with short, straight
 hairs; leaves mostly 4-8 mm. wide; petals 7-8 mm. long; seeds 2 mm.
 long; wet ground, rare. Lake Co., *Gleason & Shobe* 162; Woodford
 Co., June 1889, *McDonald*; McHenry Co., *Vasey*. July-Sept. [*E.*
molle sensu Torr., non Lam.; *E. densum* Raf.]*E. strictum* Muhl.
 4. Stem, leaves, and capsules crisp-puberulent; leaves 1-4 mm. wide; petals
 3-5 mm. long; seeds 1.5 mm. long; wet ground, rare; known from
 Lake, Peoria, and Mason counties. Aug.-Sept. [*E. lineare* Muhl.,
 nom. illegit.; *E. densum* sensu auth., non Raf.]
*E. leptophyllum* Raf.

2. JUSSIAEA L.—Primrose-willow

1. Plants creeping or floating; petals 5; capsule cylindrical; leaves elliptical,
 tapering to a slender petiole; muddy banks, or in water, not common;
 chiefly s. Ill. July-Aug.*J. diffusa* Forsk.
 1. Plants erect; petals 4; capsules clavate, 4-angled; leaves lanceolate, decur-
 rent; wet ground, rare; s. Ill. July-Sept.*J. decurrens* (Walt.) DC.

3. LUDWIGIA L.—False Loosestrife

1. Petals yellow, equalling or exceeding the sepals; leaves alternate; flowers
 peduncled; capsules opening by terminal pores; swamps. June-Sept. Seed-
 box*L. alternifolia* L.
 1. Petals small, greenish, or absent; flowers sessile.
 2. Leaves opposite, ovate or oval; muddy shores and ditches, local. July-
 Aug. [*Isnardia palustris* L.]*L. palustris* (L.) Ell.
 2. Leaves alternate.
 3. Capsules cylindrical; stem glabrous; bractlets minute; swamps, s. Ill.,
 rare. Massac Co. July-Sept.*L. glandulosa* Walt.
 3. Capsules subglobose or turbinate; leaves lanceolate or linear.

- 4. Stem glabrous; bractlets subulate; capsules longer than the calyx-lobes; muddy shores, local. July-Sept.*L. polycarpa* Short & Peter
- 4. Stem pubescent; bractlets minute, or none; capsules not longer than the calyx-lobes; muddy shores, s. Ill., rare. July-Sept.
.....*L. sphaerocarpa* Ell.

4. OENOTHERA L.—Evening-primrose

- 1. Leaves not linear-filiform; stigma 4-lobed.
 - 2. Calyx-lobes reflexed; stamens equal in length; flowers more or less nocturnal; petals yellow; capsules terete or round-angled; plants biennial or annual.
 - 3. Capsules lanceloid-cylindrical, 4-7 mm. thick at maturity, slightly tapering from a thickish base; flowers many, in a terminal spike; leaves repand-denticulate; petals 1-2 cm. long, obovate; dry soil, common. June-Oct. Common Evening-primrose*O. biennis* L.
 - 3. Capsules linear-cylindrical, 2-3 mm. thick, essentially uniform in diameter throughout.
 - 4. Upper and median leaves remotely denticulate to entire; flowers many, in a terminal spike; petals 12-25 mm. long, rhombic-ovate; capsules 1-2 cm. long, strigose; sandy soil, local, chiefly in the n. half of Ill., but extending southw. near the Mississippi R. June-Sept. [*Raimannia rhombipetala* (Nutt.) Rose]*O. rhombipetala* Nutt.
 - 4. Upper and median leaves sinuately dentate or pinnatifid; flowers few, axillary; petals 5-12 mm. long, obovate; capsules 2-3 cm. long, pilose; sandy soil, chiefly in the s. half of the state, extending northw. to Peoria Co. May-July [*Raimannia laciniata* (Hill) Rose; *O. sinuata* L.]*O. laciniata* Hill
 - 2. Calyx lobes erect or ascending, cohering in pairs; stamens unequal in length, the alternate ones somewhat longer; flowers diurnal; capsules 4-angled; plants perennial.
 - 5. Petals yellow; capsules 4-winged; leaves entire or denticulate.
 - 6. Stem erect; petals 1.2-2.5 cm. long; capsules 1.5-2 cm. long.
 - 7. Capsules sparsely pilose, the hairs glandless; leaves lanceolate, hirsute on both surfaces; stem pilose; roadsides and fields, not infrequent. June-Oct. [*O. pratensis* (Small) B. L. Robins.; *Kneiffia pratensis* Small] Common Sundrops*O. pilosella* Raf.
 - 7. Capsules with a few gland-tipped hairs; leaves linear-oblanceolate, strigose; stem short-pubescent; dry soil, rare; Karnak, Pulaski Co., McDougall [*O. fruticosa* sensu auth., non L.]
.....*O. tetragona* Roth
 - 6. Stem decumbent, strigilose; petals 5-7 cm. long; hypanthium 5-15 cm. long; capsules 5-8 cm. long, 4-6 cm. wide; sandy or rocky soil, rare, s.w. Ill.; St. Clair Co., Mulford; Washington Co., Vasey [*Megapterium missouriense* (Sims) Spach]
.....*O. missouriensis* Sims
 - 5. Petals white or pink, 2.5-4 cm. long; buds nodding; capsules 4-angled and ribbed, canescent-strigose, stipitate; leaves dentate to pinnatifid,

puberulent; roadsides, occasional; native w. of the Mississippi R. June-July. [*Hartmannia speciosa* (Nutt.) Small] White evening-primrose *O. speciosa* Nutt.

1. Stem-leaves linear-filiform; stigma shallowly lobed; petals 3-4 mm. long; capsules ellipsoid, sessile, 4-angled, 4-6 mm. long; sandy soil, s. Ill., rare; known from Jackson and Johnson counties. May-June. [*Kneiffia linifolia* (Nutt.) Spach; *Peniophyllum linifolium* (Nutt.) Pennell] *O. linifolia* Nutt.

5. GAURA L.—Butterfly-weed

1. Petals 2-3 mm. long; anthers oval, attached near the middle; fruit fusiform, 4-nerved, glabrous, 6-8 mm. long; roadsides, rare; adv. from w. U.S. June-July *G. parviflora* Dougl.
1. Petals 7-9 mm. long; anthers linear, attached near the base; fruit 4-angled, pubescent, 5-6 mm. long; fields and open woods. July-Sept. *G. biennis* L.

6. CIRCAEA L.—Enchanter's-nightshade

1. Stem 30-60 cm. tall; leaves shallowly undulate-dentate, usually rounded at the base; fruit 2-loculed, 4 mm. long at maturity; woods, common. June-July. [*C. lutetiana* of auth., not L.] *C. latifolia* Hill
1. Stem 10-30 cm. tall; leaves sharply dentate, mostly cordate; fruit 1-loculed, 2 mm. long; moist banks and ravines in deep woods, n. Ill. Lake Bluff, Hill; Elgin, Vasey; Jo Daviess Co., Pepon & Moffatt. June-July *C. alpina* L.

116. HALORAGIDACEAE R. Br.—Water-milfoil Family

1. Leaves whorled (rarely subopposite or alternate).
2. Leaves (at least the immersed ones) pinnately dissected; stamens 4-8; fruit 4-lobed 1. *Myriophyllum*
2. Leaves entire, linear; flowers perfect; stamen 1; sepals and petals none; fruit 1-loculed 2. *Hippuris*
1. Leaves alternate, dentate or pectinate-pinnatifid; stamens 3-4; fruit 3-angled 3. *Proserpinaca*

1. MYRIOPHYLLUM L.—Water-milfoil

1. Carpels rounded and smooth on the back.
2. Floral leaves (bracts) entire or denticulate.
3. Leaves verticillate in fours or fives; lakes and slow streams, n.e. Ill. [*M. exalbescens* Fern.] *M. spicatum* L.
3. Leaves chiefly scattered, or absent from the flowering stems; muddy shores and shallow water, rare *M. humile* (Raf.) Morong
2. Floral leaves pinnatifid or pectinate; leaves verticillate in threes and fours; lakes and slow streams, local *M. verticillatum* L.
1. Carpels 2-keeled and roughened on the back; stamens 4.
4. Floral leaves (bracts) ovate or lanceolate, serrate; ponds and slow streams, local *M. heterophyllum* Michx.
4. Floral leaves linear, pectinate; ditches and muddy shores, chiefly in w. Ill. [*M. scabratum* Michx.] *M. pinnatum* (Walt.) BSP.

2. HIPPURIS L.—Mare's-tail

H. vulgaris L. Ponds and streams, rare. Known from Lake and McHenry counties. June-Aug.

3. PROSERPINACA L.—Mermaid-weed

P. palustris L. Ponds and slow streams, n.e. Ill. Known from Lake, Cook, and Du Page counties. July-Sept.

117. CORNACEAE Link—Dogwood Family

1. Flowers 4-merous, perfect; leaves opposite (except *Cornus alternifolia*).....1. *Cornus*
 1. Flowers 5-merous, polygamous; leaves alternate.....2. *Nyssa*

1. CORNUS L.—Dogwood

(*Svida* Opiz)

1. Flowers cymose or paniculate, without an involucre; stone of the fruit subglobose.
 2. Leaves alternate; woods, usually near streams, chiefly in the n. two-thirds of the state. May-June. Alternate-leaved Dogwood
*C. alternifolia* L. f
2. Leaves opposite.
 3. Lower surface of blades pale, strigose, strigillose, or glabrescent, the trichomes wholly appressed.
 4. Leaves pale and microscopically farinose or pulverulent beneath.
 5. Young twigs strigillose to glabrous.
 6. Mature twigs bright red; cyme dense, flat-topped; stone compressed; swampy ground, local. June-July. Red-osier Dogwood
*C. stolonifera* Michx.
 6. Mature twigs gray or brown; cyme loosely-flowered, convex; stone subglobose, not compressed; along roads, and in low ground along streams, common. May-June. [*C. paniculata* L'Her.; *C. femina* Mill.] Gray Dogwood*C. racemosa* Lam.
 5. Young twigs tomentulose; moist ground, common. May-June. [*C. amomum* sensu auth., non Mill.] Pale Dogwood
*C. obliqua* Raf.
 4. Leaves green beneath, not at all farinose, low woods, chiefly s. Ill. June
*C. stricta* Lam.
3. Lower surface of blades with loose, partly spreading pubescence, at least on the veins.
 7. Leaves roundish-ovate, woolly pubescent beneath at maturity; woods, n. Ill., extending southw. to Kankakee and La Salle counties. May. [*C. circinata* L'Her.] Round-leaved Dogwood*C. rugosa* Lam.
 7. Leaves lance-ovate.
 8. Leaves finely pubescent above; lake shores, n. Ill. May-June. Bailey's Dogwood*C. baileyi* Coult. & Evans
 8. Leaves scabrous above; moist ground on roadsides or along streams, common. May-June. Rough-leaved Dogwood. [*C. asperifolia* of auth., not Michx.]*C. drummondii* C. A. Mey.

1. Flowers capitate, with an involucre; stone ellipsoid.

9. Tree; dry woods, local; more common southw. Apr.-May [*Cynoxylon floridum* (L.) Raf.] Flowering Dogwood *C. florida* L.

9. Herb or subshrub; woods, n. Ill., known from Lake, Cook, Ogle, and La Salle counties. May-June. [*Chamaepericlimenum canadense* (L.) Aschers. & Graebn.] Bunchberry *C. canadensis* L.

2. NYSSA L.—Tupelo

1. Leaves entire; pistillate flowers 2-several together; fruit ovoid, 8-12 mm. long; rich soil, chiefly s. and s. e. Ill., but also in Cook and Kankakee counties. May. Most of the specimens examined belong, apparently, to the var. *caroliniana* (Poir.) Fern. Black Gum *N. sylvatica* Marsh.

1. Leaves more or less dentate with 1 or more large angular teeth, or entire; pistillate flower solitary; fruit ellipsoid, 1.5-3 cm. long; swamps and low woods, s. Ill., northw. to Crawford Co. Tupelo Gum *N. aquatica* L.

118. ARALIACEAE Vent.—Ginseng Family

1. Leaves alternate; carpels 5; fruit black 1. *Aralia*

1. Leaves usually three in a whorl; carpels 2 or 3; fruit red or yellowish 2. *Panax*

1. ARALIA L.

1. Shrub or small tree, prickly; woods, s. Ill. July-Aug. Hercules'-club *A. spinosa* L.

1. Herbs.

2. Umbels numerous; woods, local. July-Aug. American Spikenard *A. racemosa* L.

2. Umbels 2-7.

3. Plant leafy-stemmed, prickly or bristly; woods, rare. June-July. Bristly *Aralia* *A. hispida* Vent.

3. Plant acaulescent, not bristly; moist ground in woods, chiefly in the n. half of the state. May-June. Wild Sarsaparilla *A. nudicaulis* L.

2. PANAX L.—Ginseng

1. Leaflets sessile, obtuse; berry yellow; rhizome globose; woods; May-June. Not definitely known to occur in Ill., but to be expected in this state since it has been collected in n.w. Ind. Dwarf Ginseng *P. trifolium* L.

1. Leaflets petiolulate, acuminate; berry red; rhizome fusiform; rich woods. July-Aug. Ginseng *P. quinquefolium* L.

119. UMBELLIFERAE B. Juss.—Parsley Family

1. Leaves simple, rigid, parallel-veined, remotely bristly on the margins; inflorescence capitate 1. *Eryngium*

1. Leaves compound; inflorescence umbellate.

2. Ovary and fruit with straight or curved bristles or prickles.

3. Ovary and fruit with straight bristles; fruit much longer than wide; leaves ternately decomposed with lanceolate or ovate, toothed leaflets; flowers (in our species) white; roots aromatic 5. *Osmorhiza*

3. Ovary and fruit with hooked or barbed bristles.
4. Plants glabrous; leaves palmately 3-7-foliolate; ovary and fruit with hooked bristles4. *Sanicula*
4. Plants pubescent; leaves pinnately decomposed.
5. Ovary and fruit with hooked bristles; rays of the umbel short.....3. *Torilis*
5. Ovary and fruit with barbed bristles; rays long.....2. *Daucus*
2. Ovary and fruit not at all bristly or prickly (rarely tuberculate).
6. Fruit 2-4 times longer than wide; flowers white.
7. Leaves trifoliolate with ovate leaflets; involuclers none.....6. *Cryptotaenia*
7. Leaves ternately compound, the leaflets pinnatifid; involuclers present.....10. *Chaerophyllum*
6. Fruit less than twice as long as wide.
8. Leaves palmately or ternately divided.
9. Leaves copiously soft-pubescent; umbels 15-30 cm. broad; outer petals larger, 2-cleft23. *Heracleum*
9. Leaves usually glabrous; none of the petals enlarged.
10. Plants annual; leaves divided into filiform segments; flowers white; fruit ovoid, tuberculate, 1 mm. long.....11. *Spermolepis*
10. Plants perennial; leaf-segments broader; fruit not tuberculate.
11. Central flower and fruit of the umbellet sessile; flowers yellow; fruit flattened laterally, the ribs filiform.....12. *Zizia*
11. Central flower and fruit not sessile.
12. Plants tall, with elongated roots; involucre absent or inconspicuous.
13. Leaflets not entire.
14. Flowers yellow; calyx-teeth prominent; fruit slightly flattened dorsally, the ribs strongly winged...18. *Thaspium*
14. Flowers white; calyx-teeth small or obsolete.
15. Leaves finely divided; plants of wet ground.....24. *Conioselinum*
15. Leaves not finely divided.....21. *Angelica*
13. Leaflets entire; plants glaucous and glabrous.....13. *Taenidia*
12. Plants small, with a tuber, flowering early in spring; anthers purple; petals not inflexed at the tip; involucre present.....7. *Erigenia*
8. Leaves pinnately divided.
16. Involucre present, conspicuous; flowers white.
17. Stem mottled with purple; leaflets ovate or lanceolate, incised or serrate; ribs of the fruit prominent; oil-tubes none.....14. *Conium*
17. Stem not purple-marked.
18. Leaflets filiform.....15. *Ptilimnium*
18. Leaflets linear to lanceolate or ovate.
19. Leaflets regularly and sharply serrate to the base.
20. Fruit with slender inconspicuous filiform ribs; stylopodium conical; oil-tubes numerous and contiguous.....9. *Berula*
20. Fruit with equal, prominent corky ribs; stylopodium depressed; oil-tubes 1-3 in each interval.....16. *Sium*
19. Leaflets remotely and irregularly dentate usually only above the middle, or entire25. *Oxypolis*
16. Involucral bracts none, or few and soon deciduous.
21. Flowers white; fruit somewhat flattened laterally.
22. Leaflets serrate17. *Cicuta*
22. Leaflets not serrate8. *Eulophus*
21. Flowers yellow; fruit flattened dorsally.
23. Leaf-segments filiform; slender annuals.....19. *Anethum*
23. Leaf-segments broader.
24. Stem terete; fruit with thick corky margin, obscure ribs, and numerous oil-tubes; plants perennial.....20. *Polytaenia*
24. Stem grooved; fruit with filiform dorsal ribs, thin wings, and solitary oil-tubes; stout biennial.....22. *Pastinaca*

1. ERYNGIUM L.—Rattlesnake-master

E. yuccifolium Michx. Meadows, roadsides, and prairie soil, common. July-Aug.

2. DAUCUS L.—Carrot

D. carota L. Carrot. Fields and waste places, very common; nat. from Eur. July-Nov.

3. TORILIS Adans.—Hedge Parsley

T. japonicus (Houtt.) DC. Waste ground and edges of woods, occasional; nat. from Eur. [*T. anthriscus* (L.) Gmel.]

4. SANICULA L.—Sanicle

1. Styles longer than the bristles of the fruit, recurved.

2. Petals greenish white; sepals subulate; fruit sessile, 6 mm. long; woods, local. May-June *S. marilandica* L.

2. Petals yellowish green; sepals oval or lanceolate; fruit pedicellate, 3 mm. long; woods, common. May-June *S. gregaria* Bickn.

1. Styles shorter than the bristles; fruit 3-6 mm. long; woods, local. June-Sept. *S. canadensis* L.

5. OSMORHIZA Raf.—Sweet Cicely

(*Washingtonia* Raf.)

1. Styles and stylopodium 1-1.5 mm. in length, not longer than the petals; stems and petioles villous; woods, common. May-June *O. claytoni* (Michx.) Clarke

1. Styles and stylopodium 2-4 mm. long, exceeding the petals; stem and petioles glabrous or pubescent; woods, common. May-June. [*O. longistylis* var. *villicaulis* Fern.; *O. longistylis* var. *brachycoma* Blake] *O. longistylis* (Torr.) DC.

6. CRYPTOTAENIA DC.—Honewort

C. canadensis (L.) DC. Woods, common throughout Ill. June-July.

7. ERIGENIA Nutt.—Harbinger-of-spring

E. bulbosa (Michx.) Nutt. Woods, locally throughout Ill., except the n.w. counties. Mar.-May.

8. EULOPHUS Nutt.

(*Perideridia* Reichenb.)

E. americanus Nutt. Thickets and edges of woods, local; apparently absent from the n. counties, and from the s. part of the state. July.

9. BERULA Hoffm.

B. pusilla (Nutt.) Fern. Swamps, not common. Known in Ill. from Peoria, Woodford, Tazewell, and Mason counties; also Kane Co. July-Sept. [*B. erecta* sensu Cov., non *Sium erectum* Huds.]

10. CHAEROPHYLLUM L.—Chervil

C. procumbens (L.) Crantz. Moist ground, common. Apr.-May.

11. SPERMOLEPIS Raf.

S. inermis (Nutt.) Mathias & Constance. Sandy soil, occasional. [*S. patens* (Nutt.) B. L. Robins.]

12. ZIZIA Koch—Golden-alexanders

1. Basal leaves ternately divided; fruit ellipsoid, 3.5-4 mm. long at maturity; roadsides, fields, meadows, open woods, common. May-June
.....*Z. aurea* (L.) Koch
1. Basal leaves ovate or suborbicular, deeply cordate, crenate; fruit oval, 3 mm. long. Ringwood, McHenry Co., *Vasey* in 1858. [*Thaspium trifoliatum* (L.) Gray, var. *apterum* Gray; *Z. cordata* sensu auth., non (Walt.) Koch
.....*Z. aptera* (Gray) Fern.

13. TAENIDIA Drude

T. integerrima (L.) Drude. Woods and thickets, common throughout Ill. May-June.

14. CONIUM L.—Poison-hemlock

C. maculatum L. Waste places, nat. from Eur. June-July.

15. PTILIMNIUM Raf.—Bishop's-weed

(*Discopleura* DC.)

1. Involucral bracts or some of them pinnately cleft or parted; calyx-teeth minute; fruit 2-3 mm. long, ovate, acute; marshy ground, s. Ill., rare. June-Oct.
.....*P. capillaceum* (Michx.) Raf.
1. Involucral bracts entire, linear, short; calyx-teeth prominent; fruit 1-1.5 mm. long, ovate-orbicular, obtuse; swamps, rare. May-Sept.
.....*P. nuttallii* (DC.) Britt.

16. SIUM L.—Water-parsnip

S. cicutaefolium Gmel. Wet ground, locally throughout Ill. June-Aug.

17. CICUTA L.—Cowbane

1. Leaflets narrowly linear; axils of the upper leaves bearing bulblets; swamps, in the n. half of the state. July-Sept.
.....*C. bulbifera* L.
1. Leaflets lanceolate; axils of the leaves never bearing bulblets; swamps and wet meadows, locally throughout Ill. June-Aug.
.....*C. maculata* L.

18. THASPIUM Nutt.—Meadow-parsnip

1. Flowers deep yellow; stem glabrous; basal leaves either cordate or ternate; woods and river banks, common. May-June. [*Thaspium trifoliatum* var. *flavum* Blake; *Zizia sylvatica* Benke in *Rhodora* 35:45. 1943; *T. aureum* sensu auth., non (L.) Nutt.]
.....*T. sylvaticum* (Benke) n. comb.
1. Flowers pale yellow or cream; stem puberulent at the nodes; leaves 1-3-ternate; woods near streams, local. May-June
.....*T. barbinode*^{*} (Michx.) Nutt.

19. ANETHUM L.—Dill

A. graveolens L. Waste ground, escaped from cult.; native of Eur. July-Sept.

20. POLYTAENIA DC.

(*Pleiotænia* C. & R.)

P. nuttallii DC. Prairie Parsley. Dry soil, locally throughout Ill. May-June.

21. ANGELICA L.—Angelica

1. Stem pubescent; fruit roundish, pubescent, 4 mm. broad; oil-tubes several, distinct; dry soil, s. Ill. July. [*A. villosa* (Walt.) BSP., not Lag.]

.....*A. venenosa* (Greenw.) Fern.

1. Stem glabrous; fruit ellipsoid, 6 mm. long, glabrous; oil-tubes continuous; river banks, local. June*A. atropurpurea* L.

22. PASTINACA L.—Parsnip

P. sativa L. Roadsides, fields, and waste places, very common; nat. from Eur. June-Aug.

23. HERACLEUM L.—Cow-parsnip

H. lanatum Michx. Wet ground, local, throughout the n. two-thirds of the state. June-Aug.

24. CONIOSELINUM Fisch.—Hemlock-parsley

C. chinense (L.) BSP. Wet ground, rare. Aug.-Sept.

25. OXYPOLIS Raf.

O. rigidior (L.) Raf. Swamps, local. Aug.-Sept.

120. ERICACEAE DC.—Heath Family

1. Ovary superior.

2. Plants saprophytic, without chlorophyll, white, pink, or tawny, turning black in drying3. *Monotropa*

2. Plants with ordinary green foliage.

3. Corolla polypetalous.

4. Leaves alternate or somewhat whorled; filaments dilated.....1. *Chimaphila*

4. Leaves all basal; filaments subulate.....2. *Pyrola*

3. Corolla sympetalous.

5. Leaves entire.

6. Erect shrubs; fruit a capsule.

7. Leaves short-petioled, deciduous, not revolute-margined; flowers large, showy, somewhat irregular; anthers awnless.....4. *Rhododendron*

7. Leaves sessile or nearly so, revolute-margined, evergreen, pale beneath; flowers small, white, nodding; anthers awned.....5. *Andromeda*

6. Trailing shrubs; leaves petioled.

8. Blades cordate at the base; corolla salverform; fruit a capsule....7. *Epigaea*

8. Blades cuneate at the base; corolla urceolate; fruit a drupe.....

.....9. *Arctostaphylos*

5. Leaves denticulate or serrate.

9. Leaves resinous-dotted beneath; flowers in terminal leafy-bracted racemes; fruit a capsule.....6. *Chamaedaphne*

9. Leaves not resinous-dotted; flowers axillary; berries red.....8. *Gaultheria*

1. Ovary inferior; fruit a berry; shrubs.

10. Corolla sympetalous, urceolate or ovoid; erect shrubs; fruit black or bluish.

11. Leaves resinous-dotted; ovary 10-loculed; drupe with 10 nutlets.....10. *Gaylussacia*

11. Leaves not resinous-dotted; ovary 4-5-loculed; fruit a many-seeded berry.....11. *Vaccinium*

10. Corolla deeply 4-cleft, the lobes reflexed; flowers nodding on slender pedicels; trailing shrubs with small evergreen leaves; berries red, acid.....12. *Oxycoccus*

1. CHIMAPHILA Pursh—Pipsissewa

1. Leaves lanceolate, whitish-variegated, acute or acuminate; flowers few (1-5); dilated portion of the filaments villous; dry woods, n.e. Ill., rare. June-Aug. Spotted Wintergreen*C. maculata* (L.) Pursh

1. Leaves oblanceolate, green throughout, obtuse or acutish; flowers several (2-8); dilated portion of the filaments merely ciliate; dry woods, n.e. Ill., rare. June-Aug. [*C. umbellata* of auth., not Nutt.; *C. umbellata* var. *cisatlantica* Blake]*C. corymbosa* Pursh

2. PYROLA L.—Wintergreen

1. Style curved downward.

2. Petals greenish white; leaves oval, thin; woods, n. Ill., rare; known from Jo Daviess, Ogle, Lee, McHenry, and Cook counties. June-Aug. Shinleaf*P. elliptica* Nutt.

2. Petals pink or purple; leaves orbicular, coriaceous, the blades mostly shorter than the petioles; swamps and bogs, rare. McHenry Co., *Vasey*. June. Bog Wintergreen*P. uliginosa* Torr.

1. Style straight; petals greenish white; leaves oval; raceme 1-sided; woods, rare. Cook Co., *Babcock*. June-Aug.*P. secunda* L.

3. MONOTROPA L.

1. Flower solitary; plants glabrous, waxy-white or pink (drying black); style shorter than the ovary, glabrous; rich woods, rare or local throughout Ill. June-Aug. Indian Pipe*M. uniflora* L.

1. Flowers several; plants pubescent, tawny or reddish; style longer than the ovary, pubescent; saprophytic on humus in woods, rare. June-Aug. Elk Grove, Cook Co., *G. Pearsall* 8333. Pinesap. [*M. hypopitys* sensu Gray, non L.; *M. hypopitys* var. *rubra* (Torr.) Farw.; *Hypopitys lanuginosa* (Michx.) Nutt.]*M. lanuginosa* Michx.

4. RHODODENDRON L.

(*Azalea* L.)

R. roseum (Loisel.) Rehd. Pink Azalea. Rocky woods, rare, Union Co. May. [*A. nudiflora* sensu auth., non L.; *R. canescens* sensu auth., non Sweet; *A. prionophylla* Small]

5. ANDROMEDA L.—Bog-rosemary

A. glaucophylla Link. Bogs, rare. McHenry and Lake counties. May-June. [*A. polifolia* of auth., not L.]

6. CHAMAEDAPHNE Moench—Leatherleaf

C. calyculata (L.) Moench. Swamps and bogs, Lake Co. May.

7. EPIGAEA L.—Trailing Arbutus

E. repens L. Woods, rare. "Illinois," without definite locality, *Vasey*.

8. GAULTHERIA L.—Creeping Wintergreen

G. procumbens L. Checkerberry. Woods, rare. June-Aug. Cook Co.: Glen-coe, Aug. 8, 1873, *P. Blatchford*; Elk Grove, Aug. 4, 1943, *G. Pearsall*.

9. ARCTOSTAPHYLOS Adans.—Bearberry

A. uva-ursi (L.) Spreng. Kinnikinnick. Woods and dunes, local; known from Lake, Cook, Ogle, and Peoria counties. May-June.

10. GAYLUSSACIA HBK.

G. baccata (Wang.) K. Koch. Black Huckleberry. Rocky woods and hill-sides, chiefly in n. Ill. May-June.

11. VACCINIUM L.

(*Cyanococcus* Rydb.)

1. Shrubs mostly 2-10 m. tall.

2. Leaves glossy above, coriaceous, the margins narrowly revolute, usually bearing a few small glands; anthers 2-awned; berries black, inedible; open woods, s. Ill. May-June. Farkleberry. [*Batodendron arboreum* (Marsh.) Nutt.]*V. arboreum* Marsh.

2. Leaves not glossy, entire or ciliolate-serrulate, acute; anthers awnless; berries glaucous; swamps and bogs, n.e. Ill. May-June. Highbush Blueberry*V. corymbosum* L.

1. Low shrubs usually less than 1 m. tall.

3. Twigs densely pubescent; leaves entire, lanceolate, pubescent; shrubs 20-60 cm. tall; moist ground, rare, n. Ill. May-June. Canada Blueberry*V. canadense* Richards.

3. Twigs glabrous, or more or less puberulent in lines, rugulose; leaves mostly serrulate with bristle-tipped teeth.

4. Leaves lanceolate or elliptical, sometimes glaucous beneath; shrubs 20-40 cm. tall; sandy soil or in open woods, Kankakee, La Salle, and Cook counties. May-June. [*V. pennsylvanicum* sensu Lam., non Mill.; *V. nigrum* (Wood) Britt.] Low-bush Blueberry*V. angustifolium* Ait.

4. Leaves oval; shrubs up to 1.5 m. tall; sandy soil in open woods, locally throughout Ill., except the n. counties. May-June. Hill Blueberry*V. vacillans* Kalm

12. OXYCOCCUS Hill—Cranberry

1. Leaves ovate-lanceolate, or elliptic-lanceolate (broadest near the base), acute or acutish; pedicels mostly terminal, the bracts attached near the middle; fruit 6-9 mm. in diameter, globose, usually spotted; bogs, n. Ill.,

rare. May-July. [*Vaccinium oxycoccus* L.] Small Cranberry
*O. palustris* Pers.

1. Leaves elliptical (broadest near the middle), obtuse; pedicels mostly lateral, the bracts attached above the middle; fruit 1-2 cm. in diameter, longer than broad, not spotted; bogs, n. Ill. June-Aug. [*V. macrocarpon* Ait.] Large Cranberry*O. macrocarpus* (Ait.) Pers.

121. PRIMULACEAE Vent.—Primrose Family

1. Lobes of the calyx and corolla erect or spreading, not reflexed.
 2. Plants small scapose, acaulescent, terrestrial.
 3. Corolla-tube equalling or exceeding the calyx; plants perennial.....1. *Primula*
 3. Corolla-tube shorter than the calyx; annuals.....2. *Androsace*
 2. Plants with leafy stems.
 4. Plants aquatic; immersed leaves pectinate.....3. *Hottonia*
 4. Plants not aquatic; leaves entire.
 5. Leaves alternate.
 6. Flowers solitary, axillary, sessile; capsule circumscissile.....4. *Centunculus*
 6. Flowers in axillary racemes; capsules opening by 5 valves.....5. *Samolus*
 5. Leaves mostly opposite or whorled.
 7. Flowers white; leaves mostly near apex of stem.....6. *Trientalis*
 7. Flowers yellow or scarlet; stems leafy.
 8. Flowers scarlet (rarely white); capsules circumscissile; plants annual.....
7. *Anagallis*
 8. Flowers yellow; capsules dehiscent by valves; plants perennial.....
8. *Lysimachia*
 1. Corolla-lobes reflexed; stamens exerted, connivent, forming a cone; leaves all basal
9. *Dodecatheon*

1. PRIMULA L.—Primrose

P. mistassinica Michx. Limestone cliffs, Jo Daviess Co., rare. Apple River, *Pepoon* 272, G. N. Jones & G. D. Fuller 16351. Corolla-lobes pale lavender, the throat yellow. May-June. [*P. mistassinica* var. *noveboracensis* Fern.]

2. ANDROSACE L.

A. occidentalis Pursh. Sandy soil, local. April.

3. HOTTONIA L.

H. inflata Ell. American Featherfoil. In shallow water, s. Ill., rare. June-Aug.

4. CENTUNCULUS L.—Chaffweed

C. minimus L. Moist ground, chiefly in the w. and s. counties. May-Sept.

5. SAMOLUS L.—Brookweed

S. parviflorus Raf. Wet soil, throughout Ill., except the n. counties. June-Aug. [*S. floribundus* HBK.; *S. "pauciflorus"* Deam]

6. TRIENTALIS L.—Star-flower

T. borealis Raf. Woods and thickets, n.e. Ill.; known from Lake and Cook counties. June-July. [*T. americana* Pursh]

7. ANAGALLIS L.—Pimpernel

A. arvensis L. Waste places, occasional; nat. from Eurasia and Africa. June-Aug.

8. LYSIMACHIA L.—Loosestrife

(*Steironema* Raf.)

- 1. Leaves gland-dotted (sometimes obscurely so).
- 2. Plants more or less pubescent; corolla not dark-streaked.
 - 3. Calyx 4-5 mm. long, often dark-margined; flowers in terminal leafy panicles; roadsides and waste places, occasional; adv. from Eur. July-Sept. Cook Co., *Moffatt* in 1906, *Worthington* in 1931; Antioch, Lake Co., *G. N. Jones* 16509*L. vulgaris* L.
 - 3. Calyx 7-10 mm. long, not dark-margined; flowers in axillary whorls; roadsides and waste places, occasional; adv. from Eur. June-July. Chicago, *Worthington* in 1933*L. punctata* L.
- 2. Plants glabrous or nearly so.
 - 4. Stem erect; leaves lanceolate or elliptical; corolla with purple streaks or dots.
 - 5. Leaves usually whorled; flowers axillary; fields and open woods. June-July. Known from Cook and Ogle counties. Whorled Loosestrife*L. quadrifolia* L.
 - 5. Leaves mostly opposite.
 - 6. Flowers in terminal racemes; corolla-lobes lanceolate; wet soil. June-July. Known from Cook, Ogle, and Henderson counties. Swamp-candle*L. terrestris* (L.) BSP.
 - 6. Flowers in small head-like axillary spikes; corolla-lobes linear; wet ground or shallow water in the n. third of the state. May-June. [*Naumburgia thysiflora* (L.) Duby] Tufted Loosestrife*L. thysiflora* L.
- 4. Stem trailing; leaves opposite, roundish; flowers axillary; corolla not purple-marked; moist ground, common; nat. from Eur. May-July. Moneywort*L. nummularia* L.
- 1. Leaves not gland-dotted; stem erect; flowers nodding, on slender axillary pedicels.
 - 7. Leaves lanceolate to ovate, pinnately veined.
 - 8. Upper leaves broadly lanceolate to ovate, the long petioles conspicuously ciliate; moist ground, common. June-Aug. Fringed Loosestrife*L. ciliata* L.
 - 8. Leaves elliptical-lanceolate, short-petioled; woods and thickets, common. June-Aug.*L. lanceolata* Walt.
 - 7. Leaves linear, 1-veined, not ciliate; moist ground, locally throughout Ill. June-Aug. [*L. longifolia* Pursh] *L. quadriflora* Sims

9. DODECATHEON L.—Shooting-star

- 1. Leaves oblanceolate, tapering into the petiole.
- 2. Mature capsules ellipsoid, thick-walled, reddish brown; anthers 7-10 mm. long; corolla lilac to white; leaves often reddish at base; meadows, often along railroads, throughout Ill. May-June *D. meadia* L.

- 2. Mature capsules cylindrical, thin-walled, light brown; anthers 5-7 mm. long; corolla rose-purple; leaves pale bluish green, not reddish at base; bluffs of the Mississippi River in s. Wisc. and Minn., and n.e. Mo., and therefore to be expected in the Driftless Area of n.e. Ill.
.....*D. amethystinum* Fassett
- 1. Leaves broadly ovate, abruptly contracted at the base; corolla dark purple; rich woods and rocky ledges, s. Ill., rare; Makanda, Jackson Co., *G. H. French* in 1871; Union Co., *French* in 1873; s. Ill. (without definite locality), *Seymour**D. frenchii* (Vasey) Rydb.

122. SAPOTACEAE Reichenb.—Sapodilla Family

1. BUMELIA Sw.

- 1. Leaves, pedicels, and calyces glabrous or nearly so; clusters many-flowered; moist thickets, s. Ill., in Hardin, Pope, Pulaski, and Alexander counties. June-Aug. Southern Buckthorn*B. lycioides* (L.) Gaertn. f.
- 1. Leaves (beneath), pedicels, and calyces tomentose; clusters 6-12-flowered; woods and thickets; reported from s. Ill., but no authentic Ill. specimens seen. June-July. Woolly Buckthorn*B. lanuginosa* (Michx.) Pers.

123. EBENACEAE Vent.—Ebony Family

1. DIOSPYROS L.

D. virginiana L. Persimmon. Woods, locally throughout Ill., except the n.w. counties. May-June.

124. STYRACACEAE A. DC.—Storax Family

- 1. Ovary superior; fruits subglobose, drupaceous.....1. *Styrax*
- 1. Ovary inferior; fruit nut-like, elongate, winged.....2. *Halesia*

1. STYRAX L.—Storax

S. americana Lam. Swamps and banks of streams, s. Ill. Apr.-May.

2. HALESIA Ellis—Silverbell Tree

H. carolina L. Woods, and along streams, s.e. Ill., rare. Apr.-May.

125. OLEACEAE Lindl.—Olive Family

- 1. Leaves compound; fruit a samara.....1. *Fraxinus*
- 1. Leaves simple; fruit a drupe.....2. *Forestiera*

1. FRAXINUS L.—Ash

- 1. Petioles velvety-pubescent; calyx evident on the fruit; wing of the samara extending down the sides; twigs terete, pubescent when young.
- 2. Samara 2.5-5 cm. long, 5-7 mm. wide, the body terete; calyx 1-2 mm. long; leaflets serrate or entire, acute at the base; leaf-scars nearly straight at the top; moist ground, local. Red Ash. [*F. darlingtoniana* Britt.]*F. pennsylvanica* Marsh.

2. Samara 5-7 cm. long, about 1 cm. wide, the body flattened; calyx 3-6 mm. long; leaflets usually entire, the lower surface light green; leaf-scars deeply notched at the top; wet ground, locally in s. Ill., and northw. to St. Clair, Richland, and Lawrence counties. Pumpkin Ash. [*F. profunda* (Bush) Britt.] *F. tomentosa* Michx. f.
1. Petioles glabrous or nearly so; twigs glabrous.
3. Calyx evident on the fruit; body of the samara terete or nearly so; leaflets 5-9, commonly 7, usually more or less petiolulate; twigs terete.
4. Wing of the samara almost entirely terminal; leaflets ovate-lanceolate or oval, entire or nearly so, glabrous beneath or pubescent; leaf-scars deeply notched at the top; woods, common throughout Ill. White Ash. This species has sometimes been mistaken for *F. biltmoreana* Beadle, which apparently does not occur in Ill. *F. americana* L.
4. Wing extending down the sides of the samara; leaflets elliptic-lanceolate, usually serrate, acuminate at each end, glabrous; leaf-scars nearly straight at the top; low woods, and along roads, common. Green Ash *F. lanceolata* Borkh.
3. Calyx none or minute; body of the samara flattened, the wing decurrent; leaflets 7-11.
5. Twigs terete; leaf-scars vertically oval; lateral leaflets sessile; flowers polygamous; wet ground, local. Black Ash. [*F. sambucifolia* Lam.] *F. nigra* Marsh.
5. Twigs usually prominently quadrangular; leaf-scars lunate; lateral leaflets shortly petiolulate; flowers perfect; woods, local; chiefly through central Ill. Blue Ash *F. quadrangulata* Michx.

2. FORESTIERA Poir.

(Adelia P.Br.)

F. acuminata Poir. River banks and swamps, s. Ill.; extending northw. to Wabash and Lawrence counties, and in w. Ill. to Fulton Co. Apr.-May.

126. GENTIANACEAE Dum.—Gentian Family

1. Leaves not scale-like.
2. Leaves opposite.
3. Style filiform, mostly deciduous; anthers becoming twisted or revolute at maturity.
4. Corolla salverform; stigmas roundish 1. *Centaurium*
4. Corolla rotate; stigmas linear 2. *Sabatia*
3. Style short or none; anthers straight; corolla funnelform or salverform, without glands 3. *Gentiana*
2. Leaves whorled; stem 1-3 m. tall; anthers straight; corolla rotate, with 4 lobes and 1 or 2 nectariferous glands for each lobe 4. *Frasera*
1. Leaves (at least the lower) reduced to scales; stem slender or filiform.
5. Calyx-lobes 4; corolla 3-4 mm. long; leaves all reduced to scales 5. *Bartonia*
5. Calyx-lobes 2; corolla about 1 cm. long; upper leaves normal 6. *Obolaria*

1. CENTAURIUM Hill—Centaury

C. pulchellum (Sw.) Druce. Wet ground, nat. from Eur. June-Sept.

2. SABATIA Adans.

S. angularis (L.) Pursh. Rose-pink. Moist soil, local. July-Aug.

3. GENTIANA L.—Gentian

1. Annuals; corolla without plaits or teeth in the sinuses.
2. Corolla-lobes fringed or dentate; flowers 3-5 cm. long.
 3. Leaves lanceolate or ovate-lanceolate, with rounded or subcordate bases; corolla-lobes conspicuously fringed all around the summit, scarcely fringed on the sides; low ground, n. Ill., rare. Sept.-Oct. Fringed Gentian*G. crimita* Froel.
 3. Leaves linear or linear-lanceolate; corolla-lobes shortly fringed or merely dentate at the summit, fringed on the sides; meadows, n.e. Ill., rare. Aug.-Oct. Small Fringed Gentian*G. procera* Holm
2. Corolla-lobes with entire or rarely denticulate margins; flowers 1-2.5 cm. long; dry soil. Aug.-Oct. Stiff Gentian*G. quinquefolia* L.
1. Perennials; corolla with membranous toothed or lobed plaits in the sinuses.
 4. Margins of leaves and calyx-lobes scabrous or ciliate; corolla usually blue.
 5. Anthers separate or merely connivent; dry ground in the n. half of the state, rare. Aug.-Oct. Downy Gentian*G. puberula* Michx.
 5. Anthers cohering in a ring or short tube.
 6. Corolla-lobes distinct, longer than or equalling the plaits; wet ground, n.e. Ill., rare. Aug.-Oct. Soapwort Gentian*G. saponaria* L.
 6. Corolla-lobes none or minute, the plaits very broad; moist ground, rare. Aug.-Oct. Closed Gentian*G. andrewsii* Griseb.
 4. Margins of leaves and calyx-lobes smooth or nearly so; corolla yellowish white; moist soil, rare. Aug.-Oct. Yellowish Gentian*G. flavida* Gray

4. FRASERA Walt.

F. carolinensis Walt. American Columbo. Dry ground, rare; known from Cook, Coles, and Crawford counties. June-Aug.

5. BARTONIA Muhl.

B. virginica (L.) BSP. Yellow Bartonian. Moist ground, n. Ill., rare. Kankakee, Hill in 1873; Oregon, Ogle Co., Waite in 1885.

6. OBOLARIA L.

O. virginica L. Pennywort. Woods and thickets, s. Ill., rare. Pulaski Co., Fricke; Cobden, Earle.

127. MENYANTHACEAE G. Don—Buckbean Family

1. MENYANTHES L.—Buckbean

M. trifoliata L. In bogs, and shallow water, Lake, Cook, McHenry, and Peoria counties. May-June.

128. APOCYNACEAE Lindl.—Dogbane Family

1. Leaves alternate; flowers in terminal corymbiform cymes; corolla salverform, purple*I. Amsonia*

1. Leaves opposite.
2. Leaves not evergreen; flowers not solitary or blue.
3. Climbing plants; corolla funnelform, yellowish; flowers fragrant.....2. *Trachelospermum*
3. Erect plants; corolla campanulate or cylindrical, pink or whitish.....3. *Apocynum*
2. Leaves evergreen; stems trailing; flowers solitary, axillary, blue.....4. *Vinca*

1. AMSONIA Walt.

A. tabernaemontana Walt. Moist ground, locally throughout Ill., except the n. counties. May-June. [*Amsonia amsonia* (L.) Britt.; *Tabernaemontana amsonia* L.; *A. salicifolia* Pursh].

2. TRACHELOSPERMUM Lem.

T. difforme (Walt.) Gray. Moist woods and along streams, s. Ill., rare. Union Co., *Brendel*. June-July.

3. APOCYNUM L.—Dogbane

1. Leaves drooping or spreading, pubescent; corolla 2-3 times as long as the calyx; roadsides and open woods, common. June-Sept. Spreading Dogbane*A. androsaemifolium* L.
1. Leaves ascending; corolla only slightly longer than the calyx.
2. Leaves and inflorescence glabrous or nearly so.
3. Leaves short-petioled, elliptical, acute at apex, narrowed at base; corolla nearly white; roadsides, fields, open woods, common. June-Aug. [*A. album* Greene] Hemp Dogbane*A. cannabinum* L.
3. Leaves subsessile or sessile, oval or ovate, obtuse or acutish, the lower rounded, truncate, or subcordate and often clasping at base; corolla greenish white; roadsides and fields, more common than the preceding. June-Aug. [*A. hypericifolium* Ait.]*A. sibiricum* Jacq.
2. Leaves and inflorescence pubescent; roadsides and fields, common throughout Ill. June-Aug. Velvet Dogbane*A. pubescens* R. Br.

4. VINCA L.—Periwinkle

V. minor L. Roadsides, woods, cemeteries; nat. from Eur. May-June.

129. ASCLEPIADACEAE Lindl.—Milkweed Family

1. Stem erect or decumbent, not twining.
2. Corolla-lobes reflexed.
3. Hoods of the crown each with a small incurved horn within.....1. *Asclepias*
3. Hoods without a horn; flowers greenish2. *Acerates*
2. Corolla-lobes erect-spreading; hoods prominently crested within.....3. *Asclepiodora*
1. Stem twining.
4. Corolla-lobes erect4. *Ampelamus*
4. Corolla-lobes spreading5. *Conolobus*

1. ASCLEPIAS L.—Milkweed

1. Flowers orange or yellow; plants hirsute; sap watery; umbels cymose, terminal, many-flowered; leaves lanceolate, acute, alternate or a few opposite; follicles tomentulose, 7-15 cm. long, 1-1.5 cm. thick; roadsides or open

- woods, common. June-Aug. Butterfly-weed [*A. decumbens* L.]
*A. tuberosa* L.
1. Flowers not orange or yellow; plants not hirsute; sap milky.
 2. Leaves narrowly linear, mostly in whorls of 4-6; flowers white; follicles erect, glabrous, narrowly lanceoloid, 6-9 cm. long, on erect pedicels; roadsides, or sandy soil in fields and open woods, common. June-Aug. Horsetail Milkweed*A. verticillata* L.
 2. Leaves not narrowly linear.
 3. Leaves sessile or clasping, opposite; plants glabrous, pale green, somewhat glaucous.
 4. Follicles smooth; umbel solitary, terminal.
 5. Leaves elliptical, cordate-clasping, wavy-margined, obtuse, mucronulate, 7-15 cm. long; corolla pale greenish purple, 8-9 mm. long; sandy soil along roads and in open woods. June-July.
*A. amplexicaulis* Sm.
 5. Leaves lanceolate to ovate-lanceolate, sessile, flat, acute or obtusish, 3-7 cm. long, the margins minutely roughened; flowers greenish white; dry ground, rare. Peoria, *Brendel*; *McDonald*
*A. meadii* Torr.
 4. Follicles somewhat echinate toward the apex with a few short blunt processes, glabrous, 8-13 cm. long, ovoid or lanceoloid; umbels terminal and lateral; leaves obtuse, mucronulate, elliptical, the margins flat; prairie soil, or along roads, extending southw. to Macoupin and Coles counties. July-Aug. Smooth Milkweed
*A. sullivantii* Engelm.
 3. Leaves manifestly petioled.
 6. Leaves pubescent beneath; fruiting pedicels deflexed.
 7. Follicles tomentose, 2-3 cm. thick, warty with soft-spinulose subulate processes; flowers lavender and green; roadsides, fields, and woods, common. June-Aug. Common Milkweed*A. syriaca* L.
 7. Follicles smooth, less than 2 cm. thick.
 8. Corolla-lobes dark purple, 8-10 mm. long; hoods red or purple; follicles 9-12 cm. long; leaves 10-20 cm. long; sandy soil, along roads, and in open woods, local. June-July. Purple Milkweed*A. purpurascens* L.
 8. Corolla-lobes greenish white tinged with purple, 4-5 mm. long; hoods yellowish; follicles 6-8 cm. long; leaves 5-8 cm. long; open woods, rare. Cook Co., *Babcock**A. ovalifolia* Dec.
 6. Leaves glabrous or nearly so.
 9. Fruiting pedicels erect; leaves lanceolate, acuminate; corolla-lobes 3-5 mm. long.
 10. Flowers rose-purple, rarely whitish; leaves all opposite; moist ground, roadsides, ditches, or in woods, common. July-Aug. Swamp Milkweed*A. incarnata* L.
 10. Flowers pink or white; leaves thin.
 11. Flowers pink; median leaves usually whorled; seeds with a

- coma; dry woods, chiefly in w. and s. Ill. May-June
*A. quadrifolia* Jacq.
 11. Flowers white; leaves all opposite; seeds usually without a
 coma; wet ground in woods, rare. June-Aug.
*A. perennis* Walt.
 9. Fruiting pedicels deflexed; corolla-lobes 6-8 mm. long.
 12. Umbel loose, the pedicels drooping, 2.5-5 cm. long; leaves thin,
 elliptic-lanceolate, acuminate; corolla-lobes obtusish, greenish,
 the hoods white or pink; stem 1-1.5 cm. tall; woods. June-
 July. Poke Milkweed [*A. exaltata* (L.) Muhl.]
*A. phytolaccoides* Pursh
 12. Umbel compact, the pedicels erect or ascending, 1-2 cm. long;
 leaves oval, firm, obtuse and mucronate, or acute; corolla-
 lobes white, acute, the hoods purplish; stem 30-90 cm. tall;
 sandy soil, not common; s. Ill., extending northw. to Wabash
 and St. Clair counties. June-July. White Milkweed
*A. variegata* L.

2. ACERATES Ell.—Green Milkweed

1. Umbel solitary, terminal; plants hirsute; leaves lanceolate, acutish; stem 10-
 30 cm. tall; dry ground, n. Ill., rare. June-Aug.*A. lanuginosa* Nutt.
 1. Umbels several; plants puberulent or glabrate; stem 30-90 cm. tall.
 2. Umbels peduncled; leaves alternate, linear-lanceolate, acuminate; hoods
 entire; roadsides and fields. July-Aug. [*A. floridana* of auth., not
 (Lam.) Hitchc.]*A. hirtella* Pennell
 2. Umbels sessile; leaves chiefly opposite.
 3. Leaves lanceolate; umbels many-flowered; pedicels pubescent; hoods
 entire; roadsides and fields, local. June-Aug.
*A. viridiflora* (Raf.) Eaton
 3. Leaves linear; umbels 10-15-flowered; pedicels puberulent; hoods 3-
 toothed; dry upland woods, Quincy, Adams Co., *Rev. R. Brinker*
 3495 [*Asclepias stenophylla* Gray]*A. angustifolia* (Nutt.) Dec.

3. ASCLEPIODORA Gray

- A. viridis* (Walt.) Gray. Dry soil, s.w. Ill., not common; known from
 Randolph, Perry, and Marion counties. June-July.

4. AMPELAMUS Raf.

- A. albidus* (Nutt.) Britt. Bluevine. River banks and thickets, or along
 fences, chiefly in the s. half of the state, but extending northw. at least to Pike
 and Champaign counties. July-Aug. [*Gonolobus laevis* sensu auth., non Michx.]

5. GONOLOBUS Michx.—Climbing Milkweed

(*Odontostephana* Alexander)

1. Flowers greenish yellow; pedicels glabrous; follicles angular, smooth, gla-
 brous; along fences and in open woods. June-July. [*Vincetoxicum gono-*
carpos Walt.]*G. gonocarpos* (Walt.) Perry

1. Flowers reddish purple; pedicels pubescent; follicles pubescent, muricate; woods, s. Ill., not common. July-Aug. [*Vincetoxicum obliquum* (Jacq.) Britt.; *Matelea obliqua* (Jacq.) Woodson]*G. obliquus* (Jacq.) R. Br.

130. CONVULVULACEAE Vent.—Morning-glory Family

1. Plants with chlorophyll and normal leaves, not parasitic.
 2. Style 2-cleft; flowers small; leaves narrow, sessile or short-petioled.....1. *Stylisma*
 2. Style undivided.
 3. Calyx with a pair of subtending bracts (these in one species some distance below the calyx)2. *Convolvulus*
 3. Calyx not subtended by a pair of bracts.
 4. Stamens and style exerted; corolla salverform.....3. *Quamoclit*
 4. Stamens and style included; corolla funnelform or campanulate.....4. *Ipomoea*
 1. Plants leafless, parasitic, twining; corolla small5. *Cuscuta*

1. STYLISMA Raf.

S. pickeringii (M. A. Curtis) Gray. Sandy prairie, rare; Oquawka, Aug. 10, 1873, H. N. Patterson. [*Breweria pickeringii* (M. A. Curtis) Gray; *Bonania pickeringii* (M. A. Curtis) Gray].

2. CONVULVULUS L.—Bindweed

1. Corolla 3-5 cm. long; calyx closely subtended and enclosed by two large bracts.
 2. Plants erect, ascending, or decumbent, finely pubescent; petioles about one quarter the length of the blades; dry sandy or rocky soil, local. June-Aug. Dwarf Bindweed*C. spithameus* L.
 2. Plants twining or trailing; petioles longer.
 3. Leaves triangular-hastate or sagittate; flowers single.
 4. Leaves hastate, the basal lobes angled.
 5. Leaves and stems glabrous or nearly so; peduncles usually longer than the petioles; roadsides, and along fences, common. June-Aug. [*C. sepium* of auth., not L.] American Bindweed*C. americanus* (Sims) Greene
 5. Leaves and stems pubescent; peduncles usually not longer than the petioles, more or less wing-angled, often 2 in each axil; local, and in similar habitats. June-Aug.*C. fraterniflorus* Mack. & Bush
 4. Leaves sagittate, the basal lobes rounded.
 6. Plants glabrous or glabrate; peduncles longer than the petioles; an occasional weed in cult. ground and waste places; introd. from Eur. June-Aug. European Bindweed*C. sepium* L.
 6. Plants copiously soft-pubescent; peduncles usually not exceeding the leaves; waste places, occasional; native of e. and s.e. U.S.; on railroad ballast, Diamond L., Lake Co., Gates in 1907. Trailing Bindweed*C. repens* L.
 3. Leaves narrowly hastate; flowers double, pink; plants pubescent; waste places, occasional; native of Asia. Japanese Bindweed*C. japonicus* Thunb.

- 1. Corolla about 2 cm. long; bracts small, attached some distance below the flower; fields and waste places, common; nat. from Eur. June-Sept. Field Bindweed *C. arvensis* L.

3. QUAMOCLIT Moench—Red Morning-glory

- Q. coccinea* (L.) Moench. Fields and roadsides, occasional; native of trop. Am. July-Oct.

4. IPOMOEA L.—Morning-glory

(*Pharbitis* Choisy)

- 1. Calyx-lobes obtuse, glabrous, elliptical, 1.5-2 cm. long; corolla 5-9 cm. long, white, the tube purple within; leaves ovate, cordate; stem glabrous; capsules ovoid, 2-4-seeded; seeds hairy; root perennial, often large; fields, thickets, and waste places throughout Ill. June-Sept. Wild Sweet-potato *I. pandurata* (L.) G. F. W. Mey.
- 1. Calyx-lobes acute or attenuate, pubescent; stem pubescent; capsules globose; seeds glabrous; plants annual.
- 2. Calyx-lobes elliptical or lanceolate, acute or acuminate.
- 3. Calyx 10-12 mm. long, the lobes ciliate, acuminate; corolla 1.5-2.5 cm. long, white; leaves entire or 3-angled; fields and along streams, s. Ill., extending northw. to Peoria and Hancock counties. July-Oct. Small-flowered Morning-glory *I. lacunosa* L.
- 3. Calyx 12-16 mm. long, hirsute toward the base; corolla 5-7 cm. long, purple, pink, variegated, or white; leaves ovate, cordate, rarely 3-lobed; fields and waste places; native of trop. Am. Aug.-Oct. Common Morning-glory *I. purpurea* (L.) Roth
- 2. Calyx-lobes linear-lanceolate, attenuate, copiously hirsute below, 1.5-2.5 cm. long; corolla 2.5-4 cm. long, purple; leaves 3-lobed; fields and waste ground; native of trop. Am. July-Oct. Ivy-leaved Morning-glory *I. hederacea* Jacq.

5. CUSCUTA L.—Dodder

- 1. Sepals separate.
- 2. Flowers cymose, pedicelled; scales short; bracts entire; on various herbs, s. Ill. Aug.-Sept. *C. cuspidata* Engelm.
- 2. Flowers sessile in dense clusters; bracts serrulate.
- 3. Styles as long as the ovary; bracts few, broad, appressed; parasitic on various shrubs and herbs. July-Oct. *C. compacta* Juss.
- 3. Styles longer than the ovary; bracts numerous, narrow, their tips recurved; chiefly on Solidago, Aster, Helianthus, and other genera of Compositae *C. glomerata* Choisy
- 1. Sepals united below into a synsepalous calyx.
- 4. Flowers nearly sessile.
- 5. Corolla-scales funbriate.
- 6. Flowers 1.5 mm. long; calyx-lobes overlapping, forming angles at the sinuses; seeds depressed-globose, 1 mm. long; on various herbs and shrubs. June-Oct. [*C. arvensis* Beyr.] *C. pentagona* Engelm.

- 6. Flowers 2-3 mm. long; calyx-lobes not overlapping; seeds ovoid, 1.5 mm. long; parasitic on various herbs. June-Oct.
.....*C. campestris* Yuncker
- 5. Corolla-scales obsolete; calyx-lobes acutish; on Polygonum and other herbs. Aug.-Oct.*C. polygonorum* Engelm.
- 4. Flowers distinctly short-pedicelled.
- 7. Corolla-lobes with incurved tips.
 - 8. Scales ovate, fimbriate; capsule enclosed by the corolla; on herbs and low shrubs, chiefly Compositae and Leguminosae; known from St. Clair and Wabash counties*C. indecora* Choisy
 - 8. Scales obsolete; withered corolla remaining at the base of the capsule; parasitic on hazel (*Corylus*) and other shrubs, and on various herbs. Aug.-Oct.*C. coryli* Engelm.
- 7. Corolla-lobes spreading or recurved.
 - 9. Scales small, irregularly fimbriate; capsule depressed-globose; on various herbs and shrubs. Aug.-Oct.*C. cephalanthi* Engelm.
 - 9. Scales long, fimbriate toward the apex; capsule ovoid; parasitic on a number of different species of herbs and shrubs. July-Oct.
.....*C. gronovii* Willd.

131. POLEMONIACEAE DC.—Phlox Family

- 1. Leaves opposite, simple, entire; corolla salverform1. *Phlox*
- 1. Leaves alternate.
 - 2. Leaves simple, entire (our species); corolla salverform; stamens straight; plants annual2. *Collomia*
 - 2. Leaves pinnate; corolla tubular-campanulate; stamens declined; plants perennial (our species)3. *Polemonium*

1. PHLOX L.—Phlox

- 1. Stem erect or ascending, 30-120 cm. tall; corolla-lobes entire or notched.
- 2. Lobes of the calyx not longer than the tube.
 - 3. Calyx-lobes subulate; panicle pyramidal; leaves often 3 cm. broad; alluvial soil; extending northw. to Vermilion, Champaign, and Fulton counties. July-Sept. Garden Phlox*P. paniculata* L.
 - 3. Calyx-lobes lanceolate; leaves usually less than 2 cm. broad.
 - 4. Flowers in an elongated panicle; stem often purple-streaked; moist woods along streams; known from Bureau, Stark, and Champaign counties. June-Aug. Sweet-william Phlox*P. maculata* L.
 - 4. Flowers in corymbiform cymes; stem green; roadsides and open woods, common. May-July. Smooth Phlox*P. glaberrima* L.
- 2. Lobes of the calyx longer than the tube.
 - 5. Upper leaves linear or linear-lanceolate; stem erect or nearly so, without decumbent sterile leafy shoots; sandy soil in open woods and along roads, common. May-Aug. Downy Phlox. [*P. argillacea* Clute & Ferris]*P. pilosa* L.
 - 5. Upper leaves lanceolate or elliptical; stem decumbent at base, bearing sterile leafy shoots; moist woods, common. Apr-June. Blue Phlox
.....*P. divaricata* L.

1. Stem diffuse, much-branched, 10-20 cm. long; corolla-lobes bifid.
6. Corolla-lobes cleft to about the middle; calyx-lobes somewhat longer than the tube; plants puberulent; sandy soil, not uncommon. Apr.-June.
Sand Phlox *P. bifida* Beck
6. Corolla-lobes lobed at apex; calyx-lobes shorter than the tube; plants glabrous; limestone cliffs, s. Ill., rare; known from Jackson, Union, and Alexander counties. Apr.-May *P. stellaria* Gray

2. COLLOMIA Nutt.

C. linearis Nutt. Dry sandy soil, local; adv. from the West. May-Aug. Known in Ill. from Cook, Henry, and Rock Island counties.

3. POLEMONIUM L.

P. reptans L. Thickets and open woods, locally throughout Ill. May-June.

132. HYDROPHYLLACEAE Lindl.—Waterleaf Family

1. Leaves not entire.
2. Flowers solitary; stamens included 1. *Ellisia*
2. Flowers in scorpioid cymes or loose racemes.
3. Corolla-lobes convolute in the bud; placentae dilated, enclosing the ovules and seeds; plants perennial or biennial, with long-petioled basal leaves 2. *Hydrophyllum*
3. Corolla-lobes imbricated in the bud; placentae not dilated merely forming ridges on the wall of the ovary; plants (in our species) annual (or biennial) with leafy stems, but no conspicuous basal leaves 3. *Phacelia*
1. Leaves entire 4. *Hydrolea*

1. ELLISIA L.

E. nyctelea L. Woods, thickets, cult. ground, and waste places, common throughout Ill. May.

2. HYDROPHYLLUM L.—Waterleaf

1. Leaves pinnately divided; calyx without appendages between the lobes; plants perennial.
2. Stem glabrous or strigilose; leaf-segments 5-7, acuminate; calyx-lobes linear, strigilose on the back, ciliate; corolla pale lavender; moist woods, common. May-June *H. virginianum* L.
2. Stem retrorsely hirsute; leaf-segments 9-13, obtusish; calyx-lobes lanceolate, short-pubescent, and hispidulous; corolla white; woods, local. May-June *H. macrophyllum* Nutt.
1. Leaves (at least the upper ones) palmately 5-9-lobed.
3. Pedicels glabrous or nearly so; calyx-appendages minute or none; corolla white; plants perennial; woods, local. June-July *H. canadense* L.
3. Pedicels rather copiously pilose-hispid; calyx with reflexed appendages (1-2 mm. long) between the lobes; corolla lavender; plants biennial; woods, common. May-June. [*Decemium appendiculatum* (Michx.) Brand] *H. appendiculatum* Michx.

3. PHACELIA Juss.

- 1. Stamens longer than the corolla, the filaments pilose; corolla blue, about 1 cm. long, appendaged within, the lobes entire; inflorescence glandular, loosely many-flowered; plants biennial; moist thickets and along streams, s. Ill. Apr.-June*P. bipinnatifida* Michx.
- 1. Stamens not longer than the corolla, the filaments glabrous; corolla without appendages; inflorescence not glandular; plants annual.
 - 2. Corolla about 4 mm. long, the lobes entire; calyx-lobes pubescent on the back; racemes 2-5-flowered; reported from Mt. Carmel, Wabash Co., by Schneck, and by Gleason from Fall Creek, Adams Co. [*P. covillei* Wats.]*P. ranunculacea* (Nutt.) Constance
 - 2. Corolla 6-7 mm. long, the lobes fringed; calyx-lobes glabrous on the back, the margins ciliate; racemes 10-20-flowered, strongly 1-sided; moist woods and thickets, usually in alluvial soil, local. May-June*P. purshii* Buckl.

4. HYDROLEA L.

H. affinis Gray. Wet ground in woods, or in shallow ponds, s. Ill., rare; Union Co., *Brendel* in 1860; Pulaski Co., *Brendel* in 1860; "S. Ill." *Vasey*. June-Aug.

133. BORAGINACEAE Lindl.—Borage Family

- 1. Plants glabrous; corolla blue, tubular-funnelform; nutlets wrinkled when dry..... 4. *Mertensia*
- 1. Plants pubescent.
 - 2. Upper leaves long-petioled; flowers small, white, in 1-sided spikes; style terminal1. *Heliotropium*
 - 2. Upper leaves sessile or short-petioled; flowers pedicelled; style arising between the lobes of the ovary.
 - 3. Racemes bractless.
 - 4. Leaves small; corolla salverform, the tube very short; nutlets smooth..... 5. *Myosotis*
 - 4. Leaves large, usually more than 2 cm. wide; plants tall and coarse.
 - 5. Nutlets wrinkled8. *Symphytum*
 - 5. Nutlets prickly2. *Cynoglossum*
 - 3. Racemes bracteate, each flower borne in the axil of a bract.
 - 6. Flowers regular.
 - 7. Stem-leaves petioled; nutlets with prickles.....3. *Lappula*
 - 7. Stem-leaves sessile; nutlets not prickly.
 - 8. Corolla salverform, the lobes rounded, spreading; style included.....6. *Lithospermum*
 - 8. Corolla tubular, the lobes erect, acute; style long-exserted...7. *Onosmodium*
 - 6. Flowers blue, more or less irregular; stamens exserted.....9. *Echium*

1. HELIOTROPIUM L.—Heliotrope

H. indicum L. Waste places, occasional in the s. half of the state; adv. from India. June-July.

2. CYNOGLOSSUM L.—Hound's-tongue

- 1. Stem pilose; plant biennial; lower leaves spatulate; inflorescence many-flowered, leafy; corolla reddish or white; pastures and waste places, common; nat. from Eur. June. Common Hound's-tongue*C. officinale* L.

1. Stem hispidulous; plant perennial; lower leaves oval; inflorescence few-flowered, leafless; corolla blue; woods, s. Ill. May. Wild Comfrey
*C. virginianum* L.

3. LAPPULA Moench—Stickseed

(*Hackelia* Opiz)

1. Basal leaves ovate or cordate; flowers white; fruit globose, the nutlets prickly all over the back; woods and thickets throughout Ill. July-Sept.
*L. virginiana* (L.) Greene
1. Basal leaves spatulate; flowers blue; fruit pyramidal, the nutlets prickly only along the margins; waste places; nat. from Eur. June-July
*L. echinata* Gilib.

4. MERTENSIA Roth

M. virginica (L.) Link. Bluebells. Woods, common. Apr.-May.

5. MYOSOTIS L.—Forget-me-not

1. Calyx strigose.
2. Corolla 6-9 mm. broad; calyx-lobes shorter than the tube; wet ground, occasional; escaped from cult.; introd. from Eur. May-Sept.
*M. scorpioides* L.
2. Corolla 3-5 mm. broad; calyx-lobes about equalling the tube; n.w. Ind., but no Ill. specimens seen
*M. laxa* Lehm.
1. Calyx-tube with uncinatate or glandular pubescence, at least toward the base; corolla 2-3 mm. broad.
3. Fruiting pedicels longer than the calyx; reported from Cook Co. by Pepon
*M. arvensis* (L.) Hill
3. Fruiting pedicels not longer than the calyx.
4. Calyx-lobes equal; corolla blue; nutlets about 1 mm. long; waste places, occasional; nat. from Eur.
*M. micrantha* Pall.
4. Calyx-lobes unequal; corolla white.
5. Fruiting calyx 4-5 mm. long, bearing few hooked hairs; nutlets about 1.5 mm. long; stem 5-30 cm. tall; sandy soil in open woods and fields. May-July. [*M. virginica* of auth., doubtfully *Lycopsis virginica* L.]
*M. verna* Nutt.
5. Fruiting calyx 5-7 mm. long, with many hooked hairs; nutlets 2-2.5 mm. long; stem 30-50 cm. tall; rich soil in woods, s. Ill., not common. May-June
*M. macrosperma* Engelm.

6. LITHOSPERMUM L.—Gromwell

1. Perennials; corolla yellow; nutlets white, smooth, glossy.
2. Corolla greenish yellow, 4-5 mm. long.
3. Leaves lanceolate, acute; nutlets ovoid, 3 mm. long; corolla longer than the calyx; waste ground, occasional; nat. from Eur. May-Aug.
*L. officinale* L.
3. Leaves ovate, acuminate; nutlets globose-ovoid, 4 mm. long; corolla shorter than the calyx; dry soil. May-June
*L. latifolium* Michx.
2. Corolla bright yellow or orange, 1-2 cm. long.

- 4. Corolla-lobes erose-denticulate, the tube 1.5-3 cm. long; later flowers cleistogamous, smaller; leaves linear; prairie soil, chiefly in n.e. Ill., but extending southw. along the valley of the Illinois R. May-July. [*L. incisum* Lehm.; *L. linearifolium* Goldie]
*L. angustifolium* Michx.
- 4. Corolla-lobes entire, the tube less than 1.5 cm. long; flowers all complete; leaves lanceolate.
- 5. Stems and leaves hispid-pubescent; corolla light yellow, pubescent within at base; nutlets 3.5-4 mm. long; sandy soil. May-July. [*L. gmelini* and *L. carolinense* of auth.]*L. croceum* Fern.
- 5. Stems and leaves soft-pubescent; corolla orange yellow, glabrous within; nutlets 2.5-3 mm. long; sandy soil. Apr.-June
*L. canescens* (Michx.) Lehm.
- 1. Annual; corolla white; nutlets gray, wrinkled and pitted; waste places and fields; nat. from Eur. May-Aug.*L. arvense* L.

7. ONOSMODIUM Michx.—False Gromwell

- 1. Leaves and stems shaggy-pubescent; stems 90-120 cm. tall; nutlets with a slight constriction or rim at base; dry banks and fields, local. June-July
*O. hispidissimum* Mack.
- 1. Leaves and stems grayish-pubescent with mostly appressed hairs; stems 40-60 cm. tall; nutlets rounded at base, not at all constricted; hillsides, bluffs, and thickets, w. Ill., local. June-July*O. occidentale* Mack.

8. SYMPHYTUM L.—Comfrey

S. officinale L. Roadsides and waste places, occasional; introd. from Eur. Urbana, Champaign Co., *Waite*; Algonquin, McHenry Co., *Nason*.

9. ECHIUM L.

E. vulgare L. Blueweed. Waste places, roadsides, and fields; nat. from Eur. June-Aug.

134. VERBENACEAE J. St. Hil.—Verbena Family

- 1. Corolla 5-lobed, nearly regular; calyx tubular; fruit splitting into 4 nutlets.....
1. *Verbena*
- 1. Corolla 4-lobed and 2-lipped; calyx short, 2-cleft; fruit splitting into 2 nutlets.....
2. *Phyla*

1. VERBENA L.—Vervain

- 1. Flowers 1.5-2.5 cm. long; bracts shorter than the calyx; leaves incisely lobed or toothed; open woods, occasional. Menard Co., and southw. May-Aug.
*V. canadensis* (L.) Britt.
- 1. Flowers 4-10 mm. long.
- 2. Bracts longer than the flowers; stems decumbent, hirsute; roadsides and waste places. June-Sept. [*V. bracteosa* Michx.]
*V. bracteata* Lag. & Rodr.
- 2. Bracts shorter than the flowers; stem erect; spikes slender or filiform.
- 3. Corolla white; spikes filiform; calyx in fruit 2 mm. or less in length; leaves serrate; roadsides and open woods, common. [*V. urticaefolia*

- var. *leiocarpa* Perry & Fern] Said to hybridize with *V. bracteata*, *V. hastata*, and *V. stricta*. White Vervain *V. urticaefolia* L.
3. Corolla blue; spikes slender; fruiting calyx more than 2 mm. long.
4. Plants densely soft-pubescent; leaves oval or ovate, serrate; calyx 4-5 mm. long; nutlets ellipsoid, 2.5 mm. long; roadsides and fields, common. June-Sept. Hoary Vervain *V. stricta* Vent.
4. Plants glabrous, or sparsely rough-pubescent.
5. Leaves lanceolate, acuminate, petiolate, the petioles 1-2 cm. long; calyx 2-3 mm. long; nutlets smooth, 1.5-2 mm. long; roadsides and open woods, common. July-Sept. Blue Vervain.....
..... *V. hastata* L.
5. Leaves linear to oblanceolate, obtuse, sessile or nearly so; calyx 3-4 mm. long; nutlets reticulate, 3 mm. long; roadsides and fields. June-Aug. [*V. angustifolia* Michx.] Said to hybridize with *V. stricta*, *V. hastata*, and *V. bracteata*. Narrow-leaved Vervain *V. simplex* Lehm.

2. PHYL A Lour.—Frog-fruit

(Lippia Houst.)

P. lanceolata (Michx.) Greene. River banks, shores, along ditches, and in wet meadows, common. June-Sept.

135. LABIATAE B. Juss.—Mint Family

(Menthaceae L. F. Ward)

1. Corolla nearly regular, almost equally 5- (or 4-) lobed.
2. Leaves entire or essentially so; plants glandular-puberulent.
3. Stamens included or only slightly exerted; calyx nearly equally 5-toothed.....
..... 2. *Isanthus*
3. Stamens long-exserted and strongly upcurved; calyx with 3 long and 2 short teeth
..... 3. *Trichostema*
2. Leaves serrate, crenate, or pinnatifid.
4. Fertile stamens 2; plants inodorous..... 26. *Lycopus*
4. Fertile stamens 4; plants strongly aromatic 27. *Mentha*
1. Corolla very irregular.
5. Calyx with a small crest or callosity on the upper side, 2-lipped; stamens 4.....
..... 4. *Scutellaria*
5. Calyx not crested.
6. Flowers in compact axillary whorls, or in terminal heads or capitate clusters.
7. Bracts broad, conspicuous; corolla 2-3.5 cm. long; flowers in dense head-like clusters; calyx tubular, equally 5-toothed, 15-nerved; stamens 2.....
..... 18. *Monarda*
7. Bracts smaller; corolla shorter.
8. Stem corymbosely branched, stiffly erect; flower-heads clustered; leaves linear, lanceolate, or ovate; calyx nearly regular, 5-toothed, 10-13-nerved
..... 24. *Pycnanthemum*
8. Stem simple or with few branches.
9. Calyx with 10 recurved teeth; corolla white, 5-6 mm. long; leaves ovate, petioled, crenate, rugose; stem canescent 5. *Marrubium*
9. Calyx with fewer than 10 teeth.
10. Stamens strongly exerted beyond the corolla; flowers in dense terminal heads or spikes..... 6. *Agastache*

- 10. Stamens not strongly exerted.
 - 11. Calyx-teeth rigid, spine-tipped; corolla 6-10 mm. long 13. *Leonurus*
 - 11. Calyx-teeth not spine-tipped.
 - 12. Corolla 12-24 mm. long 14. *Lamium*
 - 12. Corolla 7-12 mm. long.
 - 13. Calyx not 2-lipped, the 5 teeth nearly equal.
 - 14. Leaves coarsely crenate-dentate; corolla whitish, 7-9 mm. long; stem copiously finely pubescent.....7. *Nepeta*
 - 14. Leaves entire; corolla purple; stem puberulent.....21. *Satureia*
 - 13. Calyx 2-lipped, the teeth conspicuously unequal.
 - 15. Stem erect or ascending.
 - 16. Stem glabrous or sparsely pubescent; flowers in dense terminal bracted spikes; stamens 4.
 - 17. Leaves entire or sparingly crenate; floral bracts ciliate; calyx reticulate-veiny, somewhat 10-nerved 12. *Prunella*
 - 17. Leaves coarsely sharply serrate; floral bracts pectinate; calyx 13-15-nerved.....10. *Dracocephalum*
 - 16. Stem hirsute; calyx 13-nerved.
 - 18. Leaves 2-10 cm. long; stamens 2, exerted.....17. *Blephilia*
 - 18. Leaves 5-10 mm. long; stamens 4.....22. *Clinopodium*
 - 15. Stems prostrate, the flowering branches erect or ascending, pubescent; leaves oval, obtuse, entire, short-petioled, 6-15 mm. long; calyx 2-lipped, the linear teeth ciliate; stamens 4; corolla purplish.....23. *Thymus*
- 6. Flowers in racemes or spikes, or solitary or few in the axils of the leaves.
 - 19. Calyx deeply 4-cleft; corolla greenish yellow, 3-4 cm. long; flowers solitary, axillary; leaves thin, palmately veined, the blade shorter than the petiole 11. *Synandra*
 - 19. Calyx 5-toothed or 2-lipped; corolla smaller.
 - 20. Leaves reniform, crenate, petioled; stems trailing; flowers blue, axillary 8. *Glechoma*
 - 20. Leaves not reniform.
 - 21. Flowers 4-6 mm. long.
 - 22. Leaves linear or lanceolate, entire or sparingly serrate; stamens 2 19. *Hedeoma*
 - 22. Leaves ovate, coarsely dentate; stamens 4.....29. *Perilla*
 - 21. Flowers more than 6 mm. long.
 - 23. Corolla with the upper lip apparently obsolete; stamens erect, exerted; flowers in long racemes.....1. *Teucrium*
 - 23. Corolla conspicuously bilabiate.
 - 24. Leaves toothed.
 - 25. Flowers in loose terminal panicles; corolla light yellow; fertile stamens usually only 2; calyx 2-lipped.....28. *Collinsonia*
 - 25. Flowers not in loose terminal panicles.
 - 26. Calyx nearly equally 5-toothed.
 - 27. Flowers 1.5-3.5 cm. long; spikes continuous, loosely flowered; fertile stamens 4.....9. *Physostegia*
 - 27. Flowers 1-1.5 cm. long.
 - 28. Fertile stamens 2, long-exserted; plants very aromatic; corolla purple; stem glabrous.....25. *Cunila*
 - 28. Fertile stamens 4, not long-exserted; spikes composed of interrupted whorls15. *Stachys*

26. Calyx 2-lipped.
 29. Fertile stamens 2; corolla purplish.....16. *Salvia*
 29. Fertile stamens 4; corolla white.....20. *Melissa*
 24. Leaves entire; calyx 2-lipped; corolla purple, 8-10 mm. long,
 puberulent; stamens 4.....22. *Clinopodium*

1. TEUCRIUM L.

1. Calyx and upper part of stem canescent-puberulent with short, somewhat curved, glandless hairs; corolla 1.5 cm. long; moist ground, common. June-Aug. *T. canadense* L.
 1. Calyx and upper part of stem short-villous with straight, often somewhat glandular hairs; corolla 1 cm. long; moist ground, locally in the n. two-thirds of the state. July-Sept. [*T. boreale* Bickn.] *T. occidentale* Gray

2. ISANTHUS Michx.

I. brachiatus (L.) BSP. False Pennyroyal. Gravelly or sandy soil along roads or in fields or open woods, local. Aug.-Sept.

3. TRICHOSTEMA L.

T. dichotoma L. Bluecurls. Sandy soil in open woods, rare. Ottawa, La Salle Co., *Seymour* in 1882; "S. Ill.," without definite locality, *Vasey*. Aug.-Sept.

4. SCUTELLARIA L.—Skullcap

1. Flowers in axillary or terminal racemes.
 2. Flowers 6-7 mm. long; plants glabrous throughout or puberulent above; moist ground, common. July-Sept. *S. lateriflora* L.
 2. Flowers 12-25 mm. long.
 3. Stem-leaves cordate; stem puberulent or short-pilose; corolla puberulent, 2-2.5 cm. long; woods, locally throughout Ill. June-July. [*S. cordifolia* Muhl., nom. subnud.; *S. versicolor* Nutt.] *S. ovata* Hill
 3. Stem-leaves not cordate.
 4. Calyces short-pilose, the hairs gland-tipped; corolla 12-14 mm. long, puberulent or nearly glabrous; wooded slopes, s. Ill. June-July. [*S. pilosa* of Michx., not Hill; *S. pilosa* var. *hirsuta* Gray]
 *S. ovalifolia* Michx.
 4. Calyces canescent, not glandular; corolla 18-20 mm. long, puberulent; woods, throughout Ill., except the n. counties. June-Sept. [*S. pubescens* Muhl., nom. nud.; *S. canescens* Nutt.]
 *S. incana* Spreng.
 1. Flowers solitary in the axils of the leaves.
 5. Flowers 16-22 mm. long; wet ground, chiefly in the n. half of the state. June-Sept. [*S. galericulata* of Am. auth., not L.]
 *S. epilobiifolia* A. Hamilt.
 5. Flowers 5-10 mm. long.
 6. Leaves entire or nearly so; nutlets wingless; rhizomes moniliform.
 7. Pubescence of stem and pedicels spreading.
 8. Leaves gland-dotted beneath; wooded bluffs, local. May-July
 *S. parvula* Michx.

- 8. Leaves not glandular; wooded slopes and ridges, local. May-June
.....*S. australis* Epling
- 7. Pubescence of stem and pedicels appressed; wooded slopes and
ridges, local. May-June. [*S. parvula* sensu auth., ex p., non
Michx.; *S. parvula* var. *ambigua* Fern.; *S. leonardi* Epling]
.....*S. ambigua* Nutt.
- 6. Leaves coarsely crenate; stem glabrous or sparingly pubescent; nutlets
winged; rhizomes slender; woods, local. May-June
.....*S. nervosa* Pursh

5. MARRUBIUM L.

M. vulgare L. Common Horehound. Waste places, roadsides, fields, and open woods, common; nat. from Eur. June-Oct.

6. AGASTACHE Clayton—Giant Hyssop

- 1. Stem glabrous or puberulent; corolla cream or greenish yellow; roadsides,
fields, and open woods, common. Aug.-Oct.*A. nepetoides* (L.) Ktze
- 1. Stem finely hirsute; corolla purple; sandy soil in open woods and along
roads, infrequent. Aug.-Sept.*A. scrophulariaefolia* (Willd.) Ktze

7. NEPETA L.

N. cataria L. Catnip. Pastures, roadsides, waste places, and open woods, common; nat. from Eur. June-Sept.

8. GLECOMA L.

- 1. Flowers 16-22 mm. long; waste ground, occasional; nat. from Eur. Peoria,
Brendel; Naperville, Du Page Co., *Kienholz* in 1915. [*Nepeta hederacea*
(L.) Trev.]*G. hederacea* L.
- 1. Flowers 10-15 mm. long; a weed in waste places, lawns, along roads, and in
moist open woods; nat. from Eur. Apr.-June. [*Nepeta glechoma* var.
parviflora Benth.]*G. heterophylla* Waldst. & Kit.

9. PHYSOSTEGIA Benth.—False Dragonhead

- 1. Corolla 18-22 mm. long; anthers 1.3-1.6 mm. long; calyx campanulate;
leaves oblanceolate or lanceolate, thin; alluvial soil, local. Aug.-Oct.
.....*P. speciosa* Sweet
- 1. Corolla 2.5-3.5 cm. long; anthers 2 mm. long; calyx tubular-campanulate;
leaves mostly linear-lanceolate, firm; prairie soil, often along railroads,
local. July-Oct. [*P. angustifolia* Fern.]*P. virginiana* (L.) Benth.

10. DRACOCEPHALUM L.—Dragonhead

(*Moldavica* Adans.)

D. parviflorum Nutt. Dry soil, rare. Athens, *E. Hall*; Wady Petra, *V. H. Chase*. May-Aug.

11. SYNANDRA Nutt.

S. hispidula (Michx.) Britt. Wooded ravines, s. Ill., not common. Jackson Co., *Clinton*. May-June.

12. PRUNELLA L.—Selfheal

P. vulgaris L. Carpenter-weed. Roadsides, waste places, fields, and open woods, common. June-Oct.

13. LEONURUS L.—Motherwort

1. Calyx much shorter than the corolla; lower leaves palmately 3-5-lobed; corolla purple, pubescent within, 9-10 mm. long; waste places, fields, roadsides, and open woods, common; nat. from Eur. May-Aug.*L. cardiaca* L.
1. Calyx as long as the corolla; lower leaves coarsely toothed; corolla pink, glabrous within, 7-8 mm. long; waste places, occasional; nat. from Eur. June-Sept.*L. marrubiastrum* L.

14. LAMIUM L.—Dead-nettle

1. Upper leaves sessile or clasping; early flowers cleistogamous; cult. ground and waste places; nat. from Eur. Mar.-May. Henbit*L. amplexicaule* L.
1. All the leaves short-petioled.
 2. Corolla 2-2.5 cm. long; leaves marked with a whitish blotch; waste places, occasional; nat. from Eur. Naperville, *Moffatt* in 1897; Geneva, *Higgins*. May-July.*L. maculatum* L.
 2. Corolla 12-18 mm. long; leaves not blotched; waste places, occasional; nat. from Eur. Apr.-May*L. purpureum* L.

15. STACHYS L.—Hedge-nettle

1. Stem glabrous, or hispidulous on the angles.
 2. Leaves sessile or nearly so; angles of the stem retrorsely hispid.
 3. Calyx glabrous, or with a few bristles toward the base; leaves nearly glabrous, lance-linear, narrowed at the base; moist ground, chiefly in the n. half of Ill. July-Aug. [*S. ambigua* (Gray) Britt., not Sm.]*S. aspera* Michx.
 3. Calyx villous; leaves lanceolate, pubescent; moist ground, not common. July. [*S. aspera* sensu auth., non Michx.; *S. tenuifolia* var. *aspera* Fern.]*S. hispida* Pursh
 2. Leaves petioled; stem glabrous or merely with a few bristles on the angles; calyx glabrous or nearly so at maturity; moist ground, common. July-Sept.*S. tenuifolia* Willd.
1. Stem retrorsely pubescent on the sides as well as the angles; leaves lanceolate, sessile or nearly so; calyx hirsute; moist ground, common. June-Sept. [*S. palustris* var. *homotricha* Fern.; *S. ambigua* sensu Epling, non Sm.]*S. homotricha* (Fern.) Rydb.

16. SALVIA L.—Sage

1. Corolla 1.5-2.5 cm. long; leaves mostly basal, lyrate-lobed or pinnatifid; stem-leaves few, reduced; dry ground, rare; s. Ill. May-June*S. lyrata* L.
1. Corolla 8-12 mm. long; stem more or less leafy, the leaves oval to linear, entire to remotely serrate, 2-8 cm. long; dry gravelly soil, Peoria, Stark, Cook, and Wabash counties; adv. from w. U.S. July-Sept. [*S. lanceafolia* Poir.; *S. lanceolata* Willd.]*S. reflexa* Hornem.

17. BLEPHILIA Raf.

1. Leaves nearly sessile, cuneate at base, nearly odorless; bracts ovate; woods; apparently absent from the n.w. counties. May-July*B. ciliata* (L.) Raf.
1. Leaves petioled, rounded or subcordate at base, and with a strong peppermint odor; woods. June-Sept.*B. hirsuta* (Pursh) Torr.

18. MONARDA L.—Bergamot Mint

1. Heads (flower-clusters) solitary and terminal on the stem or branches; stamens longer than the upper lip of the corolla.
 2. Leaves sessile or nearly so; calyx-lobes 2.5-4 mm. long; corolla pale purplish or white, the lower lip spotted; roadsides, pastures, and open woods in the s. half of Ill. May-June*M. bradburiana* Beck
 2. Leaves distinctly petioled; calyx-lobes 1-2 mm. long.
 3. Corolla lilac-purple, 2-3.5 cm. long; stem often branched; fields, open woods, and roadsides, common. June-Aug. [*M. fistulosa* var. *mollis* (L.) Benth.]*M. fistulosa* L.
 3. Corolla white or yellowish white, 2-2.5 cm. long; stem usually simple; woods, local, chiefly in the s. and centr. counties. June-Aug.
.....*M. clinopodia* L.
1. Heads in several verticillate glomerules; corolla yellowish, the upper lip purple-spotted; stamens included; bracts yellowish and purple; sandy soil, local. Aug.-Sept. Our plants belong to subsp. *villicaulis* Pennell
.....*M. punctata* L.

19. HEDEOMA Pers.

1. Leaves serrate; calyx with the upper lip triangular; dry soil in fields, along roads, and in open woods, common. July-Oct. American Pennyroyal
.....*H. pulegioides* (L.) Pers.
1. Leaves entire; calyx-teeth subulate; sandy soil in open woods, chiefly in the n. part of the state. June-July. Rough Pennyroyal*H. hispida* Pursh

20. MELISSA L.—Bee Balm

M. officinalis L. Waste places, occasional; introd. from Eur. June-Aug.

21. SATUREIA L.—Savory

S. hortensis L. Summer Savory. Waste places, introd. from Eur.; an occasional garden escape. Peoria, *Brendel*. "Spreading in a field near Naperville. Seen in '97, '98, 1900 (*Umbach*)." (Pepon) No recent specimens seen.

22. CLINOPODIUM L.—Basil

(*Calamintha* Moench)

1. Plants pubescent; leaves ovate.
 2. Flowers sessile in capitate clusters 2-3 cm. in diameter; floral bracts setaceous, villous; roadsides, fields, waste places, occasional; adv. from Eur. [*Satureia vulgaris* (L.) Fritsch] *C. vulgare* L.

2. Flowers few, in numerous loose, peduncled, axillary cymes; bracts minute; waste places, occasional; introd. from Eur. [*S. nepeta* (L.) Scheele]
*C. nepeta* (L.) Ktze
1. Plants glabrous; leaves linear, entire, sessile or nearly so; flowers 1-5 in the axils; plants often with short, basal, sterile stolons bearing oval leaves purplish beneath; rocky woods, or sandy ground, local; n.e. Ill., extending southw. to Kankakee and La Salle counties. June-Aug. [*Satureia glabra* (Nutt.) Fern.]*C. glabrum* (Nutt.) Ktze

23. THYMUS L.—Thyme

T. serpyllum L. Roadsides and old fields and gardens, occasional; introd. from Eur. July-Aug.

24. PYCNANTHEMUM Michx.—Mountain Mint

(*Koellia* Moench)

1. Leaves ovate to ovate-lanceolate.
2. Upper leaves whitish; calyx-teeth and bracts pubescent and usually with long bristles; roadsides, fields, and open woods, s. Ill., northw. to Jackson and Gallatin counties. July-Sept.
*P. pycnanthemoides* (Leavenw.) Fern.
2. Upper leaves not whitish; calyces and bracts canescent; s. Ill., northw. to Marion Co. Aug.-Sept.*P. incanum* (L.) Michx.
1. Leaves lanceolate to linear-lanceolate or linear.
3. Stem glabrous throughout (or rarely with a few minute curved hairs); leaves linear; calyx-lobes subulate-lanceolate; dry soil in open woods, along roads, and in fields, common. June-Sept.
*P. flexuosum* (Walt.) BSP.
3. Stem pubescent.
4. Stem short-pubescent on the angles; leaves linear-lanceolate, glabrous or nearly so; moist ground in woods and along roads. July-Sept.
*P. virginianum* (L.) Dur. & Jacks.
4. Stem copiously short-pilose throughout, or at least above the middle; leaves elliptic-lanceolate, finely pubescent, at least on veins beneath; sandy soil along roads and in open woods, common. July-Sept.
*P. pilosum* Nutt.

25. CUNILA L.

C. origanoides (L.) Britt. Stone Mint. Wooded ridges, s. Ill. Aug.-Oct.

26. LYCOPUS L.—Water Horehound

1. Calyx-teeth lanceolate, shorter than or equalling the mature nutlets; leaves serrate, not incised; plants stoloniferous.
2. Base of plant and stolons lacking tubers; nutlets sharply muricate on top, 1.7-2 mm. long at maturity; wet ground, not infrequent. July-Oct.
*L. virginicus* L.

2. Base of rhizome and tips of stolons often bearing a tuber; nutlets smooth or merely rugulose on top, 1-1.5 mm. long when mature; moist ground in the n. part of the state, extending southw. to Stark Co. Aug.-Sept.
.....*L. uniflorus* Michx.
1. Calyx-teeth subulate, much longer than the nutlets.
3. Leaves merely coarsely serrate; corolla twice the length of the calyx; wet ground, locally throughout Ill., except the n. counties. Aug.-Sept.
.....*L. rubellus* Moench
3. Leaves (at least the lower) more or less incised or sinuately pinnatifid; corolla slightly longer than the calyx; wet ground, common. July-Sept. [*L. sinuatus* Ell.]*L. americanus* Muhl.

27. MENTHA L.—Mint

1. Whorls of flowers mostly in terminal spikes.
2. Leaves sessile.
3. Stem finely canescent; calyx pubescent; corolla white, about 4 mm. long; roadsides and waste places, occasional; introd. from Eur. Fayette Co., *Louise Odell* in 1940*M. alopecuroides* Hull
3. Stem and calyx glabrous or nearly so; corolla pale pink, 2-2.5 mm. long; moist ground, occasional; introd. from Eur. July-Sept. Spearmint*M. spicata* L.
2. Leaves short-petioled, lanceolate, acute; stem glabrous; calyx-tube glabrous, the teeth ciliolate; corolla 4 mm. long; waste places and along roads; nat. from Eur. July-Sept. Peppermint*M. piperita* L.
1. Whorls of flowers all axillary.
4. Calyx-tube glabrous, the teeth ciliate; stem sparsely pubescent; leaves oval; corolla deep pink, 2.5 mm. long; moist ground, not common; introd. from Eur. Aug.-Oct.*M. gentilis* L.
4. Calyx-tube more or less pubescent.
5. Leaves ovate, rounded at the base; stem and leaves pubescent; waste places, occasional; introd. from Eur. July-Sept. Field Mint
.....*M. arvensis* L.
5. Leaves lanceolate, cuneate at the base; native species.
6. Stem villous; leaves pubescent; moist ground, rare. Lake Co., *Gleason & Shobe*; McHenry Co., *Nason*. [*M. arvensis* var. *canadensis* (L.) Briquet]*M. canadensis* L.
6. Stem glabrous on the sides, sparsely retrorsely pubescent on the angles; leaves nearly glabrous; moist ground, common throughout Ill. July-Sept. [*M. arvensis* var. *glabrata* (Benth.) Fern.]
.....*M. glabrior* (Hook.) Rydb.

28. COLLINSONIA L.

C. canadensis L. Richweed. Woods, s. Ill., rare. July-Sept.

29. PERILLA L.

P. frutescens (L.) Britt. Roadsides and waste places, rare; adv. from Asia. Known in Ill. from Jackson, Union, Alexander, and Wabash counties.

136. SOLANACEAE Pers.—Nightshade Family

1. Trailing or climbing shrubs; leaves entire; fruit a berry.....1. *Lycium*
 1. Herbs, usually erect, rarely climbing.
 2. Fruit enclosed in the inflated calyx.
 3. Flowers purple or blue; calyx split to the base.....2. *Nicandra*
 3. Flowers yellowish, usually with a purplish center; calyx merely toothed, not split
 3. *Physalis*
 2. Fruit not enclosed in an inflated calyx.
 4. Corolla rotate; fruit a berry4. *Solanum*
 4. Corolla funnelform, 6-20 cm. long; fruit a more or less prickly capsule.....5. *Datura*

1. LYCIUM L.

L. halimifolium Mill. Matrimony-vine. Occasional about old dwellings and along roads, escaped from cult.; native of Eurasia. May-July.

2. NICANDRA Adans.—Apple of Peru

N. physalodes (L.) Pers. Fields and waste places, occasional; native of Peru. July-Sept. [*Physalodes physalodes* (L.) Britt.]

3. PHYSALIS L.—Ground-cherry

1. Stems and leaves glabrous, or puberulent.
 2. Pedicels nearly as long as the flowers; calyx-lobes lanceolate; plants perennial with a horizontal rhizome.
 3. Pedicels upwardly strigillose; anthers 3 mm. long; fruiting calyx ovoid, nearly filled with the berry, scarcely impressed at the base; cult. ground and roadsides, common. June-Sept. [*P. philadelphia* Lam. (?)] Smooth Ground-cherry*P. subglabrata* Mack. & Bush
 3. Pedicels retrorsely or spreading-hispidulous; anthers 2 mm. long; fruiting calyx pyramidal-ovoid, obtusely 5-angled, deeply impressed at the base; cult. ground and roadsides, common. May-July. [*P. lanceolata* of auth., not Michx.] Virginia Ground-cherry*P. virginiana* Mill.
 2. Pedicels much shorter than the flowers, glabrous or puberulent; calyx-lobes deltoid-ovate; anthers 3 mm. long; plants annual; waste places and cult. ground, occasional; native of s.w. U.S. and Mex. Thornton, Hill in 1865; Wheaton, Moffatt in 1898. Tomatillo*P. ixocarpa* Brot.
 1. Stems and leaves viscid-pubescent.
 4. Corolla 15-25 mm. in diameter; anthers 3-4 mm. long; plants perennial with a horizontal rhizome; sandy or alluvial soil, or in cult. ground and along roads, common. June-Sept. [*P. virginiana* of auth., not Mill.]*P. heterophylla* Nees
 4. Corolla 5-10 mm. in diameter; anthers 1-2 mm. long; annuals with fibrous roots.
 5. Leaves ovate, subentire at base; stem sharply angled; fields, waste places, and along roads, local. June-Oct.*P. pubescens* L.
 5. Leaves cordate, oblique, sinuately toothed to the base; stem obtusely angled; alluvial soil, chiefly w. of the Illinois R. July-Sept.*P. pruinosa* L.

4. SOLANUM L.—Nightshade

1. Plants more or less prickly; pubescence of stellate hairs.
 2. Flowers lavender or white, 1.5-2 cm. in diameter; berry not enclosed by the calyx; plants perennial; fields, roadsides, waste places, or in open woods, common. June-Sept.. Horse-nettle*S. carolinense* L.
 2. Flowers yellow, 2-2.5 cm. in diameter; berry enclosed by the prickly calyx; plants annual; cult. ground and roadsides, common; native of w. U.S. Buffalo-bur. [*Androcera rostrata* (Dunal) Rydb.]
.....*S. rostratum* Dunal
1. Plants not prickly or stellate-pubescent.
 3. Plants perennial, climbing or twining; flowers purple or white; berries scarlet, poisonous; moist ground, common; nat. from Eur. June-Oct. Deadly Nightshade*S. dulcamara* L.
 3. Plants annual, erect or spreading; flowers white.
 4. Leaves pinnatifid; berries 1-1.5 cm. in diameter; an occasional weed in cult. ground or waste places. Cook Co., *Moffatt*; Carroll Co., *Clinton*. June-Sept.*S. triflorum* Nutt.
 4. Leaves entire or sinuate; berries 5-8 mm. in diameter; roadsides, river banks, and cult. ground; nat. from Eur.(?) June-Oct. Black Nightshade*S. nigrum* L.

5. DATURA L.

1. Corolla 6-10 cm. long; plants glabrous or nearly so; leaves angle-toothed; waste places and cult. ground, not uncommon; nat. from Asia. July-Oct. Jimson-weed*D. stramonium* L.
1. Corolla 10-20 cm. long; plants glandular-pubescent; leaves entire or undulate; waste places, not common; nat. from trop. Am. July-Sept.
.....*D. metel* L.

137. SCROPHULARIACEAE Lindl.—Figwort Family

(*Rhinanthaceae* Pennell)

1. Anther-bearing stamens 5; corolla rotate; leaves alternate1. *Verbascum*
1. Anther-bearing stamens 4 or 2.
 2. Corolla spurred at base; stamens 4; capsules opening by one or more slits or pores near the apex6. *Linaria*
 2. Corolla not spurred; capsules 2-4-valved.
 3. Fifth sterile stamen present: either elongated, or represented by a scale or small gland on the upper side of the corolla-tube.
 4. Sterile stamen elongated.
 5. Flowers in a dense spike; seeds winged; anthers woolly; leaves serrate, petioled; plants glabrous2. *Chelone*
 5. Flowers in a terminal panicle or raceme; seeds wingless.....3. *Penstemon*
 4. Sterile stamens represented by a small gland or scale on the upper inner side of the corolla.
 6. Corolla maroon or purplish green; leaves petioled, sharply serrate or dentate; perennials4. *Scrophularia*
 6. Corolla blue, pink, or white; upper leaves sessile; annuals.....5. *Collinsia*
 3. Fifth sterile stamen absent.
 7. Fertile stamens 2.

8. Calyx 5-parted; two stamens anther-bearing, and two sterile, or the latter sometimes absent.
9. Corolla purplish; calyx without bracts; sterile filaments 2-forked, slightly exerted7. *Lindernia*
9. Corolla whitish or yellow; calyx (in our species) subtended by a pair of sepal-like bracts; sterile filaments simple, included or lacking.....8. *Gratiola*
8. Calyx 4-parted; stamens 2, both fertile.
10. Leaves mostly in whorls of 3-6, rarely opposite; corolla tubular-funnel-form13. *Veronicastrum*
10. Leaves opposite or alternate.
11. Leaves, at least the lower, opposite; corolla rotate, 4-lobed, blue or white14. *Veronica*
11. Leaves alternate, mostly basal; in our species the corolla 2-lipped, and the flowers greenish yellow, in a terminal spike; basal leaves ovate15. *Synthyris*
7. Stamens 4, all fertile.
12. Stamens not inclosed in the upper lip of the corolla.
13. Corolla distinctly bilabiate.
14. Calyx 5-angled, 5-toothed; leaves serrate.....9. *Mimulus*
14. Calyx 5-parted, not angled.
15. Leaves entire (in our species).....10. *Bacopa*
15. Leaves not entire.
16. Leaves pinnatifid; sepals distinct or nearly so, linear.....11. *Leucospora*
16. Leaves toothed or incised; calyx campanulate, 5-lobed....12. *Mazus*
13. Corolla with a spreading, slightly unequally 5-lobed limb.
17. Corolla somewhat campanulate or rotate; anthers 2-loculed.
18. Anthers pubescent; style slender.
19. Corolla yellow; capsule acute or acuminate; leaves petioled, pinnatifid (in our species); plants parasitic on the roots of oak trees16. *Auricularia*
19. Corolla purple, pink, or white; capsule obtuse, mucronate; leaves sessile, linear to filiform.....17. *Gerardia*
18. Anthers glabrous; style short; corolla yellow; leaves mostly pinnatifid, the upper alternate, lanceolate.....18. *Dasistoma*
17. Corolla salverform; anthers 1-loculed; flowers in an elongated spike19. *Buchnera*
12. Stamens included in the upper lip of the corolla.
20. Anther-sacs dissimilar, unequal; leaves alternate, cleft or lobed (in our species)20. *Castilleja*
20. Anther-sacs alike, parallel.
21. Leaves pinnately lobed and crenate; floral bracts not spinulose-toothed21. *Pedicularis*
21. Leaves entire; floral bracts spinulose-toothed.....22. *Melampyrum*

1. VERBASCUM L.—Mullein

1. Plants densely tomentose; flowers in a dense spike; leaves strongly decurrent; fields, roadsides, waste places, common; nat. from Eur. June-Aug. Common Mullein*V. thapsus* L.
1. Plants glabrous below, glandular above; flowers racemose; corolla white or yellow; roadsides and pastures, common; nat. from Eur. June-Aug. Moth Mullein*V. blattaria* L.

2. CHELONE L.—Turtlehead

1. Corolla white or tinged with pink; sepals obscurely ciliolate; sterile filament

green; wet ground in woods, local; chiefly in the n. two-thirds of the state. July-Oct. [*C. linifolia* (Cofeman) Pennell ex Rydb.; *C. glabra* var. *elongata* Pennell & Wherry]*C. glabra* L.

1. Corolla rose-purple; sepals ciliate; sterile filament whitish; low woods, in the s. and w. counties, local. Aug.-Oct. [*C. obliqua* var. *speciosa* Pennell & Wherry]*C. obliqua* L.

3. PENSTEMON Mitch.—Penstemon

1. Plants more or less glandular or pubescent, at least on the calyces and pedicels; corolla 1.5-3 cm. long; leaves denticulate or entire.
2. Stem pubescent or puberulent.
3. Corolla violet-purple, 2.5-3 cm. long, the lobes whitish; stem pubescent; bluffs, and dry woods and thickets, local. May-June*P. hirsutus* (L.) Willd.
3. Corolla white, lined with purple within; stem puberulent.
4. Corolla 2-2.5 cm. long, the throat narrow, flattened, narrowly ridged within, the anterior lobes projecting beyond the posterior ones; dry woods, local. May-June*P. pallidus* Small
4. Corolla 1.5-2 cm. long, the throat inflated, only slightly ridged within, the anterior lobes scarcely exceeding the posterior ones; near Mt. Carmel, *Schneck**P. deamii* Pennell
2. Stem glabrous below the inflorescence.
5. Inflorescence open, paniculate.
6. Corolla white or tinged with purple; calyx-lobes lanceolate to ovate; sandy soil in fields and thickets, and open woods. May-July. Fox-glove Penstemon*P. digitalis* Nutt.
6. Corolla purple; calyx-lobes linear-lanceolate, attenuate; alluvial soil and wooded slopes. May-July*P. calycosus* Small
5. Inflorescence narrow, interrupted; corolla white or purplish; calyx-lobes ovate, acuminate, 3-4 mm. long, glandular; sandy soil in open woods. May-July*P. tubaeiflorus* Nutt.
1. Plants glabrous throughout and somewhat glaucous; leaves entire; corolla 4-5 cm. long, lavender; sandy soil. May-June. Henderson Co., *Patterson**P. grandiflorus* Nutt.

4. SCROPHULARIA L.—Figwort

1. Corolla dull; sterile stamen brownish purple; capsules ovoid, glossy, 4-7 mm. long; woods, throughout Ill. July-Sept.*S. marilandica* L.
1. Corolla glossy; sterile stamen greenish yellow; capsules subglobose, dull, 7-9 mm. long; open woods, throughout Ill., except the s. counties. June. [*S. leporella* Bickn.]*S. lanceolata* Pursh

5. COLLINSIA Nutt.

C. verna Nutt. Blue-eyed Mary. Moist woods. Apr.-May.

6. LINARIA L.

1. Flowers in terminal racemes; plants glabrous.
2. Corolla yellow, 2-3 cm. long; calyx-lobes ovate; roadsides and fields; nat.

- from Eur. May-Sept. Butter-and-Eggs *L. vulgaris* Mill.
 2. Corolla blue or white, 10-12 mm. long; calyx-lobes lanceolate; sandy soil.
 May-June *L. canadensis* (L.) Dum.-Cours.
 1. Flowers axillary; plants glandular or pubescent; corolla 5-10 mm. long.
 3. Leaves linear-spatulate to linear; stem erect, glandular; calyx-lobes linear;
 roadsides and waste places, adv. from Eur. May-Aug. [*Chaenorrhimum*
minus (L.) Lange] *L. minor* (L.) Desf.
 3. Leaves hastate; stem prostrate, pubescent; calyx-lobes lanceolate; waste
 ground, nat. from Eur. Sangamon Co., G. D. Fuller & G. M. Link
 567. June-Sept. [*Kickxia elatine* (L.) Dumort.]
 *L. elatine* (L.) Mill.

7. LINDERNIA All.

(*Ilysanthes* Raf.)

L. dubia (L.) Pennell. Moist ground, often along streams, ditches, and ponds, locally abundant throughout Ill. July-Sept. [*I. anagallidea* (Michx.) Raf.; *I. attenuata* (Muhl.) Small; *I. dubia* (L.) Barnh.]

8. GRATIOLA L.

1. Corolla golden yellow, 10-15 mm. long; sterile filaments 2, slender; capsule 3 mm. long; seeds brown; leaves entire or remotely denticulate; plants perennial, with rhizomes; wet ground, rare. Forest Park, Cook Co., Seymour. [*G. aurea* Muhl.] *G. lutea* Raf.
 1. Corolla light yellow or white, 6-12 mm. long; sterile filaments minute or none; capsules 3-7 mm. long; seeds yellow; leaves repand to serrate; annuals with fibrous roots.
 2. Pedicels slender, 1-2.5 cm. long in fruit, equalling or exceeding the leaves; plants glandular-puberulent; capsules ovoid; wet ground and borders of ponds, not uncommon. May-Aug. [*G. virginiana* of auth., not L.]
 *G. neglecta* Torr.
 2. Pedicels stouter, usually shorter than the leaves, less than 1 cm. long; plants glabrous; capsules globose; shores and ditches, less common than the preceding. May-June. [*G. sphaerocarpa* Ell.] *G. virginiana* L.

9. MIMULUS L.—Monkey Flower

1. Corolla violet; stem erect; leaves lanceolate to oval.
 2. Leaves sessile, clasping; pedicels longer than the calyx; along streams, not uncommon. July-Sept. *M. ringens* L.
 2. Leaves short-petioled; pedicels shorter than the calyx; wet ground, throughout Ill., except the n. counties. July-Sept. *M. alatus* Soland.
 1. Corolla yellow; stems slender, creeping; leaves suborbicular; wet ground in the n. half of the state. June-Sept. [*M. glabratus* var. *fremontii* (Benth.) Grant; *M. jamesii* T. & G.] *M. geyeri* Torr.

10. BACOPA Aubl.

(*Hydrantheium* HBK.; *Macuillamia* Raf.)

B. rotundifolia (Michx.) Wettst. Water Hyssop. Margins of ponds, local. July-Sept. [*Bramia rotundifolia* (Michx.) Britt.]

11. LEUCOSPORA Nutt.

L. multifida (Michx.) Nutt. Sandy soil near streams, throughout Ill., except the n. counties. July-Oct. [*Conohea multifida* (Michx.) Benth.]

12. MAZUS Lour.

M. japonicus (Thunb.) Ktze. Waste ground, or in lawns; adv. from e. Asia. Chicago, G. D. Fuller in 1943. [*M. rugosus* Lour.]

13. VERONICASTRUM Fabr.

(*Leptandra* Nutt.)

V. virginicum (L.) Farw. Culver-root. Meadows and thickets, common. July-Aug. [*Veronica virginica* L.]

14. VERONICA L.—Speedwell

1. Flowers in racemes; perennials with rhizomes.
2. Racemes in the axils of the leaves.
 3. Capsules pubescent; stems and leaves pubescent; blades oval, serrate, short-petioled; waste ground; nat. from Eur. May-Sept.
.....*V. officinalis* L.
 3. Capsules glabrous (or with a few gland-tipped hairs); stems and leaves glabrous or sparsely glandular-puberulent; plants of wet soil.
 4. Leaves linear or linear-lanceolate, entire or remotely denticulate; capsules much broader than long, notched at both ends, much shorter than the pedicels; along ditches and ponds. June-Aug.
.....*V. scutellata* L.
 4. Leaves lanceolate to ovate, serrate or crenate; capsules nearly orbicular.
 5. Leaves short-petioled; plants glabrous throughout; swampy ground in the n. half of the state, rare. June-Aug.
.....*V. americana* (Raf.) Schw.
 5. Leaves sessile, clasping; plants minutely glandular, at least in the inflorescence; ditches and sloughs. June-Sept.*V. connata* Raf.
2. Racemes terminal; leaves ovate or oval, entire or obscurely crenate, glabrous; capsules puberulent, orbicular, obcordate, 3-4 mm. broad; roadsides, fields, or lawns; nat. from Eurasia. May-June*V. serpyllifolia* L.
1. Flowers solitary in the axils of the upper leaves; plants annual.
 6. Leaves oblanceolate or spatulate to linear, entire or shallowly toothed, glabrous; corolla whitish, 2-3 mm. in diameter; capsules emarginate, 3-4 mm. broad, the style not more than 0.5 mm. long; stem glabrous or with gland-tipped trichomes; fields, gardens, and roadsides, common. May-June. [*V. xalapensis* HBK.]*V. peregrina* L.
 6. Leaves ovate or oval, serrate or dentate, pubescent; corolla blue; capsules obcordate.
 7. Pedicels shorter than the leaves; corolla 2-3 mm. broad; capsules 3-4 mm. broad; lawns, fields, and waste places, common; nat. from Eur. Apr.-June*V. arvensis* L.

7. Pedicels as long as the leaves or longer; corolla about 1 cm. in diameter; capsules 7-8 mm. broad; an occasional weed in lawns and waste ground; nat. from Eur. Apr.-Aug. [*V. tournefortii* sensu C. C. Gmel., non Schmidt; *V. buxbaumii* Tenore; *V. byzantina* (Sm.) BSP.] *V. persica* Poir.

15. SYNTHYRIS Benth.

(*Besseyia* Rydb.)

- S. bullii* (Eaton) Heller. Sandy or gravelly soil, n.w. Ill., extending southw. to Henderson Co.; also in Cass and Menard counties. May-June. [*S. houghtoniana* Benth.]

16. AUREOLARIA Raf.—False Foxglove

(*Dasystema* Benth.)

1. Plants perennial, not glandular; corolla 3-5 cm. long; seeds winged.
 2. Plants glabrous or nearly so; stem glaucous; sandy soil in open woods. Aug.-Sept. [*D. virginica* ex p. sensu Britt.; *D. quercifolia* (Pursh) Benth.; *Gerardia virginica* of auth., not *Rhinanthus virginicus* L.]
 *A. flava* (L.) Farw.
 2. Plants grayish puberulent; open woods. July-Oct. [*A. grandiflora pulchra* Pennell] *A. grandiflora* (Benth.) Pennell
 1. Plants annual, more or less glandular; corolla 2-3 cm. long; capsules ellipsoid, 1-1.5 cm. long; seeds wingless; dry open woods, n.e. Ill., rare. Aug.-Sept. [*A. pedicularia intercedens* Pennell] *A. pedicularia* (L.) Raf.

17. GERARDIA L.

(*Agalinis* Raf.)

1. Leaves auriculate at base, lanceolate; flowers 1.5-2 cm. long, nearly sessile; anthers of the shorter filaments smaller; fields and open woods. Aug.-Sept. [*Tomanthera auriculata* (Michx.) Raf.; *Otophylla auriculata* (Michx.) Small] *G. auriculata* Michx.
 1. Leaves linear, entire, not auriculate; anthers uniform.
 2. Pedicels of the flowers less than twice the length of the calyx.
 3. Capsules ellipsoid, 8-10 mm. long; calyx-teeth triangular-lanceolate; corolla 18-25 mm. long; leaves scabrous; gravelly or sandy soil. local. Aug.-Sept. *G. aspera* Dougl.
 3. Capsules subglobose, 3-6 mm. long; calyx-teeth subulate, short.
 4. Flowers 2-3 cm. long; moist sandy soil. Aug.-Oct. *G. purpurca* L.
 4. Flowers 14-18 mm. long; moist ground. Aug.-Sept.
 *G. paupercula* Gray
 2. Pedicels of the flowers more than twice the length of the calyx.
 5. Leaves linear to linear-lanceolate, flat; moist ground, and on wooded slopes, local. Aug.-Oct. Somewhat variable, and several varieties have been described *G. tenuifolia* Vahl
 5. Leaves filiform-linear, the margins revolute.
 6. Stem strict, simple or few-branched, striate-angled, the angles minutely scabrellous; dry sandy soil, local. Aug.-Sept.
 *G. skimmeriana* Wood

6. Stem usually much-branched, nearly terete (at least below), smooth or nearly so; wooded slopes and ridges, local. Aug.-Oct.
*G. gattingeri* Small

18. DASISTOMA Raf.

D. macrophylla (Nutt.) Raf. Mullein Foxglove. Dry soil in woods near streams; often parasitic on the roots of *Aesculus*. July-Aug.

19. BUCHNERA L.

B. americana L. Blue Hearts. Sandy soil, rare. July-Sept. Chicago, *Babcock*; Menard Co., *Hall*.

20. CASTILLEJA Mutis—Indian Paint Brush

1. Plants perennial, 10-30 cm. tall; bracts green; corolla yellowish white, 4-5 cm. long; gravelly or sandy soil, n. Ill.; known from Winnebago, McHenry, Lake, and Du Page counties. June-Aug.*C. sessiliflora* Pursh
 1. Plants annual or biennial, 30-60 cm. tall; bracts scarlet or yellowish; corolla green, 2-2.5 cm. long; moist ground, throughout Ill., except the most southerly counties. May-June*C. coccinea* (L.) Spreng.

21. PEDICULARIS L.

1. Stem glabrous or nearly so, 60-90 cm. tall; leaves opposite, nearly sessile, shallowly lobed; spikes 5-10 cm. long; lower lip of the corolla 10-12 mm. long, nearly as long as the upper; capsules ovoid, scarcely longer than the calyx; swampy ground. Aug.-Oct.*P. lanceolata* Michx.
 1. Stem pubescent, 10-30 cm. tall; leaves alternate, petioled, deeply lobed; spikes 10-20 cm. long; lower lip of the corolla about 8 mm. long, much shorter than the upper; capsules lanceoloid, about three times as long as the calyx; sandy soil in open woods. May*P. canadensis* L.

22. MELAMPYRUM L.

M. lineare Desr. Moist ground, rare. June-Aug. Cook Co., *Moffatt*. [*M. americanum* Michx.]

138. LENTIBULARIACEAE Lindl.—Bladderwort Family

1. UTRICULARIA L.—Bladderwort

1. Pedicels recurved in fruit.
 2. Flowers 1-2 cm. long, the spur conspicuous, slightly curved upward; ponds and slow streams, chiefly in the n. half of the state; the common species in Ill. July-Aug. [*U. vulgaris* var. *americana* Gray; *U. macrorhiza* Le Conte]*U. vulgaris* L.
 2. Flowers 4-6 mm. long; spur short, blunt, almost obsolete; lake shores or stagnant water. Lake Co., *Hill*; Ringwood, *Vasey**U. minor* L.
 1. Pedicels erect or ascending in fruit; spur evident.
 3. Stems slender, elongated, creeping in the mud or floating.



4. Leaf-segments capillary; upper lip of the corolla equalling the lower; lake shores or shallow water, n.e. Ill.; also in St. Clair and Jackson counties. Aug.-Oct. *U. gibba* L.
4. Leaf-segments linear, flat, often minutely serrulate; upper lip of the corolla about half the length of the lower; shallow water. July-Aug. Peoria, *Brendel*; Waukegan, *Hill* *U. intermedia* Hayne
3. Stems short, submerged in the mud; leaves rarely seen; corolla 1.5-2 cm. broad, the subulate spur 7-12 mm. long, pointing downward; lake shores and peat bogs, rare. Lake Co., *Hill*; Cook Co., *Pearsall* in 1943. July-Aug. [*Stomoisia cornuta* (Michx.) Raf.] Horned Bladderwort *U. cornuta* Michx.

139. OROBANCHACEAE Lindl.—Broomrape Family

1. Flowers of 2 kinds, the lower cleistogamous and fertile, the upper complete but usually sterile; stamens included; branches slender, ascending, simple.....1. *Epifagus*
1. Flowers all perfect and complete.
2. Flowers in a thick scaly spike; stamens exerted; plants glabrous.....2. *Conopholis*
2. Flowers solitary or racemose; stamens included; plants glandular-puberulent.....3. *Orobanche*

1. EPIFAGUS Nutt.

(*Epiphegus* Spreng.; *Leptamnium* Raf.)

E. virginiana (L.) Bart. Beech-drops. Parasitic on the roots of beech trees. Sept.-Oct.

2. CONOPHOLIS Wallr.—Squaw-root

C. americana (L.f.) Wallr. In wooded ravines, parasitic on the roots of oak trees, not common. Cook Co., *Hill*; Vermilion Co., *G. N. Jones* 13346.

3. OROBANCHE L.—Broomrape

(*Thalesia* Raf.; *Aphyllon* Gray)

1. Flowers numerous, sessile or short-stalked, spicate or racemose.
2. Calyx 4-lobed, the lobes triangular-ovate, about as long as the tube; flowers subtended by 1 large and 2 small bracts; raceme loosely flowered; stem branched; parasitic on roots of herbaceous plants; adv. or nat. from Eur. *O. ramosa* L.
2. Calyx 5-cleft, the lobes linear-lanceolate, 7-8 mm. long, longer than the tube; flowers subtended by 1 or 2 bracts; spikes terminal, dense; stem simple; parasitic on various plants, including *Ambrosia*, *Artemisia*, and other *Compositae* in sandy soil, not common. Aug.-Sept. [*Myzorhiza ludoviciana* (Nutt.) Rydb.] *O. ludoviciana* Nutt.
1. Flowers few or solitary on bractless scapes; calyx 5-cleft.
3. Flowers 3-15; calyx-lobes triangular-lanceolate, shorter than the tube; parasitic on *Artemisia* and other *Compositae* in sandy soil, local. Savanna, Carroll Co., July 10, 1909, *H. C. Cowles* *O. fasciculata* Nutt.
3. Flower solitary; calyx-lobes subulate, longer than the tube; parasitic on various plants, not common. May-June. [*Anoplantus uniflora* (L.) Endl.] *O. uniflora* L.

140. BIGNONIACEAE Pers.—Trumpet-creeper Family

- 1. Trees; leaves simple, ovate.
 - 2. Leaves opposite; stamens 4; capsules ovoid; pith chambered or hollow.....1. *Paulownia*
 - 2. Leaves usually in whorls of 3; stamens 2; capsules long-cylindrical; pith continuous.....2. *Catalpa*
- 1. Climbing or trailing shrubs; leaves compound; anther-bearing stamens 4.
 - 3. Leaflets 2, entire; leaves with a tendril; pods flat.....3. *Bignonia*
 - 3. Leaflets 7-11, serrate; leaves without a tendril; pods cylindrical.....4. *Campsis*

1. PAULOWNIA Sieb. & Zucc.

P. tomentosa (Thunb.) Steud. Princess Tree or Paulownia. Cultivated; native of China; sometimes apparently spontaneous in s. Ill. Golconda, Pope Co., G. N. Jones 12012, 12013. [*P. imperialis* Sieb. & Zucc.]

2. CATALPA Scop.

- 1. Leaves long-acuminate, inodorous; panicles few-flowered, about 15 cm. long; corolla about 6 cm. in diameter, the lower lobe emarginate; capsules about 1.5 cm. thick; s. Ill.; often planted elsewhere. June-July*C. speciosa* Warder
- 1. Leaves abruptly acuminate, with an unpleasant odor; panicles many-flowered, 20-25 cm. long; corolla 4-5 cm. in diameter, the lower lobe entire or nearly so; capsules 5-8 mm. thick; commonly planted; native of s.e. U.S.*C. bignonioides* Walt.

3. BIGNONIA L.

B. capreolata L. Cross-vine. Alluvial soil, s. Ill. May. [*Anisostichus capreolata* (L.) Bureau]

4. CAMPSIS Lour.—Trumpet-creeper

C. radicans (L.) Seem. Open woods throughout Ill., except the n. counties. June-Aug. [*Bignonia radicans* L.; *Tecoma radicans* (L.) Juss.]

141. MARTYNIACEAE Link—Unicorn-plant Family

1. MARTYNIA L.—Unicorn-plant

M. louisianica Mill. River banks and waste ground, local. July-Sept. [*M. proboscidea* Glox.]

142. ACANTHACEAE J. St. Hil.—Acanthus Family

- 1. Plants growing in water or along muddy shores; leaves linear-lanceolate; corolla distinctly 2-lipped; fertile stamens 21. *Dianthera*
- 1. Plants of drier ground; leaves wider; corolla nearly regular; fertile stamens 4.....2. *Ruellia*

1. DIANTHERA L.—Water-willow

D. americana L. Common along muddy shores of streams. June-Aug.

2. RUELLIA L.

1. Flowers sessile or nearly so.
 2. Stem hirsute; calyx lobes linear-filiform, 0.5-1 mm. wide, exceeding the capsule; leaves nearly sessile; roadsides and open woods, common throughout Ill. June-Aug. Hairy Ruellia*R. ciliosa* Pursh
 2. Stem glabrous or puberulent; calyx-lobes linear-lanceolate, 2-4 mm. wide, about equalling the capsule; leaves petioled; alluvial soil throughout the state except the n. counties. June-July. Smooth Ruellia*R. strepens* L.
1. Flowers on slender peduncles bearing a pair of leaf-like bracts at the apex; stem puberulent; calyx-lobes subulate-filiform, shorter than the capsule; dry open woods, s. Ill. June-Aug. Stalked Ruellia*R. pedunculata* Torr.

143. PHRYMACEAE Schauer—Lopseed Family

1. PHRYMA L.—Lopseed

P. leptostachya L. Alluvial soil in woods, common. June-Aug.

144. PLANTAGINACEAE Lindl.—Plantain Family

1. PLANTAGO L.—Plantain

1. Leaves ovate, oval, lanceolate or spatulate, not linear.
 2. Leaves narrowed at the base; veins free to the base.
 3. Spikes cylindrical.
 4. Capsules 4-18-seeded; corolla-lobes spreading or reflexed in fruit; leaves ovate or oval; plants perennial.
 5. Capsules ellipsoid, 4-5 mm. long; sepals elliptic, acutish, 2.5-3 mm. long; seeds 1.5-2 mm. long; leaves glossy green, the petioles usually purplish at base; waste places, roadsides, lawns, fields, and open woods, very common. June-Sept. Common Plantain*P. rugelii* Dcne.
 5. Capsules ovoid, about 3 mm. long; sepals oval, obtuse, 1.5 mm. long; seeds 0.6-0.7 mm. long; leaves dull green; waste places in cities, not common; probably adv. from Eur.; known in Ill. from Chicago, *Hill*, *Moffatt*, and Peoria, *Brendel*, *McDonald*. Broad-leaved Plantain*P. major* L.
 4. Capsules 2-seeded, ellipsoid, 2 mm. long, circumscissile at the middle, tipped with the persistent corolla; seeds yellowish brown, concave on one side, 1.5 mm. long; sepals pubescent, scarious-margined; leaves spatulate or obovate; plants annual or biennial; fields and roadsides, not infrequent. May-July*P. virginica* L.
 3. Spikes ellipsoid; leaves lanceolate; seeds 2, hollowed on the inner surface; waste places, roadsides, fields, lawns, very common; nat. from Eur. May-Sept. Buckhorn Plantain*P. lanceolata* L.
2. Leaves, or some of them, cordate at base; veins branching from the midrib; spikes cylindrical; capsules 2-4-seeded, 4-5 mm. long; along ditches, local. May-July. Heart-leaved Plantain*P. cordata* Lam.

1. Leaves linear.

- 6. Capsules 4-seeded; calyx-lobes erect and converging over the top of the capsule; stamens 2; fields, roadsides, and open woods, chiefly in the s. half of the state. Apr.-May *P. pusilla* Nutt.
- 6. Capsules 2-seeded; calyx-lobes spreading or reflexed in fruit, not closed over the top of the capsule.
- 7. Bracts much longer than the flowers; fields, roadsides, and open woods, common. June-Aug. Bracted Plantain *P. aristata* Michx.
- 7. Bracts not longer than the flowers; sandy soil in fields and along roads, n. Ill., local. May-Aug. *P. purshii* R. & S.

145. RUBIACEAE B. Juss.—Madder Family

- 1. Shrubs; leaves opposite or whorled; flowers in dense globose heads.....2. *Cephalanthus*
- 1. Herbs.

2. Leaves opposite.

- 3. Flowers axillary, sessile or nearly so.
- 4. Plants pubescent; fruit separating into 2 or 3 indehiscent carpels.....4. *Diodia*
- 4. Plants glabrous; fruit a capsule of 2 carpels, one dehiscent, the other indehiscent5. *Spermacoce*
- 3. Flowers pedicellate, cymose or solitary.
- 5. Plants trailing; leaves evergreen, cordate at base; fruit a pair of united red drupes3. *Mitchella*
- 5. Plants erect; leaves not as above; fruit a capsule.....1. *Houstonia*
- 2. Leaves apparently in whorls of 4-86. *Calium*

1. HOUSTONIA L.—Bluets

- 1. Flowers cymose; stems 10-50 cm. tall; plants perennial.
- 2. Calyx-lobes much exceeding the capsule, and about twice as long as the calyx-tube; stem-leaves lanceolate to linear-lanceolate; open rocky woods, local; chiefly in the centr. and s. parts of Ill., but also in Will and La Salle counties; May-July. [*H. purpurea* var. *calycosa* Gray; *H. purpurea* of Ill. reports] *H. lanceolata* (Poir.) Britt.
- 2. Calyx-lobes slightly if at all exceeding the capsule, about as long as the calyx-tube; stem-leaves linear or linear-oblancoolate; thin soil on wooded ridges and slopes, rare; s. Ill., northw. to Jackson, Williamson, and Saline counties. May-July *H. longifolia* Gaertn.
- 1. Flowers solitary; stems very slender, 1-5 (-10) cm. tall.
- 3. Pedicels mostly 2-5 cm. long; flowers with a yellow center; plants perennial with a filiform rhizome; fields and open woods, local; known from Cook, Kankakee, St. Clair, and Johnson counties. Apr.-June *H. caerulea* L.
- 3. Pedicels mostly 0.5-2 cm. long; flowers without a yellow center; plants annual; dry ground, rare. Apr.-May. Truro, Knox Co., May 10, 1908, V. H. Chase 1632 *H. minima* Beck

2. CEPHALANTHUS L.—Buttonbush

C. occidentalis L. Along streams and lake shores, and in swamps, common throughout Ill. June-Aug.

3. MITCHELLA L.—Partridge-berry

M. repens L. Woods, local; known from Cook, La Salle, Clark, Jackson, Johnson, and Pope counties. May-July.

4. DIODIA L.

(*Diodella* Small)

D. teres Walt. Rough Buttonweed. Fields, roadsides, and open woods, chiefly in centr. and s. Ill. July-Aug.

5. SPERMACOCE L.

S. glabra Michx. Smooth Buttonweed. Muddy shores, river banks, and wet ground in woods in the s. and w. counties. July-Aug.

6. GALIUM L.—Bedstraw

1. Ovary and fruit uncinat-hispid, or at least puberulent.
2. Leaves cuspidate, 1-veined, 6-8 in each whorl.
 3. Leaves narrowly oblanceolate to linear; stems long, weak, reclining, retrorsely hispidulous; corolla white; plants annual; woods and thickets, very common; nat. from Eur. May-June. Goose-grass
.....*G. aparine* L.
 3. Leaves narrowly oval; corolla greenish white; plants perennial; damp woods. June-Aug. Sweet-scented Bedstraw*G. triflorum* Michx.
2. Leaves not cuspidate, 4 in each whorl.
 4. Leaves narrowly lanceolate, or linear, glabrous or nearly so, or the margins and midveins scabrous; flowers white, numerous in a terminal panicle; in sandy or rocky soil along roads or in woods and thickets, or occasionally in bogs; n. Ill. May-July. Northern Bedstraw*G. boreale* L.
 4. Leaves oval, more or less pubescent.
 5. Leaves 1-veined, or obscurely 3-veined at base, oval; flowers greenish purple, pedicelled, paniculate; fruit 3-4 mm. in diameter; woods, chiefly in the w. and s. counties. June-Aug.*G. pilosum* Ait.
 5. Leaves 3-veined, oval-lanceolate; flowers greenish yellow, puberulent, sessile or nearly so, in few-flowered cymes; fruit 2-3 mm. in diameter; woods. May-July. Wild-licorice*G. circaezans* Michx.
1. Ovary and fruit glabrous or nearly so; leaves 1-veined; corolla white.
 6. Leaves cuspidate, 5-7 (usually 6) in each whorl.
 7. Leaves linear, 1-2 mm. wide, the margins sparsely antrorsely short-ciliolate or nearly smooth; stems clustered, nearly smooth, 15-30 cm. tall; dry woods, common. June-July*G. concinnum* T. & G.
 7. Leaves narrowly elliptical-oblanceolate, 2.5-4 mm. wide, the margins retrorsely scabrellous; stems reclining or trailing, retrorsely scabrous on the angles, 0.5-2 m. long; swamps and thickets, n. Ill. July-Aug. Rough Bedstraw*G. asprellum* L.
 6. Leaves blunt, linear or linear-spatulate.
 8. Corolla 4-lobed, the lobes acute; leaves mostly in fours; stem erect; pedicels smooth; moist ground, common. May-June. [*G. tinctorium* sensu auth., non L.]*G. obtusum* Bigel.

- 8. Corolla 3-lobed, the lobes obtuse; leaves of the main stem mostly in sixes and fives; stems diffuse, slender.
- 9. Pedicels smooth, straight, 2-6 mm. long; flowers in twos and threes; wet ground, rare; n.e. Ill. May-Sept. [*G. claytoni* Michx.].....
.....*G. tinctorium* L.
- 9. Pedicels scabrous, usually arcuate, 5-10 mm. long; flowers solitary; swamps and bogs, rare. July-Aug.*G. trifidum* L.

146. CAPRIFOLIACEAE Vent.—Honeysuckle Family

- 1. Plants trailing; leaves roundish or oval, crenate, evergreen; flowers nodding in pairs; fruit ovoid, indehiscent, 1-seeded.....4. *Linnaea*
- 1. Erect or climbing shrubs, or herbs.
- 2. Shrubs with erect or twining stems.
- 3. Leaves pinnate; fruit berry-like, 3-5-seeded.....1. *Sambucus*
- 3. Leaves simple.
- 4. Flowers in compound cymes; fruit a 1-seeded drupe.....2. *Viburnum*
- 4. Inflorescence otherwise.
- 5. Leaves not serrate; fruit a berry or drupe.
- 6. Flowers regular or nearly so; fruit a berry-like drupe with 2 nutlets.....
.....3. *Symphoricarpos*
- 6. Flowers mostly irregular; fruit a few—many-seeded berry.....5. *Lonicera*
- 5. Leaves serrate; flowers yellow; fruit a capsule.....6. *Diervilla*
- 2. Herbs; flowers axillary; leaves connate or sessile; fruit a drupe.....7. *Triosteum*

1. SAMBUCUS L.—Elder

- 1. Inflorescence flat-topped, 10-40 cm. broad; fruit black (rarely greenish yellow); pith white; moist ground along roads, in woods, or along streams and lakes, common throughout Ill. June-July. Common Elder
.....*S. canadensis* L.
- 1. Inflorescence ovoid, 4-5 cm. broad; fruit bright red (rarely yellow); pith brown; moist rocky woods, rare; known from Cook and La Salle counties. Apr.-May. Red Elder. [*S. racemosa* of auth., not L.]*S. pubens* Michx.

2. VIBURNUM L.—Viburnum

- 1. Leaves not lobed.
- 2. Leaves serrate or serrulate, the veins curving and anastomosing before reaching the margin; petioles flat or channelled and somewhat margined; cymes sessile or nearly so.
- 3. Winter buds scurfy-punctate, usually somewhat glossy; blades thin, acute or acuminate.
- 4. Blades abruptly acuminate, sharply serrate; wet ground, chiefly in the n. half of the state. May-June. Nannyberry*V. lentago* L.
- 4. Blades acute or obtuse at the apex, serrulate with incurved teeth; petioles glabrous or nearly so; moist woods, common. May-June. Blackhaw. [*V. bushii* Ashe]*V. prunifolium* L.
- 3. Winter-buds dull, porous, puberulent; blades firm, obtusish; petioles more or less reddish-tomentulose; wooded ravines, s. Ill., rare. Fountain Bluff, *Cranwill*; Gallatin Co., *Mattoon*. May. Southern Blackhaw*V. rufidulum* Raf.

2. Leaves coarsely dentate, the veins straight, ending in the teeth; petioles not margined; cymes peduncled.
5. Leaves short-petioled, the petioles not more than 1 cm. long; blades usually with 7-10 teeth on each side; fruit ellipsoid, the stone flattened, sulcate on both sides.
6. Lower surface of leaves softly pubescent over the whole surface; woods and river banks, n. Ill., not common; known from Lake, Cook, Du Page, McHenry, Winnebago, and Jo Daviess counties. May-June. [*V. villosum* Raf. not Sw.; *V. pubescens* of auth., not Pursh; *V. affine* var. *hypomalacum* Blake]
.....*V. rafinesquianum* Schult.
6. Lower surface of leaves glabrous, except on the veins or in their axils; woods and thickets, locally throughout the n. half of the state from Vermilion and Peoria counties northw. May-June. [*V. pubescens* var. *affine* (Bush) Rehd.; *V. rafinesquianum* var. *affine* (Bush) House]*V. affine* Bush
5. Leaves longer-petioled, the petioles 1-2.5 cm. long; blades usually with 10-15 teeth on each side; fruit globose-ovoid, the stone deeply sulcate ventrally, the back rounded; woods, rare. [*V. pubescens* var. *deamii* Rehd.; *V. pubescens* var. *indianense* Rehd.; *V. dentatum* var. *deamii* (Rehd.) Fern.]*V. dentatum* L.
1. Leaves palmately veined, usually 3-lobed.
7. Young twigs glabrous; petioles glabrous and with a pair of glands; marginal flowers of the cyme neutral, with enlarged flat corollas; fruit red; moist woods, chiefly in the n. half of the state. May-June. American Cranberry-bush. [*V. opulus* var. *americanum* (Mill.) Ait.]
.....*V. trilobum* Marsh.
7. Young twigs pubescent; petioles pubescent, glandless; cyme with all the flowers alike and perfect; fruit black; dry woods, chiefly in the n.e. counties. May-June. Maple-leaved Viburnum*V. acerifolium* L.

3. SYMPHORICARPOS Duham.—Snowberry

1. Corolla 5-9 mm. long; fruit white or greenish white.
2. Stamens and style included; twigs and leaves glabrous; petioles 2-4 mm. long; corolla 5-7 mm. long; style 2 mm. long, glabrous; fruits white, the larger ones 12-15 mm. in diameter; native of w. N. Am. and commonly planted for ornament, but scarcely established in Ill. Garden Snowberry. [*S. racemosus* of auth., not Michx.; *S. racemosus* var. *laevigatus* Fern.]*S. rivularis* Suksd.
2. Stamens and style shortly exerted; twigs puberulent; leaves pubescent; petioles 4-10 mm. long; corolla 6-9 mm. long; style 4-8 mm. long, pilose or glabrous; fruits pale greenish white, 6-8 mm. in diameter; dry soil, n. Ill., rare, extending southw. to Kankakee and Hancock counties. June-July. Wolfberry*S. occidentalis* Hook.
1. Corolla 3-4 mm. long; fruit red (rarely whitish), ellipsoid, glaucous, 5-7 mm. long; stamens and style included; style 2 mm. long; petioles 2-4 mm.

long; river banks and woodland pastures, common. July. Coralberry.
Buckbrush. [*S. vulgaris* Michx.] *S. orbiculatus* Moench

4. LINNAEA L.—Twinflower

L. americana Forbes. Winnetka, Cook Co., *Vasey*. Possibly now extinct in Ill. [*L. borealis* L. var. *americana* (Forbes) Rehd.]

5. LONICERA L.—Honeysuckle

(*Xylosteon* Adans.)

1. Erect shrubs; leaves opposite, not connate-perfoliate; berries red.
 2. Corolla pink or white; leaves ovate-lanceolate, glabrous; berries united at base; often planted and sometimes escaped from cult.; native of Asia. May-June. Tatarian Honeysuckle *L. tatarica* L.
 2. Corolla yellowish white; leaves elliptical, ciliate; berries not united; moist woods, rare, Cook and Lake counties. Apr.-June. American Fly Honeysuckle. [*L. ciliata* Muhl.] *L. canadensis* Marsh.
1. Plants twining or trailing.
 3. Flowers in terminal clusters; upper leaves connate-perfoliate.
 4. Corolla 2-lipped, the upper lip 4-lobed, the lower entire.
 5. Corolla greenish yellow, the tube somewhat gibbous.
 6. Corolla-tube 6-10 mm. long; filaments hirsute at base; leaves green above, glaucous beneath; rocky soil, local; known from Lake, Cook, La Salle, and Sangamon counties. May-June. Glaucous Honeysuckle [*L. glauca* Hill] *L. dioica* L.
 6. Corolla-tube 10-14 mm. long; filaments nearly glabrous; leaves glaucous on both sides; woods; the common honeysuckle in Ill. May-June. Sullivant's Honeysuckle [*L. parviflora* Lam.; *L. sullivantii* Gray] *L. prolifera* (Kirsch.) Rehd.
 5. Corolla bright yellow or orange, its slender tube not gibbous; rocky woods, occasional. Apr.-May. Yellow Honeysuckle *L. flava* Sims
 4. Corolla red, tubular, the short limb nearly equally 5-lobed; cult. and sometimes escaped. May-Oct. Trumpet Honeysuckle *L. sempervirens* L.
 3. Flowers in pairs from the upper axils, white or pink, turning yellow, 2.5-4 cm. long, fragrant; leaves ovate or oval, not connate-perfoliate; young branches villous; escaped from cult. and occasionally spontaneous; introd. from Asia. May-July. Japanese Honeysuckle *L. japonica* Thunb.

6. DIERVILLA Mill.—Bush Honeysuckle

D. lonicera Mill. Rocky woods in n. Ill., extending southw. to Kankakee and La Salle counties. May-June.

7. TRIOSTEUM L.—Horse-gentian

1. Principal leaves with broadly dilated connate-perfoliate bases; corolla purplish or dull red, 12-15 mm. long; sepals finely and evenly pubescent;

stem softly short-pubescent, the hairs 0.5 mm. long; woods and thickets.
 May-June *T. perfoliatum* L.

1. Principal leaves narrowed to the sessile bases.
2. Leaves ovate or oval; sepals finely and evenly pubescent; fruit 8-15 mm. in diameter; corolla purplish-red.
3. Stem glandular-puberulent and hirsute; sandy soil in open woods, centr. and n. Ill. May-June *T. aurantiacum* Bickn.
3. Stem rather sparsely hirsute with somewhat reflexed non-glandular hairs 1-2 mm. long; rich woods, local. May-June
 *T. illinoense* (Wieg.) Rydb.
2. Leaves lanceolate or oblanceolate; stem hirsute, not glandular; sepals ciliate, otherwise glabrous; corolla greenish yellow; fruit 6-7 mm. in diameter; alluvial soil, s. Ill., not common. May *T. angustifolium* L.

147. VALERIANACEAE Batsch—Valerian Family

1. Perennial, strong-smelling, mostly tall herbs; some of the leaves pinnatifid; calyx-lobes becoming pappus-like; fruit 1-loculed 1. *Valeriana*
1. Annual, dichotomously branched low herbs; leaves not pinnatifid; sepals minute or lacking; fruit 3-loculed 2. *Valerianella*

1. VALERIANA L.—Valerian

1. Corolla 1-2 cm. long; basal leaves cordate; stem-leaves thin, with 3-7 ovate, toothed leaflets; root fibrous; woods and alluvial banks, chiefly in the s. part of the state, extending northw. to Vermilion Co. May-June
 *V. pauciflora* Michx.
1. Corolla 4-5 mm. long; basal leaves spatulate; stem-leaves pinnately parted into 3-7 lanceolate or linear divisions; root fusiform; wet ground, in Lake, McHenry, and Du Page counties. May-June. [*V. edulis* of auth., not Nutt.] *V. ciliata* T. & G.

2. VALERIANELLA Mill.

1. Corolla blue, 1.5-2 mm. long; bracts ciliate, obtuse; fruits 2-4 mm. long, laterally compressed, obliquely rhomboidal, wider than long, the dorsal side of the fertile cell with a thick corky mass; waste places and cult. ground, occasional; introd. from Eur. Corn-salad. [*V. locusta* (L.) Betcke] *V. olitoria* (L.) Poll.
1. Corolla white or pinkish; bracts acute, usually not ciliate; fruit longer than wide; native species.
2. Fertile carpel of the fruit narrower than the combined width of the divergent sterile carpels; corolla 3-4 mm. long.
3. Fruit 3-3.5 mm. long, 3 mm. wide; sterile carpels divergent, the fruit becoming saucer-shaped. Ottawa, La Salle Co., *Skeels*
 *V. patellaria* (Sulliv.) Wood
3. Fruit 2 mm. long, 1.5-2 mm. wide; sterile carpels inflated, curved together at the ends, forming a deep cavity; moist ground, not common. May-June. Kankakee Co., *Hill*
 *V. umbilicata* (Sulliv.) Wood

2. Fertile carpel of the fruit equalling or exceeding the width of the sterile carpels.
4. Corolla 3-4 mm. long, the tube as long as the limb; blades of the rosette-leaves oval, abruptly petioled; moist ground in the n. part of the state, not common. May-June. Kankakee Co., *Hill* in 1873; La Salle Co., *Greenman, Lansing, & Dixon* 134; Joliet, *Hill* in 1907 *V. intermedia* Dyal
4. Corolla 1.5-2 mm. long, the tube shorter than the limb; rosette-leaves spatulate; moist ground, chiefly in the s. half of Ill., local. May-June. Johnson Co., *Schneck*; Jackson Co., *Gleason* in 1903; St. Clair Co., *Eggert*; Madison Co., *McDonald* in 1904 *V. radiata* (L.) DuRoi.

148. DIPSACACEAE Lindl.—Teasel Family

1. DIPSACUS L.—Teasel

D. sylvestris Huds. Roadsides, fields, pastures, and waste places, common; nat. from Eur. July-Sept.

149. CUCURBITACEAE B. Juss.—Gourd Family

1. Corolla large, yellow, 6-15 cm. long; stem trailing 1. *Cucurbita*
 1. Corolla greenish white, small, less than 6 cm. long.
 2. Stem and leaves glabrous; fruit an inflated usually 4-seeded pod dehiscent at the apex and bursting irregularly 2. *Echinocystis*
 2. Stem and leaves more or less pubescent; fruits indehiscent, 1-seeded, usually 3-10 together 3. *Sicyos*

1. CUCURBITA L.

C. foetidissima HBK. Missouri Gourd. Dry ground, usually along railroads; adv. from w. of the Mississippi R.; Chicago, *Moffatt* in 1896; Sangamon Co. *G. D. Fuller* in 1941. [*Pepo foetidissima* (HBK.) Britt.]

2. ECHINOCYSTIS T. & G.

E. lobata (Michx.) T. & G. Wild Balsam-apple. Alluvial soil, and waste places, local. July-Sept. [*Micrampelis lobata* (Michx.) Greene]

3. SICYOS L.

S. angulatus L. Alluvial soil, and in fields, throughout Ill., except the n.w. counties. July-Sept.

150. CAMPANULACEAE Juss.—Bellflower Family

1. Leaves petioled or tapering at the base; flowers in a terminal inflorescence 1. *Campanula*
 1. Leaves sessile, clasping, cordate; flowers axillary, solitary, sessile 2. *Specularia*

1. CAMPANULA L.—Bellflower

1. Flowers in spikes or racemes.
 2. Corolla rotate; style declined; capsule clavate, with apical pores; moist woods, common throughout Ill. June-Sept. [*Campanulastrum americanum* (L.) Small] *C. americana* L.

- 2. Corolla campanulate; style straight; capsule globose, opening by basal pores; roadsides and waste places, escaped from cult.; introd. from Eur. June-Sept. *C. rapunculoides* L.
- 1. Flowers in loose panicles, or solitary; corolla campanulate.
- 3. Corolla 5-12 mm. long; leaves all linear or narrowly lanceolate; plants of wet ground.
- 4. Leaves linear; corolla blue, 8-12 mm. long; marshy ground, wet meadows, and lake shores, not common; n. Ill.; Lake Co., *Gleason & Shobe* in 1906. July-Aug. *C. uliginosa* Rydb.
- 4. Leaves lanceolate; corolla white, 5-8 mm. long; wet meadows, local, chiefly in the n. half of the state. June-July *C. aparinoides* Pursh
- 3. Corolla 12-20 mm. long; basal leaves ovate or cordate; plants of sandy or rocky places; n. Ill., not common. June-Aug. [*C. rotundifolia* of auth., not L.] *C. intercedens* Witasek

2. SPECULARIA Fab.—Venus' Looking-glass

S. perfoliata (L.) A. DC. Dry sandy soil, common. May-June.

151. LOBELIACEAE Dum.—Lobelia Family

1. LOBELIA L.—Lobelia

- 1. Corolla red (rarely pink or white), 3-4 cm. long; wet ground, not uncommon. July-Oct. Cardinal-flower *L. cardinalis* L.
- 1. Corolla blue or whitish.
- 2. Corolla 1-2.5 cm. long.
- 3. Corolla 2-2.5 cm. long; anthers glabrous at the tip; wet ground throughout Ill. Aug.-Oct. *L. siphilitica* L.
- 3. Corolla 1-1.5 cm. long; anthers pubescent at the tip; wet ground, s. Ill. Aug.-Oct. *L. puberula* Michx.
- 2. Corolla 6-10 mm. long.
- 4. Leaves linear; wet meadows, local. July-Sept. *L. kalmii* L.
- 4. Leaves oblanceolate to ovate.
- 5. Stem densely long-pubescent; capsule wholly inferior, inflated; open woods, locally throughout Ill. June-Oct. *L. inflata* L.
- 5. Stem glabrous or nearly so
- 6. Sepals distinctly auricled at the base; dry soil, locally throughout Ill. June-Aug. *L. leptostachys* A. DC.
- 6. Sepals not auricled; dry sandy soil, common. July-Aug. *L. spicata* Lam.

152. COMPOSITAE Adans.—Composite Family

(*Carduaceae* Neck.; *Cichoriaceae* Reichenb.; *Ambrosiaceae* Reichenb.)

- 1. Heads composed of ray- and disk-flowers, or of disk-flowers only; juice not milky (except in *Cacalia*) Series I. *Tubuliflorae*, p. 243
- 1. Heads composed wholly of perfect flowers with ligulate corollas; herbs usually with milky juice; leaves alternate or sometimes all basal Series II. *Liguliflorae*, p. 246

Series I. TUBULIFLORAE DC.

1. Pappus of capillary bristles.
 2. Heads radiate (i.e., the outer flowers of the head with strap-shaped corollas).
 3. Rays yellow (whitish in one species of *Solidago*).
 4. Bracts in one series, about equal in length (a few short basal ones sometimes present); pappus single.
 5. Leaves opposite, dissected into linear lobes; bracts bearing 3-7 conspicuous glands; pappus of 8-15 scales, each dissected into 5-10 bristles.....38. *Dyssodia*
 5. Leaves alternate and basal; bracts glandless; pappus of numerous capillary bristles47. *Senecio*
 4. Bracts in several series, very unequal, overlapping.
 6. Heads numerous, small; pappus single.....12. *Solidago*
 6. Heads few, large, solitary, or corymbose.
 7. Leaves serrate, large; pappus single; stem 1-2 m. tall, usually simple.....19. *Inula*
 7. Leaves entire or nearly so; pappus double; stem 30-60 cm. tall, branched11. *Chrysopsis*
 3. Rays not yellow.
 8. Bracts in 3-5 series; rays broad, few14. *Aster*
 8. Bracts usually in 1 or 2 series; rays usually narrow and numerous.....15. *Erigeron*
 2. Heads rayless (or apparently so), the flowers usually all tubular.
 9. Flowers white or whitish, or cream-color.
 10. Leaves prickly.
 11. Heads 1-flowered, in capitate clusters.....49. *Echinops*
 11. Heads many-flowered, distinct.....50. *Cirsium*
 10. Leaves not prickly.
 12. Bracts scarious.
 13. Leaves mostly basal, spatulate or obovate, the stem-leaves small; plants perennial, stoloniferous, dioecious or polygamous17. *Antennaria*
 13. Leaves all or mostly cauline; plants annual or biennial, not stoloniferous or dioecious; all the flowers fertile, the central ones perfect, surrounded by pistillate ones.....18. *Gnaphalium*
 12. Bracts not scarious.
 14. Bracts with tips hooked; coarse biennial weeds with large ovate leaves; heads globose.....48. *Arctium*
 14. Bracts not hooked.
 15. Principal bracts in only one series (often with a few small bractlets at the base of the head).
 16. Pappus scabrous; flowers all perfect; plants perennial, with milky sap45. *Cacalia*
 16. Pappus smooth; marginal flowers pistillate, the disk-flowers perfect; plants annual, with watery sap and strong odor.....46. *Erechtites*
 15. Bracts in more than one series.
 17. Leaves all or mostly opposite or whorled (or some of the upper ones alternate)6. *Eupatorium*
 17. Leaves alternate.
 18. Bracts striate, imbricated in 3 or more equal series; pappus plumose; achenes striate, nearly terete; leaves minutely resinous-dotted8. *Kuhnia*
 18. Bracts not striate, in 1-3 series; achenes flattened; pappus merely scabrous; leaves not resinous-dotted.
 19. Heads racemose; outer bracts foliaceous; pappus copious, of soft bristles; achenes terete.....species of 14. *Aster*

19. Heads paniculate; bracts all narrow, not foliaceous; pappus-bristles short, brittle; achenes compressed..... species of 15. *Erigeron*
9. Flowers pink, purple, blue, or yellow (rarely white).
20. Stems twining; leaves opposite, triangular-hastate; flowers pink.....7. *Mikania*
20. Stems not twining.
21. Leaves opposite or whorled, not prickly; flowers purple, blue, or white....6. *Eupatorium*
21. Leaves alternate or basal.
22. Leaves prickly.
23. Heads 1-flowered, in capitate clusters.....49. *Echinops*
23. Heads many-flowered, distinct.
24. Pappus bristles plumose.....50. *Cirsium*
24. Pappus bristles not plumose.....51. *Carduus*
22. Leaves not prickly.
25. Bracts of the involucre pectinate, or tipped with a rigid spine.....51. *Centaurea*
25. Bracts neither pectinate nor with a rigid spine.
26. Bracts with hooked tips; coarse biennial weeds with large ovate chiefly basal leaves; heads globose; flowers purple (rarely white); receptacle bristly.....48. *Arctium*
26. Bracts not hooked; receptacle not bristly.
27. Flowers yellow; bracts in 1 series.....47. *Senecio*
27. Flowers not yellow; bracts imbricated in 2-several series.
28. Pappus bristles plumose or barbellate; heads in long racemes or spikes; leaves narrow, entire, rigid.....9. *Liatris*
28. Pappus bristles not plumose.
29. Pappus (in our species) double, the outer bristles short; heads many-flowered, in corymbose cymes; bracts imbricated in several series.....4. *Vernonia*
29. Pappus bristles approximately the same length, not in two series.
30. Heads 2-5-flowered, aggregated into dense clusters subtended by foliaceous bracts; flowers all perfect and alike; bracts 8.....5. *Elephantopus*
30. Heads many-flowered, corymbose; flowers of 2 kinds in the same head; bracts imbricated; plants camphor-scented.....16. *Pluchea*
1. Pappus not of capillary bristles, either of rigid awns, small chaffy scales, or reduced to a mere crown, or entirely lacking.
31. Heads radiate.
32. Rays yellow.
33. Pappus of 2-6 awns or bristles.
34. Leaves all or mostly opposite or whorled; bracts not hooked.
35. Terrestrial or marsh plants with one kind of leaves; achenes flat or angled.....33. *Bidens*
35. Partly submerged aquatics with the submerged leaves finely dissected; achenes terete.....34. *Megalodonta*
34. Leaves alternate; bracts often gummy, with recurved or hooked tips....10. *Grindelia*
33. Pappus none, or of few short teeth or scales.
36. Leaves all or mostly opposite or whorled.
37. Achenes thick, not at all, or scarcely flattened.
38. Leaves thin, deeply angulate-lobed or lyrate-pinnatifid; rays small or none.....20. *Polymnia*
38. Leaves thick, entire or serrate; rays conspicuous.
39. Bracts obtuse; ray-flowers pistillate, fertile, papery and persistent on the achene.....23. *Heliopsis*

- 39. Bracts acute or acuminate; ray-flowers neutral, deciduous..... 29. *Helianthus*
- 37. Achenes flattened.
 - 40. Rays numerous; bracts thick, in several rows; coarse herbs with resinous sap; disk flowers perfect but sterile.....21. *Silphium*
 - 40. Rays mostly 8; bracts in two series; disk flowers fertile.....32. *Coreopsis*
- 36. Leaves alternate or basal.
 - 41. Leaves or some of them deeply lobed or divided; stem not winged.
 - 42. Receptacle conical to columnar.
 - 43. Achenes flattened, broad-margined or winged.....27. *Ratibida*
 - 43. Achenes 4-sided, not at all margined or winged.....25. *Rudbeckia*
 - 42. Receptacle flat or convex; achenes flattened, 2-winged, notched at the apex21. *Silphium*
 - 41. Leaves serrate or entire.
 - 44. Stems scapose; leaves all basal, spatulate, entire.....36. *Actinea*
 - 44. Stems leafy.
 - 45. Stems more or less winged by the decurrent bases of the leaves (except *Helenium tenuifolium*).
 - 46. Rays 3-lobed, 10-18; pappus of 5-8 acuminate or aristate scales37. *Helenium*
 - 46. Rays entire or emarginate; pappus of 1-3 subulate awns.
 - 47. Heads several to many, corymbose; rays 2-8.....30. *Actinomeris*
 - 47. Heads solitary or few; rays 8-15.....31. *Verbesina*
 - 45. Stems not winged.
 - 48. Receptacle conical; pappus a mere crown, or none; disk flowers purple25. *Rudbeckia*
 - 48. Receptacle flat or convex; pappus of 2 deciduous, translucent scales or awns; disk flowers yellow or brownish29. *Helianthus*
- 32. Rays not yellow.
 - 49. Leaves opposite; ray-flowers small, white.
 - 50. Leaves angulate-lobed, thin, dilated at the base; plants glandular-pubescent; corolla-tube of the ray-flowers pubescent.....20. *Polymnia*
 - 50. Leaves serrate.
 - 51. Leaves ovate, petioled.....28. *Galinsoga*
 - 51. Leaves lanceolate, sessile.....24. *Eclipta*
 - 49. Leaves alternate.
 - 52. Leaves dissected or incised; bracts scarious.
 - 53. Rays 4-6, short; heads numerous.....39. *Achillea*
 - 53. Rays 10-30; heads fewer.
 - 54. Leaves cut into filiform divisions; receptacle chaffy.....40. *Anthemis*
 - 54. Leaves incised or coarsely and irregularly toothed.....42. *Chrysanthemum*
 - 52. Leaves entire to serrate or dentate.
 - 55. Receptacle conical or columnar; rays purple, reflexed.....26. *Echinacea*
 - 55. Receptacle flat or convex; rays spreading, white or pink.
 - 56. Leaves entire, lanceolate; rays many, lilac or white....13. *Boltonia*
 - 56. Leaves ovate, dentate; rays 5, white, short.....22. *Parthenium*
- 31. Heads rayless.
 - 57. Flowers green or greenish.
 - 58. Staminate and pistillate flowers in the same head, or flowers all perfect.
 - 59. Heads few or solitary; receptacle conical; bracts short, oval, obtuse, scarious; leaves finely dissected, with pineapple odor when crushed.....41. *Matricaria*

59. Heads numerous, in spikes, racemes, or panicles.
 60. Heads in long terminal bracted spikes; receptacle bristly or chaffy; leaves opposite, or the upper alternate, entire or serrate.....1. *Iva*
 60. Heads in panicles or racemes; receptacle smooth; leaves alternate, mostly lobed or incised; plants bitter aromatic.....44. *Artemisia*
58. Staminate and pistillate flowers in separate dissimilar heads; involucre of the pistillate heads woody or spiny.
 61. Pistillate heads 1-flowered; fruit an achene with 4-8 tubercles or straight teeth2. *Ambrosia*
 61. Pistillate heads forming an ovoid bur covered with more or less hooked prickles3. *Xanthium*
57. Flowers yellow (or yellowish) or white.
 62. Flowers and bracts bright white; bracts petal-like, scarious-margined; leaves alternate; stem woolly-pubescent; heads corymbose.....35. *Hymenopappus*
 62. Flowers yellow or yellowish; bracts green.
 63. Heads numerous, in flat-topped corymbs; leaves alternate, pinnately dissected; plants bitter-aromatic43. *Tanacetum*
 63. Heads few; leaves opposite.
 64. Pappus none; achenes thick, not flattened; disk-flowers perfect but sterile; plants glandular-pubescent.....20. *Polymnia*
 64. Pappus of 2-4 awns or teeth; achenes flattened; disk-flowers fertile; plants not glandular33. *Bidens*

Series II. LIGULIFLORAE DC.

65. Pappus none; low glaucescent branching annual herbs with alternate clasping entire or lobed leaves, and few small long-peduncled heads of yellow flowers.....53. *Serinia*
65. Pappus present.
 66. Pappus composed of scales, or of scales and bristles.
 67. Flowers yellow; pappus double, the outer of short thin scales, the inner of bristles55. *Krigia*
 67. Flowers blue (sometimes white or pink); pappus a short crown of numerous small chaffy scales56. *Cichorium*
66. Pappus consisting wholly of capillary bristles.
 68. Pappus plumose; leaves entire, grass-like; flowers yellow or purple.....54. *Tragopogon*
 68. Pappus not plumose.
 69. Heads usually several on each stem; leaves not all basal.
 70. Achenes more or less flattened; leaves usually lobed and often somewhat soft-prickly.
 71. Achenes narrowed at the apex, or beaked; flowers blue or yellow57. *Lactuca*
 71. Achenes truncate, not beaked; flowers yellow.....58. *Sonchus*
 70. Achenes cylindric or prismatic.
 72. Flowers whitish or purplish; heads pendent.....59. *Prenanthes*
 72. Flowers yellow; heads erect.
 73. Achenes beakless60. *Hieracium*
 73. Achenes filiform-beaked.....62. *Pyrhropappus*
69. Heads solitary; leaves all basal; flowers yellow.
 74. Achenes not muricate, 10-nerved; leaves (in our species) entire.....61. *Agoseris*
 74. Achenes muricate near the apex, 4-5-nerved; leaves lobed.....63. *Taraxacum*

Tribe 1. *Ambrosieae*

1. IVA L.—Marsh-elder

- 1. Heads in bracted spikes; stem hispid; fields and roadsides. Aug.-Oct.
..... *I. ciliata* Willd.
- 1. Heads spicate-paniculate; stem puberulent; roadsides and fields. July-Sept.
Horseweed. [*Cyclachaena xanthifolia* (Nutt.) Fresen.]
..... *I. xanthifolia* Nutt.

2. AMBROSIA L.—Ragweed

- 1. Leaves pinnatifid or bipinnatifid.
 - 2. Leaves petioled, bipinnatifid; fruit with 5-7 sharp tubercles; plants annual; fields and waste places, common. Aug.-Oct. Common Ragweed [*A. artemisiifolia* L.] *A. elatior* L.
 - 2. Leaves sessile, pinnatifid; fruit with unarmed or with blunt tubercles; plants perennial with a slender rhizome; roadsides and waste places, adv. from w. U.S. Western Ragweed. July-Oct. [*A. psilostachya* sensu Gray, non DC.] *A. coronopifolia* T. & G.
- 1. Leaves 3-5-lobed or undivided; plants annual.
 - 3. Leaves opposite, 3-5-lobed, or entire; stem stout, 1-4 m. tall; staminate heads peduncled; fruit with 5-7 sharp tubercles; fields and waste places, common. July-Oct. Giant Ragweed *A. trifida* L.
 - 3. Leaves chiefly alternate, lanceolate, hastately toothed at base; stem 30-90 cm. tall, rough-hirsute; staminate heads sessile, the upper lobe of the involucre elongate, hispid; fruit with 4 teeth at the top; fields and waste places, chiefly in the s. half of Ill., extending northw. to Menard Co. *A. bidentata* Michx.

3. XANTHIUM L.—Cocklebur

- 1. Leaves lanceolate, acute at each end, white-canescens beneath, each with a 3-parted spine at the base; waste ground, introd. from trop. Am. Aug.-Oct. Spiny Cocklebur *X. spinosum* L.
- 1. Leaves cordate or ovate, the axils without spines.
 - 2. Body of the fruit and its prickles glandular and more or less hispidulous; waste places, cult. ground, and river banks. Aug.-Oct. [*X. italicum* of auth., not Mor.; *X. saccharatum* sensu Widder, ex p.]
..... *X. commune* Britt.
 - 2. Body of fruit and its prickles merely glandular to glandular-puberulent, or nearly glabrous; waste places, fields, and along rivers. Aug.-Oct. [*X. canadense* of auth., not Mill.; *X. pungens* Wallr.; *X. glabratum* Britt.; *X. americanum* of auth., (?) not Walt.] *X. pennsylvanicum* Wallr.

Tribe 2. *Vernonieae*

4. VERNONIA Schreb.—Ironweed

- 1. Leaves glabrous beneath or merely puberulent.
 - 2. Leaves glabrous, linear-lanceolate, punctate beneath; inflorescence dense, fastigiata; moist ground, locally throughout Ill. July-Aug.
..... *V. fasciculata* Michx.

2. Leaves elliptic-lanceolate, puberulent beneath; inflorescence loose, the branches spreading; woods, fields, and roadsides throughout Ill. July-Oct. *V. altissima* Nutt.
1. Leaves pubescent beneath.
3. Bracts appressed, acute or obtuse; roadsides, pastures, and open woods, common. July-Sept. [*V. illinoensis* Gleason] *V. missurica* Raf.
3. Bracts with acuminate, squarrose tips; open woods, local; chiefly in the s. half of the state. July-Sept. *V. baldwini* Torr.

5. ELEPHANTOPUS L.—Elephant's-foot

E. carolinianus Willd. Sandy soil in woods, and along roads, s. Ill., extending northw. to Wabash and St. Clair counties. Aug.-Sept.

Tribe 3. *Eupatorieae*

6. EUPATORIUM L.

1. Leaves whorled.
2. Stem green; leaves thin, sparsely puberulent on the veins beneath, not rugose; inflorescence convex; heads mostly 5-7-flowered, the corollas pinkish; woods throughout Ill. July-Aug. Joe-pye Weed. [*E. trifoliatum* L.; *E. falcatum* Michx.] *E. purpureum* L.
2. Stem purplish or speckled with purplish; leaves thickish, rugose, rather copiously short-pubescent beneath; inflorescence flattish-topped; heads mostly 9-15-flowered, the corollas rose purple; moist ground, more frequent in the n. half of the state. July-Sept. [*E. purpureum* sensu auth., non L.] *E. maculatum* L.
1. Leaves opposite, or the upper alternate.
3. Flowers white (rarely purplish); receptacle flat.
4. Leaves connate-perfoliate, lanceolate, attenuate, crenate-serrate, rugose-reticulate, pubescent beneath; wet ground, common. Aug.-Oct. Boneset *E. perfoliatum* L.
4. Leaves not connate-perfoliate.
5. Stem pubescent; leaves lanceolate, 3-nerved, grayish-puberulent.
6. Leaves conspicuously petioled, sharply serrate; heads 4-6 mm. high, 7-15-flowered; moist ground, common. Aug.-Oct. Late Boneset *E. serotinum* Michx.
6. Leaves sessile or nearly so, sparingly toothed above the middle, or entire; heads 6-8 mm. high, about 5-flowered; woods near streams, and along roads. Aug.-Oct. Tall Thoroughwort *E. altissimum* L.
5. Stem glabrous or nearly so; leaves all opposite.
7. Leaves sessile, lanceolate, pinnately veined, serrate; heads about 5-flowered; woods, local. Aug.-Oct. Upland Boneset *E. sessilifolium* L.
7. Leaves petioled, ovate, triple-nerved, coarsely dentate; heads 10-30-flowered; woods, common. July-Sept. White Snakeroot. [*E. ageratoides* L.f.; *E. urticaefolium* Reich.] *E. rugosum* Houtt.
3. Flowers bluish; receptacle conical; leaves ovate, petiolate, crenate-dentate,

more or less puberulent; moist ground in the s. half of the state, extending northw. to Adams and Champaign counties. July-Oct. Mist Flower
 *E. coelestinum* L.

7. MIKANIA Willd.

M. scandens (L.) Willd. In alluvial soil, occasional. Aug.-Sept.

8. KUHNIA L.—False Boneset

K. eupatorioides L. Prairie soil, often along roads, common. Aug.-Oct.
 [*K. suaveolens* Fresen.]

9. LIATRIS Schreb.—Blazing-star
 (*Lacinaria* Hill)

1. Pappus evidently plumose; heads few, racemose, cylindrical, 15-60-flowered, 1.5-2 cm. high.
2. Stems and leaves glabrous or nearly so; bracts glabrous on the back, thin, appressed, the inner ones mucronate; roadsides, prairie soil, or on hillsides, throughout Ill. except the s. counties. Aug.-Sept.
 *L. cylindracea* Michx.
2. Stems and leaves pubescent; bracts pubescent, lanceolate, acuminate, firm, rigid, more or less squarrose; dry soil, s. Ill., extending northw. to St. Clair and Wabash counties [*L. hirsuta* Rydb.]
 *L. squarrosa* (L.) Willd.
1. Pappus barbellate or scabrous; heads numerous in elongate spikes.
3. Heads ellipsoid, 3-15-flowered.
4. Rachis of spike crisp-pubescent; bracts ciliate, acute, the tips spreading; prairies, rare. July-Aug. [*L. pycnostachya* of auth., not Michx.]
 *L. bebbiana* Rydb.
4. Rachis of spike glabrous; bracts obtusish, appressed; prairies and interdunal flats, chiefly in the n. part of Ill. July-Sept.
 *L. spicata* (L.) Willd.
3. Heads hemispherical or campanulate, 15-45-flowered; bracts oval or suborbicular, erose; rachis of inflorescence pubescent; roadsides, prairies, and open woods. Sept.-Oct. White-flowered plants occur. [*L. scariosa* of auth., not L.] *L. aspera* Michx.

Tribe 4. *Astereae*

10. GRINDELIA Willd.—Gumweed

G. squarrosa (Pursh) Dunal. Waste ground, fields, and roadsides, occasional; adv. from w. U.S.; known in Ill. from Cook, La Salle, Henry, and Fayette counties. July-Aug.

11. CHRYSOPSIS Nutt.—Golden-aster

C. villosa (Pursh) Nutt. Sandy soil, locally in the w. half of the state from Lee Co. to St. Clair Co. June-Sept.

12. SOLIDAGO L.—Goldenrod
 (*Euthamia* Nutt.; *Oligoneuron* Small)

1. Heads distinctly pedicellate; ray-flowers usually fewer than the disk-flowers; receptacle pitted; leaves not punctate.

2. Heads in panicles, racemes, or axillary clusters; bracts of the involucre not longitudinally striate.
3. Heads in small axillary clusters or short racemes.
4. Stem pubescent; achenes glabrous at maturity.
 5. Rays cream color or nearly white; involucre 3-5 mm. high; wooded slopes and ridges, local. Aug.-Oct. White Goldenrod.....
.....*S. bicolor* L.
 5. Rays orange-yellow; involucre 5-6 mm. high; wooded slopes and ridges, rare. La Salle Co.*S. hispida* Muhl.
4. Stem glabrous; achenes puberulent; leaves sharply serrate.
 6. Stem more or less glaucous, terete; leaves sessile, lanceolate; woods, throughout Ill., except the w. and n.w. counties. Aug.-Oct. Wreath Goldenrod*S. caesia* L.
 6. Stem angled, not glaucous; leaves ovate, the petioles winged; woods, throughout Ill. Aug.-Oct. [*S. flexicaulis* L.] Broad-leaved Goldenrod*S. latifolia* L.
3. Heads mostly in terminal panicles or racemes.
 7. Branches of the panicle spreading or recurved, the heads distinctly secund.
 8. Stem glabrous or nearly so (rarely sparsely villosulous).
 9. Branches of the inflorescence pubescent.
 10. Stem terete.
 11. Leaves pinnately veined, oval or elliptical, thin, serrate, sparsely hirsute along the veins beneath, the lower with margined petioles; racemes few, divergent, slender; rays 1-6; wooded slopes and ridges, common. Aug.-Oct. Elm-leaved Goldenrod*S. ulmifolia* Muhl.
 11. Leaves (at least the median and lower) more or less distinctly 3-ribbed, lanceolate, sessile, sharply serrate, glabrous on both sides or sparingly hirsute or hirtellous on the veins beneath, the margins scabrous; inflorescence a dense pyramidal panicle; rays 7-15; moist ground, common. Aug.-Oct. [*S. gigantea* Ait.; *S. gigantea* var. *leiophylla* Fern.] Late Goldenrod
.....*S. serotina* Ait.
 10. Stem sharply angled; leaves oval or lanceolate, thick, glabrous beneath, strongly scabrous above, serrate or entire, acute; heads 15-20-flowered, the involucre 3-4.5 mm. high; bracts obtuse; wet ground. Aug.-Oct. Spreading Goldenrod*S. patula* Muhl.
 9. Branches of the inflorescence glabrous or merely hirtellous.
 11. Panicles usually longer than broad, the branches erect or ascending; heads 4-6 mm. high; rays 2-8; bogs and swamps, local; known from Cook, Kane, La Salle, Peoria, and Woodford counties. Aug.-Sept. [*S. neglecta* T. & G.; *S. uliginosa* of auth., not Nutt.] Swamp Goldenrod
.....*S. uniligulata* (DC.) Porter

11. Panicles usually as broad as long, pyramidal, the branches becoming elongated and recurved; rays 8-13.
12. Heads about 5 mm. high; plants strongly stoloniferous; prairie soil, local; July-Sept. [*S. moritura* Steele; *S. missouriensis* of auth., not Nutt.] Prairie Goldenrod*S. glaberrima* Martens
12. Heads about 3 mm. high; plants not strongly stoloniferous; roadsides, fields, and open woods. June-Aug. Early Goldenrod*S. juncea* Ait.
8. Stem hirsute or puberulent (or glabrous toward the base); branches of the inflorescence pubescent.
13. Leaves with 1 principal vein (i.e., not plainly 3-ribbed, the lateral veins, if present, weak).
14. Stem more or less hirsute, or the lower part almost glabrous; leaves lanceolate or elliptic-lanceolate, sharply serrate, sessile or nearly so, more or less rugulose, scaberrulous above, short-hirsute on the veins beneath; moist ground, rare. Aug.-Oct. [*S. altissima* of auth., not L.] Rough-leaved Goldenrod*S. rugosa* Mill.
14. Stem grayish puberulent; leaves oblanceolate, crenate-dentate or entire, puberulent on both sides, the lower long-petioled; fields, roadsides, sand dunes, and open woods, common. Aug.-Oct. [*S. longipetiolata* Mack. & Bush] Field Goldenrod*S. nemoralis* Ait.
13. Leaves (at least the median and lower) more or less plainly 3-ribbed, two of the lateral veins becoming prominent (often only slightly so in the upper leaves.)
15. Leaves broadly oval or ovate, sharply serrate, puberulent; bluffs, cliffs, or rocky woods, s.w. Ill.; known from Calhoun, Jersey, and Jackson counties. Sept.-Oct. Drummond's Goldenrod*S. drummondii* T. & G.
15. Leaves lanceolate or oblanceolate.
16. Leaves oblanceolate or elliptical, dentate-crenate, the upper smaller, entire; outer bracts oval, obtusish, firm; rays 3-7, short; stem 30-100 cm. tall; bluffs and dry soil, local. Aug.-Oct. Rough Goldenrod*S. radula* Nutt.
16. Leaves lanceolate, acuminate or acute, sharply serrate or entire; bracts linear-lanceolate, thin; rays 9-15; involucre 2.5-4 mm. high; stem 1-3 m. tall; moist rich soil, chiefly along roads, and in thickets and woods, common. Aug.-Oct. [*S. gilvocanescens* sensu auth.; *S. canadensis* sensu auth., non L.] Tall Goldenrod*S. altissima* L.
7. Branches of the panicle ascending or erect; heads not secund; achenes glabrous; sandy or gravelly soil, or in dry open woods. Aug.-Oct. [*S. rigidiuscula* (T. & G.) Porter.] Showy Goldenrod*S. speciosa* Nutt.

2. Heads in dense terminal compound corymbiform cymes (*Oligoneuron* Small).
17. Leaves oval or elliptical, scabrous on both sides, crenate; stem pubescent or puberulent throughout; prairie soil, mostly along roads, throughout Ill., except the s. counties. Aug.-Sept. Rigid Goldenrod*S. rigida* L.
17. Leaves lanceolate or linear, glabrous; stem glabrous, or puberulent above.
18. Inflorescence pubescent or puberulent; stem leaves entire, recurved, somewhat conduplicate, sheathing at the base; moist ground. Aug.-Sept. Riddell Goldenrod*S. riddellii* Frank
18. Inflorescence, as well as the rest of the plant, glabrous; leaves flat; moist ground. Aug.-Sept. Ohio Goldenrod*S. ohioensis* Riddell
1. Heads sessile or subsessile, in flat-topped corymbs; ray-flowers more numerous than the disk-flowers; receptacle fimbriolate; leaves punctate (*Euthamia* Nutt.).
19. Stem, leaves, and peduncles hirtellous; leaves distinctly 3-5-veined; moist ground. Aug.-Oct. [*S. graminifolia* var. *nuttallii* (Greene) Fern.]*S. hirtella* (Greene) Bush
19. Stem glabrous; leaves glabrous, 1-veined or obscurely 3-veined, the margins scaberulous.
20. Heads sessile, 3-7 in each glomerule; moist soil. Aug.-Oct.*S. media* (Greene) Bush
20. Heads nearly all shortly pedicellate, usually solitary; prairie soil, n. Ill., not common. Aug.-Sept.*S. remota* (Greene) Friesner

13. BOLTONIA L'Her.

1. Leaves lanceolate to oblanceolate, 0.5-2 cm. wide, the upper smaller; disk 5-8 mm. broad; alluvial soil, river banks, or wet ground in woods, locally throughout Ill. Aug.-Oct.*B. asteroides* (L.) L'Her.
1. Leaves linear, 1-5 mm. wide, those of the branchlets subulate; disk 3-5 mm. broad; dry soil, s. Ill., rare; St. Clair Co., *Brendel*; Jackson, Marion, and Washington counties, *Vasey**B. diffusa* Ell.

14. ASTER L.—Aster

1. Lower leaves cordate or subcordate, long-petioled, serrate.
2. Upper leaves cordate-clasping; stem pubescent, divaricately branched above; heads numerous; involucre 5 mm. high; bracts pubescent, green-tipped; rays 8-15, pale blue or violet, 6-10 mm. long; dry soil, open woods and thickets, rare. Sept.-Oct.*A. undulatus* L.
2. Leaves not clasping.
3. Involucral bracts and peduncles glandular-puberulent; rays 12-16, pale purple, 10-14 mm. long; bracts green-tipped; open woods, in the n. half of Ill. Aug.-Sept. Large-leaved Aster*A. macrophyllus* L.
3. Involucres and peduncles not glandular.
4. Bracts of the involucre puberulent or pubescent.

5. Rays white, 7-15, narrow, 1 cm. or more in length; heads few, large, 1-1.5 cm. high; bracts obtuse, appressed, puberulent, ciliate; leaves sharply serrate, scabrous on both sides; wooded bluffs, rare. Starved Rock, *Thone*. Aug.-Oct. *A. furcatus* Burgess
5. Rays usually purple; leaves entire or slightly dentate.
 6. Bracts short-hirsute, recurved, lanceolate, acuminate; rays 30-45; bluffs and rocky woods, Peoria and Woodford counties and southw. to the Mississippi R. Sept.-Oct. *A. anomalus* Engelm.
 6. Bracts erect; rays 10-15; leaves often glabrous or nearly so above, finely and sparingly pubescent beneath; banks and dry open woods, local. Aug.-Oct. *A. shortii* Lindl.
4. Bracts glabrous or nearly so; rays 8-15, usually blue, 6-8 mm. long.
 7. Leaves firm, all entire or nearly so; involucre 6-7 mm. high, turbinate, the bracts linear-spatulate, imbricate in several series, with green, abruptly acute tips; sandy soil, and in open woods, local. Sept.-Oct. *A. azureus* Lindl.
 7. Leaves thin, nearly all sharply serrate.
 8. Involucre 4-6 mm. high, the bracts obtuse or obtusish, appressed; stem glabrous or nearly so; dry woods, not infrequent throughout Ill. Aug.-Oct. *A. cordifolius* L.
 8. Involucre 6-10 mm. high, the bracts acute or acuminate.
 9. Stem densely and finely pubescent; tips of the bracts appressed; dry open woods, local; apparently absent from the s. counties. Sept.-Oct. [*A. hirtellus* Lindl.] *A. drummondii* Lindl.
 9. Stem glabrous or nearly so; tips of the bracts spreading; dry woods, common and variable. Aug.-Oct. *A. sagittifolius* Wedem.
1. Lower leaves neither cordate at the base nor long-petioled.
 10. Stem-leaves clasping or auricled at the base.
 11. Stem pubescent throughout.
 12. Leaves essentially entire.
 13. Heads large; leaves strongly clasping.
 14. Stem hirsute; involucre 8-10 mm. high, the bracts loose, spreading; roadsides and moist ground, common. Aug.-Oct. New England Aster *A. novae-angliae* L.
 14. Stem hispidulous; involucre 6-7 mm. high, the bracts appressed, pubescent on the back; open woods, local; chiefly in the s. part of the state. Aug.-Oct. *A. patens* Ait.
 13. Heads small; involucre 6 mm. high; stem hirsute; wooded bluffs, local. Aug.-Sept. *A. oblongifolius* Nutt.
 12. Leaves, at least the lower, sharply toothed; bracts glabrous; involucre 8-10 mm. high; moist ground; local. Aug.-Oct. *A. puniceus* L.

11. Stem glabrous, or the upper part pubescent in lines.
15. Stem-leaves toothed; rays purple (rarely white).
16. Leaves oblanceolate, acuminate, sharply serrate, abruptly contracted into winged entire auriculate-clasping petioles; moist ground, often along streams or ditches, Fulton, Peoria, and Henry counties. Sept.-Oct.
.....*A. prenanthoides* Muhl.
16. Leaves lanceolate, toothed, sessile, those of the branches smaller and entire; moist ground, n.e. Ill., extending s.w. to Menard Co. Aug.-Oct.*A. lucidulus* (Gray) Wieg.
15. Leaves entire or nearly so, lanceolate or oblanceolate, glabrous and glaucous, the margins scabrous; sandy soil in woods, usually near streams. Aug.-Oct. Smooth Aster*A. laevis* L.
10. Leaves not clasping.
17. Rays present, conspicuous; plants perennial.
18. Leaves densely appressed silvery-silky on both sides; rays violet; sandy soil, often in open woods, local. Sept.-Oct.
.....*A. sericeus* Vent.
18. Leaves not silvery-silky.
19. Heads not in flat-topped corymbs.
20. Involucre conspicuously turbinate, 10-12 mm. high, the bracts linear-spatulate, obtuse, appressed, rounded on the back, imbricated in 5 or 6 series, their tips green only at the apex; rays violet-blue; prairie soil, local; chiefly in the s. part of the state, but extending northw. to Christian and Fulton counties. Sept.-Oct.
.....*A. turbinellus* Lindl.
20. Involucre hemispherical to campanulate; bracts not rounded on the back.
21. Involucres 3-7 mm. high.
22. Bracts (at least the outer) bristly-ciliate, the tips recurved; heads small, densely clustered.
23. Rays white.
24. Stem with spreading or slightly reflexed hairs; bracts (at least the outer) hispidulous on the back; dry ground, prairie soil, often along roads, common. Sept.-Oct. [*A. multiflorus* of auth., ex p. not Ait. *A. ericoides* var. *prostratus* (Ktze) Blake]*A. exiguus* (Fern.) Rydb.
24. Stem with appressed or ascending short hairs, or the lower part glabrous; bracts smooth or nearly so on the back; in habitats similar to the preceding, but less common; chiefly in the n. half of Ill. July-Oct. [*A. multiflorus* Ait.; *A. stricticaulis* Rydb.]*A. ericoides* L.

- 23. Rays light blue (or pink), about 5 mm. long; stem pubescent; leaves linear, entire, 2-5 mm. wide, hirsutulous, cuspidate; heads numerous; involucre 4-5 mm. high; moist ground, rare. Sept. Chicago, *Benke*; Peoria, *McDonald*, *Brendel*. [*A. ericoides* × *novae-angliae*] × *A. amethystinus* Nutt.
- 22. Bracts glabrous (or finely ciliolate), appressed; heads larger.
- 25. Heads solitary at the ends of short leafy branchlets arranged along the upper side of wand-like branches.
- 26. Outer bracts and uppermost leaves mucronate; leaves of the flowering branchlets appressed or ascending; rays white; roadsides, fields, and open woods, common throughout Ill. Aug.-Oct. [*A. ericoides* of auth., not L.; *A. ericoides* var. *platyphyllus* T. & G.; *A. ericoides* var. *villosus* T. & G.; *A. pilosus* var. *platyphyllus* (T. & G.) Blake; *A. glabellus* Nees]
.....*A. pilosus* Willd.
- 26. Bracts obtusish, the tips soft and thin; leaves of the flowering branchlets spreading; rays pale purple or white; moist sandy soil, rare. Aug.-Sept. Bushy Aster
.....*A. dumosus* L.
- 25. Heads paniculate or racemose.
- 27. Heads large, 15-25 mm. in diameter; rays 6-12 mm. long.
- 28. Leaves narrowly linear, entire, scabrous-margined; rays white; wet ground and in bogs, rare. Aug.-Sept. Lake Co., *Hill*; Peoria, *Brendel* [*A. junceus* sensu auth., non Ait.]
.....*A. junciformis* Rydb.
- 28. Leaves lanceolate to linear-lanceolate.
- 29. Rays usually bluish purple; leaves firm, thickish, rough; bracts acute; moist soil, local. Sept.-Oct. [*A. praealtus* Poir., nom. illegit.]
.....*A. salicifolius* Lam.
- 29. Rays usually white; leaves thin, smooth (except the margins); bracts acuminate; moist ground, especially along roads, local. Sept.-Oct.*A. paniculatus* Lam.

27. Heads smaller, 7-14 mm. in diameter; rays 2-6 mm. long, lavender or white.
30. Heads in a narrow or open panicle.
31. Leaves finely pubescent beneath, puberulent above, oblanceolate, or lanceolate, frequently serrate; roadsides, fields, river banks, common throughout Ill. Sept.-Oct. [*A. missouriensis* of Britt., not *A. missouriensis* (Nutt.) Ktze]
.....*A. pantotrichus* Blake
31. Leaves glabrous beneath, more or less scabrous above, entire or sparingly serrate; moist woods, local. Sept.-Oct. [*A. tradescanti* ex p. of auth.]*A. interior* Wieg.
30. Heads unilaterally racemose.
32. Leaves lanceolate or oblanceolate, serrate; involucre 4-5 mm. high; rays 10-12, white or bluish; woods, common. Sept.-Oct.
.....*A. lateriflorus* (L.) Britt.
32. Leaves linear, denticulate or entire; involucre 3-4 mm. high; rays 15-25, white; fields, woods, and roadsides, local. Sept.-Oct.
.....*A. vimineus* Lam.
21. Involucre 8-10 mm. high; bracts linear-lanceolate, keeled, appressed, imbricate in 4-5 series; rays 10-15, violet or rarely white, 8-10 mm. long; leaves numerous, linear, entire, sessile, 1-nerved, rigid, usually ciliolate; sandy soil in woods in the n. half of the state. Sept.-Oct. [*Ionactis linariifolius* (L.) Greene]
.....*A. linariifolius* L.
19. Heads in flat-topped corymbs; rays white or whitish; involucre 4-5 mm. high.
33. Leaves rigid, linear-lanceolate, acute; rays about 8 mm. long; achenes glabrous; pappus simple; sandy soil, Lake, McHenry, Du Page, Cook, and Kankakee counties; also Menard Co., Hall. Aug.-Sept. [*A. ptarmicoides* var. *lutescens* (Lindl.) Gray; *Unamia lutescens* (Lindl.) Rydb.]*A. ptarmicoides* (Nees) T. & G.
33. Leaves lanceolate, acuminate, not rigid; rays 4-6 mm. long; achenes slightly pubescent; pappus double; moist ground in the n. half of the state, local. Aug.-Oct. [*Doellingeria*

umbellata (Mill.) Nees} Flat-top Aster

.....*A. umbellatus* Mill.

17. Rays none; plants annual; heads campanulate, 8-12 mm. broad; involucre 4-6 mm. high; pappus copious, soft; achenes appressed-pubescent; leaves linear, entire, sessile, ciliolate, acutish; roadsides and waste ground, local; adv. from the West. Cook Co., *Moffatt, Hill, Agnes Chase*. July-Sept. [*A. angustus* sensu auth., non Nees; *Brachyactis angustus* (Lindl.) Britt.]*A. brachyactis* Blake

15. ERIGERON L.—Fleabane

(*Leptilon* Raf.)

1. Rays conspicuous, longer than the pappus.
2. Leaves clasping; rays lilac or purple; plants perennial.
3. Stem simple; rays 50-75; involucre glandular-puberulent; open woods, common. April-June*E. pulchellus* Michx.
3. Stem branched above; rays 150-200; involucre hirsute, not glandular; open woods, roadsides, and fields, common. May-June
.....*E. philadelphicus* L.
2. Leaves not at all clasping; rays white or pink-tinged; plants annual or biennial.
4. Stem-leaves linear or narrowly lanceolate, finely pubescent, usually entire; involucre hirsutulous; basal leaves spatulate; roadsides, fields, or dry open woods, chiefly in the n. half of the state. May-July. [*E. ramosus* sensu (Walt.) BSP., non Raf.] Daisy Fleabane
.....*E. strigosus* Muhl.
4. Stem-leaves lanceolate, ciliate, sparsely hirsute or glabrous, irregularly sharply toothed, or the upper ones entire; involucre glabrous or with a few hairs; basal leaves ovate, coarsely dentate, long-petioled, usually absent at flowering time; fields, roadsides, waste places, and open woods, common throughout Ill. June-Oct. Whitetop
.....*E. annuus* (L.) Pers.
1. Rays inconspicuous, scarcely, if at all, exceeding the pappus.
5. Rays purplish; involucre about 2 mm. high; stem diffusely or divaricately branched; leaves all linear, entire; dry soil, local. June-Sept.
.....*E. divaricatus* Michx.
5. Rays white; involucre 3-4 mm. high; stem strict; lower leaves spatulate, toothed; common weed in cult. ground and along roads. Aug.-Oct. Horseweed*E. canadensis* L.

Tribe 5. *Gnaphalieae*

16. PLUCHEA Cass.—Marsh Fleabane

- P. camphorata* (L.) DC. Swamps and sloughs, not common; s. Ill. July-Oct. [*P. petiolata* Cass.; *P. viscida* (Raf.) House.]

17. ANTENNARIA Gaertn.—Everlasting

1. Rosette leaves comparatively small, usually less than 3 cm. long, 1-ribbed, or indistinctly 3-ribbed.
2. Rosette leaves obovate, abruptly contracted below the middle into a petiole-like base; roadsides and open woods. May-June*A. neodioica* Greene
2. Rosette leaves cuneate-spatulate, gradually tapering to the sessile base; dry soil on open wooded slopes. Apr.-May*A. neglecta* Greene
1. Rosette leaves larger, distinctly 3-ribbed, 3-12 cm. long.
3. Upper surface of leaves dark green and glabrous or nearly so from the beginning; dry soil in open woods and on bluffs. Apr.-May
.....*A. parlinii* Fern.
3. Upper surface of leaves tomentose, tardily glabrate in age.
4. Heads small, the involucre of the pistillate plants 5-7 mm. high; wooded slopes, common. Apr.-May*A. plantaginifolia* Hook.
4. Heads larger, the involucre of the pistillate plants 8-10 mm. high.
5. Rosette leaves rhombic-obovate, widest at or below the middle, usually acutish at the apex; pastures and open woods, common. Apr.-May*A. fallax* Greene
5. Rosette leaves spatulate or obovate, widest above the middle, rounded at the apex. Cook Co. [*A. occidentalis* of auth., not Greene]
.....*A. munda* Fern.

18. GNAPHALIUM L.—Cudweed

1. Heads in cymose or paniculate clusters; pappus-bristles not united.
2. Stems 30-90 cm. tall, simple below; bracts white; achenes smooth.
3. Leaves not decurrent; plants not glandular; outer bracts obtuse; fields, roadsides, and open woods, common. Aug.-Oct. Sometimes mistaken for *Anaphalis margaritacea* (L.) B. & H., which is not known to occur in Ill. [*G. polycephalum* Michx.]*G. obtusifolium* L.
3. Leaves decurrent; stem glandular-pubescent; bracts acute; sandy soil in woods and fields, rare. July-Sept.*G. macounii* Greene
2. Stems 5-25 cm. tall, diffusely branched near the base; bracts brownish; achenes scabrous; dried mud, and along ditches, local. June-Aug.
.....*G. uliginosum* L.
1. Heads in a narrow spike-like panicle; pappus-bristles united at base, falling away in a ring; leaves glabrate above; fields and open woods, local. May-July*G. purpureum* L.

Tribe 6. *Imuleae*

19. INULA L.—Elecampane

I. helenicum L. Roadsides, fields, and open woods, occasional; introd. from Eur. July-Aug.

Tribe 7. *Heliantheae*

20. POLYMNIA L.—Leafcup

1. Rays white, inconspicuous, 2-5 mm. long; leaves pinnately lobed; achenes 3-5 mm. long, angular; woods, common. June-Nov.*P. canadensis* L.
1. Rays yellow, 1.5-2 cm. long; leaves palmately lobed; achenes 6-8 mm. long, black, flattened; woods and thickets, s. Ill. July-Sept.*P. uvedalia* L.

21. SILPHIUM L.

1. Stem 1-3 m. tall, leafless or nearly so; leaves large, cordate, dentate, long-petioled; prairie soil, common. July-Sept. Prairie-dock
.....*S. terebinthinaceum* Jacq.
1. Stem leafy throughout.
 2. Leaves pinnately parted, large, alternate; prairie soil, common. July-Aug. Compass-plant*S. laciniatum* L.
 2. Leaves toothed or entire, chiefly opposite.
 3. Leaves merely sessile, 7-10 cm. long; stem nearly terete; prairie soil, often along railroads, common. July-Aug. [*S. integrifolium* var. *deamii* Perry]. Occasional plants with some of the leaves whorled have been mistaken for *S. trifoliatum* L., which is not known to occur in Ill. Rosin-weed*S. integrifolium* Michx.
 3. Leaves connate-clasping, perfoliate, 20-60 cm. long; stem sharply 4-angled; alluvial soil, common. July-Aug. Cup-plant
..... *S. perfoliatum* L.

22. PARTHENIUM L.

P. integrifolium L. American Feverfew. Prairie soil, common. July-Sept.

23. HELIOPSIS Pers.

H. helianthoides (L.) Sweet. Open woods, and along roads, common. July-Aug. [*H. scabra* Dunal]

24. ECLIPTA L.

E. alba (L.) Hassk. Shores, sloughs, and fields, throughout Ill., except the n. counties. July-Sept.

25. RUDBECKIA L.—Coneflower

1. Peduncles glabrous; disk greenish yellow; rays 2.5-5 cm. long, soon drooping; lower leaves pinnately parted, the upper 3-lobed or entire; stem 1.5-3 cm. tall, glabrous; alluvial soil, common. July-Sept. Goldenglow
.....*R. laciniata* L.
1. Peduncles more or less pubescent; disk brown or purple; stem 30-150 cm. tall.
 2. Chaff of the receptacle acuminate, glabrous; lower leaves, or some of them, 3-lobed or 3-parted, the upper lanceolate, entire or serrate; rays 8-12, orange-yellow, 1.5-2.5 cm. long; woods, locally throughout Ill. Aug.-Oct. Brown-eyed Susan*R. triloba* L.
 2. Chaff obtuse or acutish, puberulent toward the tip.

3. Stem (at least the upper part) tomentulose or puberulent; leaves thick, tomentulose beneath, the lower ones, or some of them, deeply 3-lobed or 3-parted; rays 15-20, 2-3 cm. long; prairie soil, or in open woods, local. Aug.-Sept. Fragrant Coneflower*R. subtomentosa* Pursh
3. Stem strigose or hirsute; leaves merely toothed, or entire.
4. Leaves irregularly coarsely dentate, or serrate; stem hirsute; rays 2-4 cm. long; plants perennial; moist ground, rare. Wabash Co., *H. Shearer**R. sullivantii* Boynton & Beadle
4. Leaves denticulate or entire.
5. Stem sparsely strigose; rays orange-yellow, 1-1.5 cm. long; stigmas obtuse; pappus a minute crown; plants perennial; dry open woods, s. Ill., rare. Herod, Pope Co., July 29, 1898, *G. P. Clinton*. Orange Coneflower*R. fulgida* Ait.
5. Stem hirsute; rays bright yellow, 2-3.5 cm. long; stigmas subulate; pappus none; plants annual or biennial; fields, roadsides, and open woods, common. June-Aug. Black-eyed Susan
.....*R. hirta* L.

26. ECHINACEA Moench

(Brauneria Necker)

1. Leaves ovate to lanceolate, serrate or dentate, or the uppermost entire; stem usually branched above; woods and thickets, not common. July-Aug. Purple Coneflower*E. purpurea* (L.) Moench
1. Leaves oblanceolate or narrowly elliptical, entire; stem simple; prairie soil, local. June-July. Pale Coneflower*E. pallida* (Nutt.) Britt.

27. RATIBIDA Raf.

(Lepachys Raf.)

1. Rays spatulate-elliptical, 2.5-5 cm. long; disk subglobose to short-ellipsoid, shorter than the rays, becoming 1-2 cm. long and 1-1.5 cm. thick in fruit; stigmas subulate; roadsides and prairie soil, common throughout Ill. July-Aug. Drooping Coneflower*R. pinnata* (Vent.) Barnh.
1. Rays oval, 1.5-2 cm. long; disk cylindrical, equalling or exceeding the rays, becoming 2.5-4 cm. long and 7-10 mm. thick in fruit; stigmas short, obtuse; along railroads, occasional; adv. from w. U.S.; Cook Co., *W. D. Barnes* in 1898; Taylorville, *Andrews* in 1898; Peoria, *McDonald* in 1904*R. columnifera* (Nutt.) Woot. & Standl.

28. GALINSOGA Ruiz & Pavon

G. ciliata (Raf.) Blake. Peruvian Daisy. Waste places, cult. ground, roadsides; nat. from trop. Am. First collected in Ill. at Chicago by *Moffatt* in 1891, now common throughout Ill. June-Sept. [*G. parviflora* var. *hispida* DC.]

29. HELIANTHUS L.—Sunflower

1. Plants perennial.
2. Stem scape-like; leaves mostly near the base of the stem, oval, long-petioled, the upper ones bract-like; sandy soil in the n. part of the state. July-Sept. [*H. illinoensis* Gleason]*H. occidentalis* Riddell

2. Stem usually leafy to the inflorescence.
3. Heads small, 1.5-3 cm. broad, the rays about 1 cm. long, the disk 5-8 mm. broad; leaves lanceolate, acuminate, serrate, petiolate, more or less scabrous on both surfaces; stem glabrous or nearly so; sandy soil in open woods, local, s. Ill. Aug.-Oct. *H. microcephalus* T. & G.
3. Heads large, 4-8 cm. in diameter, the rays 2-4 cm. long.
 4. Bracts oval, acutish or obtuse, usually glabrous on the back, closely and evenly ciliolate, shorter than the disk, erect, closely appressed; disk usually purple-brown; leaves lanceolate, thick, scabrous, narrowed at the base; sandy or prairie soil, locally abundant. July-Sept. [*H. scaberrimus* Ell.; *H. subrhomboideus* Rydb.] Prairie Sunflower *H. rigidus* (Cass.) Desf.
 4. Bracts lanceolate or linear-lanceolate, acuminate; disk-flowers yellow.
 5. Leaves sessile or subsessile.
 6. Stem hirsute or hispidulous; leaves ascending.
 7. Stem villous-hirsute; leaves finely and densely grayish pubescent on both surfaces, ovate or ovate-lanceolate, acute, 3-veined above the slightly clasping base, all opposite; bracts copiously pubescent; heads solitary or few; rays 2-3 cm. long; prairie soil, locally abundant. Aug.-Sept.
..... *H. mollis* Lam.
 7. Stem more or less hispidulous or scabrous; leaves lanceolate or ovate-lanceolate, acuminate; heads several, panicked.
 8. Leaves lanceolate, hirsutulous beneath, faintly 3-veined from the cuneate, somewhat ciliate base; rays 1-2 cm. long, pale yellow; moist ground, local. Peoria, *Brendel*; Woodford Co., *McDonald* *H. giganteus* L.
 8. Leaves ovate-lanceolate, finely and rather copiously grayish short-pubescent beneath, the lateral veins confluent somewhat below the middle; rays 2.5-4 cm. long, bright yellow; roadsides and fields, not common. Sangamon Co., *E. Hall* in 1860; Kankakee Co., *G. N. Jones*
..... *H. doronicoides* Lam.
 6. Stem glabrous or nearly so, glaucous, slender; leaves divaricate, lanceolate, acuminate, 3-veined from the rounded base, scabrous on both sides; roadsides and open woods, local. July-Sept. *H. divaricatus* L.
 5. Leaves manifestly petioled.
 9. Stem smooth or nearly so, glaucous.
 10. Leaves triple-veined from near the base, chiefly opposite, at least below the inflorescence, abruptly contracted into margined petioles.
 11. Leaves lanceolate, shallowly serrate to entire, firm, the lower surface hirsutulous or glaucous; roadsides and open woods, common. July-Sept. [*H. arenicola* E. E. Wats.; *H. formosus* E. E. Wats.; *H. leoninus* E. E. Wats.] *H. strumosus* L.

11. Leaves ovate-lanceolate, thin, conspicuously coarsely regularly serrate-dentate, the lower surface glabrous, scabrous, or puberulent; dry woods, local. July-Oct.
.....*H. decapetalus* L.
10. Leaves 1-veined or inconspicuously 3-veined, the upper alternate, remotely denticulate or nearly entire, the lower ones opposite, coarsely serrate, all elongate-lanceolate, acuminate, scabrous above, finely shortly whitish pubescent beneath; peduncles strigose; stem 2-4 m. tall; prairie soil, roadsides, borders of fields, common. Aug.-Oct. [*H. instabilis* E. E. Wats.]*H. grosseserratus* Martens
9. Stem scabrous or hispidulous; leaves triple-veined from near the base, chiefly opposite below the inflorescence.
12. Lower surface of leaves hispidulous or short-hirsute; stem hirsute; roadsides and fields, local. Aug.-Sept.
.....*H. hirsutus* Raf.
12. Lower surface of leaves rather copiously canescent-puberulent; stem hirsutulous or antrorsely scabrous-strigilose; rhizome short, often tuberous-thickened at apex; alluvial soil, common. July-Oct. [*H. subcanescens* (Gray) E. E. Wats.; *H. mollissimus* E. E. Wats.] Jerusalem Artichoke
.....*H. tuberosus* L.
1. Plants annual; leaves chiefly alternate; disk usually brownish purple; stem hispid or strigose.
13. Leaves lanceolate, usually entire; stem 30-90 cm. tall; disk 1.5 cm. broad; bracts lanceolate, densely scabrous; sandy soil, roadsides, waste places, occasional; probably adv. from w. U.S. Aug.-Sept.
.....*H. petiolaris* Nutt.
13. Leaves ovate, dentate; stem 1-4 m. tall; disk 2.5-4 cm. broad; bracts ovate-lanceolate, ciliate and hispid; fields and roadsides, and often cult.; native w. of the Mississippi R. Aug.-Sept. Garden Sunflower
.....*H. annuus* L.

30. ACTINOMERIS Nutt.

A. alternifolia (L.) DC. Yellow Ironweed. Alluvial soil and along roads, common. July-Sept. [*Verbesina alternifolia* (L.) Britt.]

31. VERBESINA L.

V. helianthoides Michx. Open woods and along roads, throughout Ill., except the n. counties. June-July.

32. COREOPSIS L.

1. Leaves simple, entire or palmately cleft or divided; achenes wing-margined; plants perennial.
2. Leaves entire, or rarely with 1 or 2 lateral lobes.
3. Leaves mostly near the base of the stem; heads long-peduncled.

- 4. Plants glabrous, except the ciliate bases of the leaves; sandy soil. June-July*C. lanceolata* L.
- 4. Plants pubescent; limestone ridges, Lockport, Hill in 1899; known also from Cook, Peoria, and Cass counties. [*C. lanceolata* var. *villosa* Michx.]*C. crassifolia* Ait.
- 3. Stem leafy; plants pubescent; roadsides, fields, and woods, s. Ill. Pope Co., Clinton in 1898; St. Clair Co., Brendel in 1850; Jackson Co., Brendel, Gleason*C. pubescens* L.
- 2. Leaves palmately cleft or divided, or the uppermost entire.
 - 5. Leaves petioled, 3-divided into elliptic-lanceolate segments; heads many; stem 1-3 m. tall; rays entire; pappus none; open woods and along roads. Aug.-Sept. Tall Tickseed*C. tripteris* L.
 - 5. Leaves sessile, rigid, 3-cleft at or below the middle, the lobes linear-oblong; heads few or solitary; stem 30-90 cm. tall; rays mostly 3-toothed; pappus of 2 short teeth, or none; roadsides and open woods. June-July*C. palmata* Nutt.
- 1. Leaves or most of them 1-2-pinnately parted.
 - 6. Heads 4-6 cm. broad; rays 1.5-2 cm. long, yellow throughout; disk yellow; achenes broadly winged; pappus of 2 short scales; plants perennial; roadsides and waste places, occasional; adv. from w.-centr. U.S. June-Aug.*C. grandiflora* Hogg
 - 6. Heads 1.5-3 cm. broad; rays 8-12 mm. long, crimson-brown at base or throughout; disk brownish purple; achenes linear, wingless; pappus a mere border, or absent; plants annual; roadsides and waste places, escaped from cult.; native westw. and southw. June-Aug.*C. tinctoria* Nutt.

33. BIDENS L.—Beggar-ticks

- 1. Rays inconspicuous or none.
 - 2. Leaves pinnately parted or dissected.
 - 3. Achenes linear-fusiform, with 3 or 4 short, retrorsely barbed awns; rays yellowish white; roadsides and open woods, chiefly in the s. half of Ill., but extending northw. to Champaign and Hancock counties. Aug.-Sept. Spanish Needles*B. bipinnata* L.
 - 3. Achenes flat, 2-awned.
 - 4. Outer bracts 10-16; achenes brown; involucre 10-20 mm. high; roadsides, fields, and woods, chiefly in the n. half of the state. Aug.-Oct.*B. vulgata* Greene
 - 4. Outer bracts 4-8; achenes black.
 - 5. Involucre 5-7 mm. high; awns of the achenes upwardly barbed; wet ground, rare. Aug.-Oct.*B. discoidea* (T. & G.) Britt.
 - 5. Involucre 10-15 mm. high; awns downwardly barbed; roadsides, fields, and open woods. Aug.-Oct.*B. frondosa* L.
 - 2. Leaves simple, lanceolate, toothed or lobed, sessile or petioled; awns of the pappus 3 or 4.

6. Outer bracts 4 or 5, rarely much exceeding the disk; achenes angled 4-6 mm. long; corollas 5-toothed; stamens exserted; wet ground throughout Ill. Sept.-Oct. *B. connata* Muhl.
6. Outer bracts 6-8, foliaceous, exceeding the disk; achenes flat, 7-9 mm. long; corollas 4-toothed; stamens included; wet ground throughout Ill. Sept.-Oct. *B. comosa* (Gray) Wieg.
1. Rays present, conspicuous.
7. Leaves simple, oblanceolate to linear-lanceolate, acuminate, serrate, connate at the base; heads nodding in fruit; achenes cuneate, 4-angled, the 4 awns retrorsely barbed; wet ground, chiefly in the n. half of the state. July-Oct. [*B. gracilentia* Greene; *B. glaucescens* Greene; *B. leptopoda* Greene; *B. prionophylla* Greene; *B. filamentosa* Rydb.; *B. elliptica* (Wieg.) Gleason] *B. cernua* L.
7. Leaves pinnately parted or dissected; achenes flat.
8. Outer bracts 8-10, ciliolate or glabrous, not exceeding the inner; (awns sometimes only 0.5 mm. long).
9. Achenes obovate; moist ground along roads, or in swales and fields throughout Ill., except the n.w. counties. Aug.-Oct.
..... *B. aristosa* (Michx.) Britt.
9. Achenes cuneate; moist ground throughout Ill. July-Oct. [*B. trichosperma* (Michx.) Britt.] Plants with narrow leaf-segments have been named *B. coronata* var. *tenuiloba* (Gray) Sherff
..... *B. coronata* (L.) Britt.
8. Outer bracts 12-20, coarsely hispidulous, mostly longer than the inner; swampy ground, not common; known from Cook, Kankakee, La Salle, Henry, and Henderson counties. July-Sept. [*B. involucrata* sensu Britt., non Phil.] *B. polylepis* Blake

34. MEGALODONTA Greene—Water-marigold

M. beckii (Torr.) Greene. Ponds and slow streams, rare. Aug.-Sept. Known in Ill. from Lake and Cook counties [*Bidens beckii* Torr.]

Tribe 8. Helenieae

35. HYMENOPAPPUS L'Her.

H. scabiosaeus L'Her. Open sandy woods, rare. Mason, Cass, and Kankakee counties. May-June. [*H. carolinensis* (Lam.) Porter].

36. ACTINEA Juss.

(*Picradenia* Hook.)

A. herbacea (Greene) B. L. Robins. Dry gravelly banks, stony fields, and limestone hills, near Joliet, Will Co., Hill, May 9, and 27, 1902, June 8, 1907; H. C. Cowles, May 13, 1906; Manito, Mason Co., J. Voss. Also in Ottawa Co., Ohio, and s. Ontario, Canada. [*Tetranneuris herbacea* Greene; *Actinella scaposa* var. *glabra* Gray].

37. HELENIUM L.—Sneezeweed

1. Leaves lanceolate to elliptical, more or less decurrent on the angular stem; rays 1-2 cm. long; plants perennial.
2. Disk yellow; leaves lanceolate or oblanceolate, mostly dentate; ray-flowers fertile; low meadows, and along ditches, streams, and ponds, common. [*H. latifolium* Mill.; *H. canaliculatum* Lam.; *H. altissimum* Link ex Rydb.] Aug.-Oct. *H. autumnale* L.
2. Disk brownish-purple; leaves linear-lanceolate, mostly entire; ray-flowers neutral, often brownish purple at base; roadsides, meadows, and pastures, chiefly in the s. part of the state. [*H. polyphyllum* Small]. July-Sept. *H. nudiflorum* Nutt.
1. Leaves narrowly linear, numerous, entire, not decurrent; rays 6-10 mm. long; disk yellow; plants annual; moist ground, s. Ill., rare; Jackson Co., *Gleason* in 1900. Aug.-Oct. *H. tenuifolium* Nutt.

38. DYSSODIA Cav.

(*Boebera* Willd.)

D. papposa (Vent.) Hitchc. Roadsides and fields. Sept.-Oct.

Tribe 9. *Anthemideae*

39. ACHILLEA L.—Yarrow

A. millefolium L. Roadsides, fields, lawns, etc., very common; nat. from Eur. May-Aug. Rays sometimes pink.

40. ANTHEMIS L.

1. Rays 10-18, white; achenes not flattened.
2. Chaff of the receptacle subulate, stiff, subtending only the inner flowers; rays neutral; achenes sparsely glandular-tuberculate, 1-1.5 mm. long; plants annual, ill-scented when fresh; fields and waste places, common; nat. from Eur. May-Sept. [*Maruta cotula* (L.) DC.] Dog-fennel or Mayweed *A. cotula* L.
2. Chaff membranous or absent; rays fertile.
3. Chaff broad, obtuse, or absent; achenes obtusely 3-angled, 1-1.5 mm. long; plants perennial, tomentulose, pleasantly aromatic; cult., and occasionally spont.; introd. from Eur. June -Aug. Garden Chamomile *A. nobilis* L.
3. Chaff linear-lanceolate, cuspidate; achenes 10-ribbed, 1.5-2 mm. long; plants annual; fields and waste places, nat. from Eur. May-Aug. Field Chamomile *A. arvensis* L.
1. Rays 20-30, yellow, pistillate; achenes 4-angled and somewhat compressed; chaff lanceolate, acuminate, rigid; plants perennial, pubescent; fields and waste places, escaped from cult.; introd. from Eur. June-Sept. [*Cota tinctoria* (L.) J. Gay] *A. tinctoria* L.

41. MATRICARIA L.

M. matricarioides (Less.) Porter. Pineapple-weed. Roadsides, farmyards, and waste places, not uncommon; adv. or nat. from the Pacific Coast. May-Aug. [*M. suaveolens* (Pursh) Buch.]

42. CHRYSANTHEMUM L.

1. Heads 3-5 cm. broad, few or solitary; rays 20-30; fields, roadsides, and waste places, common; nat. from Eur. May-Aug. [*Leucanthemum vulgare* Lam.; *C. leucanthemum* var. *pinnatifidum* Lecoq. & Lamotte] Ox-eye Daisy *C. leucanthemum* L.
1. Heads 5-15 mm. broad, corymbose; rays 10-15, or absent; waste places, escaped from cult.; nat. from Eur. Sept.-Oct. [*Balsamita major* Desf.; *C. balsamita* var. *tanacetoides* Boiss.] *C. balsamita* L.

43. TANACETUM L.—Tansy

T. vulgare L. Waste places, escaped from cult., nat. from Eur. July-Sept.

44. ARTEMISIA L.—Wormwood

1. Leaves or their divisions linear to filiform, glabrous, or nearly so, green.
 2. Bracts of the involucre glabrous; heads 2-3 mm. broad; disk-flowers sterile.
 3. Leaves simple, all entire, or the lower trifid; plants perennial; prairie soil, rare. July-Sept. Lee Co., Vasey [*A. cernua* Nutt.] *A. dracunculoides* Pursh
 3. Leaves 1-3-pinnately divided; plants biennial; sandy soil in the n. part of the state, local. July-Sept. *A. caudata* Michx.
 2. Bracts tomentulose; heads 3-4 mm. broad; disk-flowers fertile; leaves 1-3-pinnately parted; plants perennial, shrubby, often cult., and sometimes persisting; introd. from Eur. Aug.-Sept. Southernwood *A. abrotanum* L.
1. Leaves or their divisions lanceolate to linear.
 4. Plants more or less whitish-tomentose; perennials.
 5. Leaves lanceolate or the upper linear.
 6. Leaves regularly serrate, lanceolate, acuminate, green above, whitish-tomentose beneath; alluvial soil in the n. half of the state, rare. Aug.-Sept. *A. serrata* Nutt.
 6. Leaves entire or few-toothed, tomentose on both sides, but usually less so above; along railroads and river banks; adv. from w. centr. U.S. Aug.-Sept. [*A. ludoviciana* of auth., not Nutt.] *A. gnaphalodes* Nutt.
 5. Leaves all pinnatifid.
 7. Leaves green and glabrate above, the lobes acute; heads 3-4 mm. high; receptacle glabrous; waste places, occasional; escaped from cult.; introd. from Eur. July-Oct. *A. vulgaris* L.
 7. Leaves canescent on both sides, the lobes obtuse; heads very numerous, about 2 mm. high; receptacle glabrous; roadsides and waste places, occasional; escaped from cult.; introd. from Eur. July-Sept. Common Wormwood or Absinth *A. absinthium* L.

- 4. Plants glabrous, annual or biennial.
 - 8. Heads 2-3 mm. high; leaf-divisions laciniate-dentate; plants biennial; cult. ground, waste places, or along railroads, in the n. half of the state. Aug.-Oct. Biennial Wormwood*A. biennis* Willd.
 - 8. Heads 1.5-2 mm. high; leaf-segments 1-3 mm. long; plants annual; roadsides and waste places, occasional; nat. from Eur. Aug.-Oct. Annual Wormwood*A. annua* L.

Tribe 10. *Senecioneae*

45. CACALIA L.—Indian-plantain

(*Mesadenia* Raf.)

- 1. Heads 20-30-flowered; bracts 12-15; receptacle flat; leaves hastate, dentate; woods, local. July-Aug. [*Synosma suaveolens* (L.) Britt.]*C. suaveolens* L.
- 1. Heads 5-flowered; bracts 5; receptacle raised in the center to a conical point.
 - 2. Leaves thin, reniform or flabellate, lobed or sinuately dentate.
 - 3. Leaves green on both sides; stem grooved; woods. July-Sept. [*C. reniformis* Muhl.]*C. muhlenbergii* (Sch.-Bip.) Fern.
 - 3. Leaves glaucous beneath; stem terete; open woods. July-Sept.*C. atriplicifolia* L.
 - 2. Leaves thick, oval, entire or denticulate, green on both sides; wet marly soil, local. June-Aug.*C. tuberosa* Nutt.

46. ERECHTITES Raf.

E. hieracifolia (L.) Raf. Fireweed. In moist woods, recently burned clearings, along roads, or in bogs, local. Aug.-Oct.

47. SENECIO L.—Ragwort

- 1. Basal leaves dentate or entire, the median stem-leaves often pinnatifid; plants perennial.
 - 2. None of the leaves cordate; basal leaves obovate or elliptical.
 - 3. Leaves and stems more or less floccose, tardily glabrate; involucre 5-7 mm. high; achenes hispidulous on the angles; prairie soil, and in dry ground in oak woods, local. May-June*S. plattensis* Nutt.
 - 3. Leaves glabrous or nearly so; stem glabrous, or slightly floccose when young; involucre 4-5 mm. high.
 - 4. Basal leaves obovate or suborbicular; achenes glabrous; bluffs and open woods, not common. Apr.-June. [*S. rotundus* (Britt.) Small]*S. obovatus* Muhl.
 - 4. Basal leaves oblanceolate; achenes often hispidulous on the margins; roadsides and open woods. May-June. [*S. balsamitae* Muhl.]*S. pauperculus* Michx.
 - 2. Basal leaves more or less cordate or subcordate, long-petioled, mostly glabrous; wet ground. Apr.-June. [*S. semicordatus* Mack. & Bush]*S. aureus* L.

1. Leaves all pinnatifid or coarsely sinuate-dentate; plants annual.
 5. Rays conspicuous; bracts not black-tipped; fields, s. Ill. May-June. [*S. lobatus* Pers.] Butterweed*S. glabellus* Poir.
 5. Rays none; bracts often black-tipped; cult. ground and waste places, occasional; nat. from Eur. June-July. Groundsel*S. vulgaris* L.

Tribe 11. *Cynareae*

48. ARCTIUM L.—Burdock

1. Involucre 1-2 cm. broad; inner bracts not exceeding the flowers; heads racemose; petioles hollow, not deeply furrowed; waste places, common; nat. from Eur. July-Sept. Common Burdock*A. minus* (Hill) Bernh.
 1. Involucre 2.5-3 cm. broad; inner bracts equalling or exceeding the flowers; heads corymbose; petioles solid, deeply furrowed; waste places, occasional; nat. from Eur. July-Oct. Great Burdock*A. lappa* L.

49. ECHINOPS L.—Globe-thistle

E. sphaerocephalus L. Roadsides and waste places, occasional; introd. from Eur. Apparently established in Kankakee Co., near Manteno, July 14, 1938, *Steyermark & Standley* 1726.

50. CIRSIUM Hill—Thistle

1. Heads large, more than 2 cm. in diameter; flowers all perfect; plants biennial.
 2. Leaves bristly on the upper surface, grayish arachnoid beneath, strongly decurrent; bracts of the involucre all spine-tipped; flowers violet-purple; fields, roadsides, and waste places, common; nat. from Eur. July-Aug. Bull Thistle [*C. lanceolatum* (L.) Hill]
*C. vulgare* (Savi) Airy-Shaw
 2. Leaves not bristly on the upper surface; outer involucre bracts spine-tipped, the inner acuminate, soft, or all the bracts spineless.
 3. Leaves white-tomentose beneath.
 4. Leaves pinnately parted into linear lobes, persistently white-tomentose on both sides; flowers cream color; sand dunes near Lake Michigan. June-July. Beach Thistle*C. pitcheri* (Torr.) T. & G.
 4. Leaves pinnately lobed or merely toothed.
 5. Leaves pinnately lobed, the margins revolute; rich soil along roads, in fields, or in woods, throughout Ill., common. Aug.-Sept. Field Thistle*C. discolor* (Muhl.) Spreng.
 5. Leaves merely toothed, or shallowly lobed, the margins flat; woods, locally throughout Ill. Aug.-Sept. Tall Thistle
*C. altissimum* (L.) Spreng.
 3. Leaves not white-tomentose.
 6. Heads 5-10 cm. broad; stem stout, 30-60 cm. tall; bracts spine-tipped and with a prominent glutinous midvein; gravelly soil, n. Ill., extending southw. to Kankakee, Peoria, and Adams counties. June-July. Hill's Thistle*C. hillii* (Canby) Fern.

- 6. Heads 2-3 cm. broad; stem 1-2.5 m. tall; bracts without prickly-points; wet ground, chiefly in the n. half of Ill. Aug.-Sept. Swamp Thistle*C. muticum* Michx.
- 1. Heads smaller, 1.5-2 cm. high and 1-1.5 cm. in diameter; flowers dioecious; perennials with spreading rhizomes; leaves glabrous or nearly so.
 - 7. Leaves deeply pinnately lobed; fields and waste places; nat. from Eur. June-Aug. Canada Thistle*C. arvense* (L.) Scop.
 - 7. Leaves entire or slightly lobed; occasional in fields and waste places; nat. from Eur. June-Aug. [*C. arvense* var. *integrifolium* Wimm. & Grab.]*C. setosum* (Willd.) Bieb.

51. CARDUUS L.

C. nutans L. Musk Thistle. An occasional weed in waste places; introd. from Eur. June-Sept.

52. CENTAUREA L.—Star-thistle

- 1. Bracts of the involucre not spiny.
 - 2. Lower bracts pectinate or fringed to the middle or below; leaves entire or toothed.
 - 3. Bracts lanceolate, pale, without dilated tips; flowers blue, purplish, pink, or white, the marginal ones enlarged; plants annual; waste places, escaped from cult.; native of Eur. July-Sept. Bachelor's Button*C. cyanus* L.
 - 3. Bracts with abruptly dilated tips; flowers rose-purple; plants perennial.
 - 4. Flowers all alike, discoid, not enlarged; bracts regularly pectinate-fringed; fields and roadsides, occasional; adv. from Eur. July-Sept. Black Knapweed*C. nigra* L.
 - 4. Marginal flowers enlarged, showy; bracts irregularly lacerate to entire; fields and roadsides, occasional; adv. from Eur. June-Sept. Brown Knapweed*C. jacea* L.
 - 2. Lower bracts pectinate only near the dark-colored tip; leaves coarsely dentate to pinnatifid; flowers rose-purple, the marginal ones radiant; plants perennial; waste ground, occasional; adv. from Eur. Aug.-Oct.*C. vochinensis* Bernh.
- 1. Bracts of the involucre tipped with a rigid spine; plants annual.
 - 5. Flowers purple; stem wingless; heads sessile; waste places, occasional; adv. from Eur. June-Oct.*C. calcitrapa* L.
 - 5. Flowers yellow; stem winged by the decurrent leaf-bases; heads peduncled; waste places, occasional; adv. from Eur. July-Sept. Barnaby's Thistle*C. solstitialis* L.

Tribe 12. *Cichorieae*

53. SERINIA Raf.

S. oppositifolia (Raf.) Ktze. Moist sandy soil, s. Ill. Mar.-Apr.

54. TRAGOPOGON L.—Oyster Plant. Salsify

- 1. Flowers yellow.

- 2. Bracts 8-9, equalling or shorter than the flowers; peduncles scarcely or not at all thickened below the head; roadsides and fields, common; nat. from Eur. May-Aug. Yellow Goat's-beard *T. pratensis* L.
- 2. Bracts 10-13, longer than the flowers; peduncles conspicuously thickened below the head; waste places, occasional; introd. from Eur. June.
..... *T. dubius* Scop.
- 1. Flowers purple; bracts longer than the flowers; peduncles thickened below the head; roadsides and fields, occasional; nat. from Eur. June-Aug. Vegetable Oyster *T. porrifolius* L.

55. KRIGIA Schreb.

(*Adopogon* Necker; *Cynthia* D. Don)

- 1. Plants perennial; pappus of 10-15 minute scales, and 15-20 long bristles.
- 2. Plants with a solitary head on a leafless scape; involucre 10-15 mm. high; plant bearing a small globose tuber; open woods in the s. half of Ill., northw. to Fayette Co. Apr.-May. [*C. dandelion* (L.) DC.; *A. dandelion* (L.) Ktze] *K. dandelion* (L.) Nutt.
- 2. Plants with 1-3 clasping stem-leaves, and several heads; involucre 8-10 mm. high; plant without a tuber; wooded slopes and ridges. May-Sept. [*K. amplexicaulis* Nutt.; *C. virginica* (L.) D. Don; *A. virginicum* (L.) Ktze] *K. biflora* (Walt.) Blake
- 1. Plants annual; pappus of 5-7 short rounded scales and an equal number of longer bristles; scapes slender, each with one head; leaves basal; involucre 6-8 mm. high; dry soil in fields and open woods, chiefly in the valleys of the Illinois and Wabash rivers. May-July. [*A. carolinianum* (Walt.) Britt.] *K. virginica* (L.) Willd.

56. CICHORIUM L.—Chicory

- C. intybus* L. Roadsides and fields, common; nat. from Eur. June-Nov. There are occasional white-flowered plants.

57. LACTUCA L.—Lettuce

- 1. Achenes filiform-beaked; pappus white; flowers pale yellow.
- 2. Heads 6-8-flowered; achenes light brown, 5-7-nerved but not transversely rugulose; leaves pinnatifid (or merely spinulose-denticulate in f. *integrifolia* Bogenh.), tending to turn edgewise in a vertical position, the margins and midribs spinulose; stem 30-90 cm. tall; fields, waste places, and roadsides, common; nat. from Eur. July-Sept. Prickly Lettuce
..... *L. scariola* L.
- 2. Heads 12-20-flowered; achenes dark brown, 1-3-nerved, transversely rugulose; stem 1-3 m. tall; native species.
- 3. Leaves entire to pinnatifid, not spinulose-toothed.
 - 4. Leaves sinuately pinnatifid, or the upper entire; open woods, and roadsides, common. June-Aug. Wild Lettuce *L. canadensis* L.
 - 4. Leaves all unlobed, lanceolate, entire or denticulate; woods and roadsides. June-Aug. [*L. integrifolia* Bigel.] *L. sagittifolia* Ell.
- 3. Leaves spinulose-toothed, the midvein somewhat setose on the lower surface; prairie soil, rare. July. Wady Petra, Stark Co., V. H. Chase

- 743; without locality, *Vasey*. Western Lettuce
*L. ludoviciana* (Nutt.) DC.
1. Achenes not filiform-beaked.
 5. Pappus white; flowers blue.
 6. Leaves oval, coarsely and unevenly dentate; achenes 4 mm. long;
 woods, throughout Ill., except the n.w. counties. Aug.-Sept.
*L. villosa* Jacq.
6. Leaves lyrate-pinnatifid, the terminal segment larger, triangular; achenes
 5-6 mm. long; woods. July-Sept.*L. floridana* (L.) Gaertn.
5. Pappus brown; flowers cream or bluish; leaves pinnatifid or merely sinu-
 ate; alluvial soil in woods, common. Aug.-Sept. [*L. spicata* of auth.]
*L. biennis* (Moench) Fern.

58. SONCHUS L.—Sow-thistle

1. Plants perennial, with rhizomes; heads 4-5 cm. in diameter, the flowers bright
 yellow; involucre 1.5 cm. high; achenes 2.5-3 mm. long, striate and papil-
 lose; fields and waste places; nat. from Eur. July-Sept. Field Sow-thistle
*S. arvensis* L.
1. Plants annual; heads 1-2.5 cm. in diameter, pale yellow; involucre 1 cm.
 high; achenes 2-2.5 mm. long.
 2. Leaves runcinate-pinnatifid, scarcely prickly, the terminal segment com-
 monly large and triangular; upper leaves clasping by an acute, sagittate
 base; achenes longitudinally striate and papillose; fields and waste
 places; nat. from Eur. June-Nov. Common Sow-thistle*S. oleraceus* L.
2. Leaves toothed or more or less curled or lobed, harshly prickly, the basal
 auricles rounded; achenes longitudinally ribbed, otherwise smooth;
 fields and waste places; nat. from Eur. May-Aug. Spiny Sow-thistle
 *S. asper* (L.) Hill

59. PRENANTHES L.

(*Nabalus* Cass.)

1. Involucre glabrous.
 2. Heads 5-7-flowered; pappus straw-colored; plants not glaucous; oak
 woods, local; apparently absent from the w. part of the state. Aug.-
 Sept.*P. altissima* L.
2. Heads 8-12-flowered; pappus reddish brown; plants glaucous; woods, n.
 Ill., southw. to Peoria Co. Aug.-Sept.*P. alba* L.
1. Involucre pubescent.
 3. Heads 12-16-flowered; basal leaves oblanceolate.
 4. Stem glabrous; upper leaves clasping; flowers purplish; moist ground,
 throughout Ill., except the s.w. part. Aug.-Sept.
*P. racemosa* Michx.
4. Stem hirsute; leaves not clasping; flowers cream; prairie soil. Aug.-Sept.
*P. aspera* Michx.
3. Heads 20-35-flowered; basal leaves deltoid; stem glabrous or puberulent;
 flowers cream; banks of streams, locally throughout Ill., but apparently
 absent from the n. counties. Aug.-Oct.*P. crepidinea* Michx.

60. HIERACIUM L.—Hawkweed

1. Plants with stolons and slender rhizomes; leaves oblanceolate, hirsute, all basal; flowers orange; heads 1.5-2.5 cm. broad; fields and meadows, occasional, nat. from Eur. Lake Co. June-July. Orange Hawkweed
 *H. aurantiacum* L.
1. Plants with short stout erect rhizomes; stolons none; flowers yellow; native species.
2. Heads medium or small, 1-2 cm. in diameter; leaves entire or denticulate.
3. Leaves and lower part of stem densely long villous-hirsute with brownish or whitish hairs 1-2 cm. long; achenes fusiform; fields and open woods, local. July-Sept. *H. longipilum* Torr.
3. Leaves and stem with shorter pubescence.
4. Inflorescence leafy-bracted, the heads 40-50-flowered, on stout peduncles; achenes columnar, truncate; dry woods and fields, local. Aug.-Sept. Rough Hawkweed *H. scabrum* Michx.
4. Inflorescence not leafy-bracted, the heads 15-20-flowered, on slender peduncles; achenes fusiform; dry soil in woods, local. July-Sept.
 *H. gronovii* L.
2. Heads large, 2.5-4.5 cm. in diameter; leaves dentate; stem leafy; dry woods and thickets in the n. counties. Aug.-Sept. Canada Hawkweed
 *H. canadense* Michx.

61. AGOSERIS Raf.

A. cuspidata (Pursh) D. Dietr. Dry soil in the n. half of the state, local. May-June. [*Troximon cuspidatum* Pursh; *Nothocalais cuspidata* (Pursh) Greene].

62. PYRRHOPAPPUS DC.—False Dandelion

P. carolinianus (Walt.) DC. Dry soil, s. Ill., extending northw. to Wabash and Jefferson counties. May-June.

63. TARAXACUM (Haller) Ludw.—Dandelion

1. Achenes greenish brown, the beak 8-10 mm. long, 2-3 times longer than the body; heads usually 3-5 cm. in diameter, 150-200-flowered, the flowers orange-yellow; outer involucre bracts reflexed; leaves sinuate to coarsely pinnatifid, the terminal lobe large; waste places, fields, roadsides, lawns, etc., very common; nat. from Eur. Mar.-Nov. Common Dandelion. [*Leontodon taraxacum* L.; *L. vulgare* Lam.; *T. officinale* Weber]
 *T. vulgare* (Lam.) Schrank
1. Achenes red or reddish brown, the beak 5-7 mm. long, less than twice the length of the body; heads 2-3 cm. in diameter, 70-90-flowered, the flowers sulphur-yellow; bracts ascending or spreading; leaves deeply pinnatifid, the terminal lobe small; waste places, less frequent than the preceding; nat. from Eur. May-June. Red-seeded Dandelion. [*T. erythrospermum* Andrzej.; *Leontodon erythrospermum* (Andrzej.) Eichw.]
 *T. laevigatum* (Willd.) DC.

GLOSSARY

- ACAULESCENT.** Stemless or apparently so.
ACHENE. A small, dry, hard, unilocular, indehiscent, 1-seeded fruit in which the pericarp and seed-coat are not fused.
ACICULAR. Needle-shaped.
ACTINOMORPHIC. Radially symmetrical; regular; capable of being divided vertically into similar halves through two or more planes.
ACUMINATE. Tapering at the apex, and ending in a point or angle of about forty-five degrees.
ACUTE. Sharp-pointed; ending in a point or angle of about ninety degrees.
ADNATE. United with a dissimilar part, as the calyx-tube to the ovary, or stamens to the corolla, etc.
ADVENTIVE (adv.). Transient, not native or fully naturalized.
ALTERNATE. Any arrangement of leaves or other parts not opposite or whorled; placed singly at different heights on the axis or stem.
ANNUAL. Of one year's growth; a plant that completes its life-cycle in one season.
ANNULAR. In the form of a ring.
ANNULUS. A ring of thick-walled cells partly surrounding the sporangium of some ferns.
ANTHER. The pollen-bearing part of the stamen.
ANTHERIFEROUS. Anther-bearing.
ANTHESIS. The time at which a flower opens; or the act of expansion of a flower.
APETALOUS. Without petals.
APHYLLOPODIC. With the basal leaves rudimentary or bladeless, as in species of *Carex*.
APICULATE. With a small point or apiculus.
APOPETALOUS. Having the corolla composed of several distinct petals; equivalent to the more common term *polypetalous*.
AQUATIC. Living in water; said of plants which live in water, either floating at the surface or completely submerged.
ANASTOMOSING (veins). Connecting by cross-veins and forming a network.
ANDROGYNOUS. With both staminate and pistillate flowers in the same inflorescence, in *Carex*, with the staminate flowers above the pistillate.
ARACHNOID. Cobwebby; with fine, grayish, entangled hairs.
ARCUATE. Curved or bent like a bow.
AREOLA. A small angular space marked upon a surface; the meshes of cellular tissue.
ARIL. An appendage or an outer covering of a seed, growing out from the hilum or funiculus; sometimes it appears as a pulpy covering.
ARISTATE. Awned; tipped by a bristle.
ASCENDING. Growing somewhat obliquely and curving upward.
ATTENUATE. Tapering to a narrow point.
AURICULATE. With ear-shaped appendages (auricles); said of leaves having a pair of short obtuse projections at base.
AWN. A bristle-like appendage.
AXIAL (axile). With the placentae in the axis or center of the ovary.
AXIL. The upper angle formed by a leaf or branch with the stem.
AXILLARY. Situated in an axil.
BARBELATE. With small fine barbs or bristles.
BASIFIXED. Attached or fixed by the base, as an anther upon the filament.
BEAK. A narrowed or prolonged tip; applied particularly to fruits and carpels.
BERRY. A many-seed fruit, in which the entire pericarp except the thin outer skin (epicarp) is succulent.
BICONVEX. Convex on both sides; doubly convex, as a lens; lenticular.
BIDENTATE. Having two teeth.
BIDENTULATE. Minutely bidentate.
BIENNIAL. Of two years' duration; a plant requiring two growing seasons to complete its life cycle.

- BIFID. Two-cleft.
- BILABiate. Two-lipped, referring especially to the corolla (or calyx).
- BIPINNATE. Twice pinnate.
- BIPINNATIFID. Twice pinnatifid, that is, having the primary divisions of the leaves again pinnatifid.
- BRAct. A reduced or more or less modified leaf, usually subtending a flower or a cluster of flowers.
- BRActLET. A small bract, particularly if borne on a secondary axis, as on a pedicel or even on a petiole; a bracteole.
- BRANCHLET. A small branch or twig.
- BULB. A short thick bud or modified stem, usually underground, bearing fleshy scale-like leaves that are stored with reserve food.
- BULBOUS. Resembling a bulb.
- BUNDLE-SCARS. Scars left in leaf-scars at time of leaf-fall by the breaking of the vascular bundles that pass from the stem into the petiole.
- CADUCOUS. Falling off early, or prematurely, as the sepals of the poppy; in distinction from deciduous, or persistent.
- CALYX. The outer perianth of the flower; a collective term for the sepals.
- CAMPANULATE. Bell-shaped.
- CANCELLATE. Marked like lattice, with lines crossing each other.
- CANESCENT. With gray or whitish pubescence.
- CAPILLARY. Fine, slender, hair-like.
- CAPITATE. Aggregated in a dense or compact head-like cluster.
- CAPSULE. A dry dehiscent fruit composed of two or more carpels.
- CARPEL. A simple pistil or a member of a compound pistil; the ovuliferous organ of a flower.
- CATKIN. A bracteate, spike-like inflorescence bearing staminate or pistillate apetalous flowers; the catkin falls as a whole.
- CAUDATE. Having a tail-like appendage.
- CAULINE. Pertaining or belonging to the stem.
- CESPITOSE. Growing in tufts; forming mats.
- CHAFF. A small thin scale or bract; particularly on the receptacle of the Compositae.
- CHARTACEOUS. Papery; having the texture of writing paper.
- CHLOROPHYLL. The green coloring matter of plants, occurring chiefly in chloroplasts.
- CILIATE. Bearing cilia, a marginal fringe of hairs.
- CILIOLE. Minutely ciliate.
- CINEREOUS. Ash-colored; light gray.
- CLASPING (leaf). With the base partly or completely surrounding the stem.
- CLAVATE. Club-shaped; gradually thickened upward.
- CLAW. The narrowed base of the petals of some flowers.
- CLEISTOGAMOUS (flowers). Small, closed, self-pollinated flowers, as in some violets and other plants; they are often underground.
- CLIMBING. Said of plants that ascend by means of tendrils, or by twining the stem or petiole around a support, or sometimes by other means.
- COMA. The hairs at the end of some seeds, as in *Epilobium*, or *Asclepias*.
- COMPLETE (leaf). One consisting of blade, petiole, and stipules.
- COMPOUND (leaf). One composed of two or more leaflets on a common petiole or rachis.
- CONCOLORED. Of one color throughout; not variegated.
- CONDUPLICATE. Folded together lengthwise.
- CONNATE. Similar parts fused together, e.g., a pair of leaves united by their bases.
- CONVOLUTE. Rolled up longitudinally.
- CORDATE. Heart-shaped.
- CORIACEOUS. Of leathery texture.
- CORM. A short, erect, often globose underground stem.
- CORMOSE. Resembling a corm.
- COROLLA. The inner cycle of the perianth, composed of petals.
- CORYMB. A flat-topped or convex indeterminate inflorescence with the pedicels arising from different points on the axis, the outer flowers opening first.

- CORYMBOSE (corymbiform). Like a corymb.
- CREEPING (stem). Growing along the surface of the ground and rooting from the nodes.
- CRENATE. Toothed with rounded shallow teeth.
- CRENULATE. Finely crenate.
- CUCULATE. Hooded, or hood-shaped.
- CUNEATE. Wedge-shaped; broad at one end and tapering to a point at the other.
- CUSPIDATE. Sharp-pointed; ending in a sharp point or cusp.
- CYME. A convex or flat flower-cluster of the determinate type, the central flowers opening first.
- CYMOSE. Arranged in cymes; cyme-like.
- DECIDUOUS. Falling off at maturity, or at the end of the season.
- DECLINED. Bent downward or aside; applied to stamens or style when turned to one side of the flower.
- DECOMPOUND. More than once compound.
- DECUMBENT (stem). Reclining, but with apex ascending.
- DECURRENT (leaf). Extending down the stem below the insertion.
- DEFLEXED. Deflected, or turned abruptly downward.
- DEHISCENT. Splitting open along definite lines at maturity.
- DELTOID. Triangular, shaped like the Greek letter Δ , as in the leaves of species of poplar.
- DENTATE. Coarsely toothed, with the teeth directed outward.
- DENTICULATE. Minutely dentate.
- DETERMINATE (inflorescence). One in which the terminal flower is the oldest and therefore the first to open, the order of flowering proceeding from the top downward.
- DIADELPHOUS. Having the stamens united by their filaments in two sets, as in almost all papilionaceous flowers.
- DIFFUSE. Loosely spreading or branching.
- DIMORPHOUS. Occurring in two forms.
- DIOECIOUS. Having the staminate and pistillate flowers on different plants.
- DISCOID. Resembling a disk; a discoid head (in Compositae) is one without ray-flowers.
- DISK. A development of the receptacle about the base of the pistil; the common receptacle of the heads of Compositae.
- DISSECTED. Divided into many narrow segments.
- DISTINCT. Separate; not united with parts of the same series; not connate.
- DIVARICATE. Spreading; widely divergent.
- DIVIDED. Separated to the base or to the midvein.
- DRUPE. A succulent indehiscent fruit with a bony, usually one-seeded endocarp; a stone-fruit, like a plum.
- DRUPELET. A little drupe, such as the individual carpels which together form the blackberry and similar fruits.
- ECHINATE. Beset with prickles or bristles.
- ELLIPSOID. A solid body elliptical in longitudinal section.
- ELLIPTICAL. Having the form of an ellipse; nearly oblong.
- EMARGINATE. Deeply notched at the apex.
- ENDOCARP. The inner layer of the pericarp.
- ENTIRE. With smooth margins, not toothed or lobed.
- EPIGYNOUS. Borne on the ovary; applied to petals and stamens when the ovary is inferior.
- EPIPETALOUS. Borne upon the corolla.
- EPISEPALOUS. Borne upon the calyx.
- EQUITANT. Said of conduplicate leaves which alternately enfold each other as in *Iris*, the upper part of the leaf being flat and vertical.
- EROSE. With jagged margin, as if gnawed.
- EVANESCENT. Passing away; soon disappearing.
- EVERGREEN. Remaining green in its dormant season; applied to plants whose leaves are green throughout the year.
- EXFOLIATING. Peeling off in thin layers.

EXsertED. Prolonged beyond the surrounding organs, as stamens from the corolla; not included.

EXstIPULATE. Lacking stipules.

FALCATE. Sickle- or scythe-shaped.

FARINOSE. Covered with mealy powder.

FASCICLE. A compact cluster or bundle.

FASTIGIATE. With stems or branches erect and close together.

FERRUGINOUS. Rust-colored.

FILAMENT. The stalk of a stamen, usually bearing an anther at its apex.

FILIFORM. Thread-like; slender and terete.

FIMBRIATE. Fringed.

FIMBRILLATE. Minutely fringed.

FLABELLATE. Fan-shaped.

FLEXUOUS. Having a more or less zigzag form.

FLOCCOSE. With tufts of soft woolly hairs.

FLORET. Individual flower of Compositae and grasses.

FOLIACEOUS. Having the form or texture of a leaf; leafy.

FOLLICLE. A simple, dry dehiscent fruit, producing several or many seeds and composed of one carpel, which splits along one suture.

FREE. Said of floral organs which are not united with other floral organs.

FUGACIOUS. Falling or withering away very early; ephemeral.

FUNNELFORM. Said of a corolla with the tube gradually widening upward into the spreading limb.

FUSIFORM. Spindle-shaped, narrowed toward the ends from an enlarged middle.

GENICULATE. Bent abruptly like a knee.

GIBBOUS. Swollen on one side.

GLABRATE. Nearly glabrous, or becoming glabrous.

GLABROUS. Not hairy; free from epidermal hairs.

GLANDULAR. Bearing glands or gland-like appendages or trichomes.

GLAUDESCENT. Becoming glaucous.

GLAUCOUS. Covered with a "bloom"; bluish white or bluish gray.

GLOMERULE. An inflorescence condensed in the form of a small head or cluster.

GLUME. A chaff-like bract; particularly one of the two empty bracts at the base of the spikelet in grasses, or the single bract of sedges.

GLUTINOUS. Sticky; mucilaginous; covered with a sticky exudate.

GRAIN. A dry, unilocular, 1-seeded, indehiscent, superior fruit of grasses, in which the thin pericarp is adherent throughout to the seed; a caryopsis.

GRANULAR, GRANULOSE. Composed of or appearing as if covered with minute grains.

GYNECANDROUS. Having staminate and pistillate flowers in the same spikelet, as in sedges, the upper flowers pistillate and the lower staminate.

HALBERD-SHAPED. Hastate.

HASTATE. Halberd-shaped; like an arrowhead, but with the basal lobes pointing outward nearly at right angles.

HEAD. A type of inflorescence in which numerous small flowers are crowded upon a common receptacle; the inflorescence or capitulum of Compositae; a compact inflorescence.

HERB. A plant that has no perennial woody stem above ground, thus distinguished from a shrub or tree.

HIRSUTE. Pubescent with rather coarse or stiff hairs.

HIRSUTULOUS. Slightly hirsute.

HIRTELLOUS. Minutely hirsute.

HISPID. Beset with rigid hairs or bristles.

HISPIDULOUS. Minutely hispid.

HYALINE. Thin and translucent.

HYPANTHIUM. The cup-shaped or tubular receptacle on which the perianth and the stamens are inserted.

HYPOGYNIUM. A structure supporting the ovary in some sedges.

HYPOGYNOUS. Borne on the receptacle beneath the ovary; said of stamens and petals.

IMBRICATE. Overlapping, as shingles on a roof.

INCISED. Sharply and more or less deeply and irregularly cut.

INCLUDED. Not at all exerted or protruded, as stamens not projecting from the corolla.

INDEHISCENT. Not opening regularly.

INDURATE. Hardened.

INDUSIUM. The covering of the sori of some ferns.

INFERIOR. Said of an ovary when the other floral parts appear to be inserted upon it.

INFLORESCENCE. The arrangement of the flowers on the stem.

INTERNODE. The portion of the stem between two nodes.

INTRODUCED. Brought intentionally from another country or region.

INVOLUCEL. A secondary involucre; that subtending the umbellets in the umbelliferae.

INVOLUCRE. A whorl or group of bracts surrounding or subtending a single flower, or the collection of bracts aggregated at the base of an inflorescence, as the heads of Compositae, or in the umbels of Umbelliferae.

INVOLUTE. A type of vernation, in which the margins are rolled inward or toward the upper side.

IRREGULAR (flower). See Zygomorphic.

KEEL. A central dorsal ridge like the keel of a boat; the structure formed by the two lower united petals of a papilionaceous flower; the midvein of a compressed floral bract in grasses and sedges.

LACINIATE. Cut into narrow pointed lobes.

LANCEOLATE. Lance-shaped; much longer than broad, widening above the base, and tapering to the apex.

LANCEOLID. A solid body lanceolate in longitudinal section.

LEAFLET. One of the blades of a compound leaf.

LEGUME. The fruit of certain Leguminosae, a pod formed from a simple pistil, and dehiscent along both sutures.

LEMMA. The lower of the two bracts enclosing the flower in grasses.

LENTICULAR. Lentil-shaped, that is, with the shape of a biconvex lens.

LIGULATE. Provided with or resembling a ligule.

LIGULE. A thin, often scarious projection from the top of the leaf-sheath in grasses and similar plants; the principal part of the corolla of ray-florets in numerous Compositae; the membranous structure on the adaxial surface of the leaf of *Isoetes* and *Selaginella*.

LINEAR. Long and narrow with nearly parallel margins.

LIP. Either of the divisions of a bilabiate corolla; the peculiar upper (apparently lower) petal in orchids.

LOCULE. One of the cavities or compartments of a pistil or anther.

LOBE. Any part or segment of an organ; specifically, a part of a petal, calyx, or leaf that represents a division to about the middle.

LOMENT. A jointed legume, usually constricted between the seeds, and at maturity breaking transversely into 1-seeded, indehiscent segments.

LUNATE. Crescent- or half-moon-shaped.

LYRATE. Lyre-shaped; descriptive of a pinnatifid leaf having a large, rounded terminal lobe, and the lateral lobes becoming gradually smaller toward the base.

MEGASPORE. The larger of two kinds of spores of a plant, usually giving rise to a female gametophyte.

MEMBRANOUS. Thin, soft, pliable, sometimes more or less translucent.

MICROSPORE. The smaller of two kinds of spores of a plant, usually giving rise to a male gametophyte.

MICROSPOROPHYLL. A sporophyll that bears microspores.

MONADELPHOUS. Said of stamens when the filaments are united into one tube.

MONILIFORM. Resembling a string of beads, as the rhizome of certain species of *Scutellaria*.

MONOECIOUS. Having stamens and pistils in separate flowers on the same plant.

- MUCRONATE. Tipped with a short abrupt point or mucro.
- MUCRONULATE. Minutely mucronate.
- MULTIPLE FRUIT. A cluster of matured ovaries produced by separate flowers.
- MURICATE. Roughened with short hard points.
- NATURALIZED (nat.). Although not native in the region, growing spontaneously and well established as a component of the flora.
- NEUTRAL. Devoid of stamens and functioning pistil.
- NODOSE. Provided with knots or internal transverse partitions, as the leaves of some species of *Juncus*.
- NODE. The joint of a stem where the leaves are inserted.
- NUT. An indehiscent, dry, one-seeded, hard-walled fruit, produced from a compound ovary.
- NUTLET. A little nut; one of the achene-like parts of the fruit of Boraginaceae, Verbenaceae, Labiatae, etc.
- OB— . A Latin prefix, usually signifying inversion, as obcordate (inversely heart-shaped), oblanceolate (inversely lanceolate), obovate (inversely ovate), etc.
- OBTUSE. Blunt, rounded.
- OPPOSITE. Inserted on opposite sides of an axis, as leaves, when there are two at one node.
- ORBICULAR. Circular; round in outline.
- OVAL. Broadly elliptical, with the width more than half the length.
- OVARY. The basal part of the pistil containing the ovules; the immature fruit.
- OVATE. Having the outline like the median longitudinal section of a hen's egg, the broader end downward.
- OVoid. A solid body ovate in longitudinal section.
- OVULE. The primordium of a seed in the ovary; the organ which may develop after fertilization into the seed.
- PALET. The upper bract which with the lemma encloses the flower in grasses.
- PALMATE (leaf). Radiately lobed or divided, with three or more veins arising from one point.
- PANICLE. A compound raceme.
- PANICULATE. Borne in panicles, or resembling, a panicle.
- PAPILIONACEOUS. Referring to the peculiar irregular corolla of many Leguminosae, consisting of a large upper petal (*standard*), two oblique lateral petals (*wings*), and the two lower ones connivent into a *keel*.
- PAPILLOSE. Covered with papillae, which are small protuberances.
- PAPPUS. The modified limb of the calyx in Compositae, forming a crown of variable structure at the summit of the achene.
- PARASITE. An organism which derives nourishment from another living organism.
- PARIETAL. Borne on or pertaining to the wall of the ovary or fruit.
- PECTINATE. Comb-like; pinnatifid with narrow, closely set segments.
- PEDATE. Palmately divided or parted, with the lateral divisions two-cleft.
- PEDICEL. The stalk of a single flower in a cluster.
- PEDUNCLE. The primary flower stalk which supports either a cluster of flowers, or a single flower.
- PELLUCID. Clear, transparent, or translucent.
- PELTATE. Shield-shaped; said of a leaf when the petiole is attached to the under side away from the margin or usually not far from the center.
- PENDENT. Hanging down; pendulous.
- PENICILLATE. Bearing a little tuft of hairs, especially at the tip.
- PERENNIAL. A plant, or part of a plant, which persists for more than two seasons.
- PERFECT (flower). Having both stamens and carpels; bisexual.
- PERFOLIATE. Said of a leaf when the stem appears to pass through its base.
- PERIANTH. The floral envelope; a term commonly used when there is no clear distinction between calyx and corolla.
- PERICARP. The wall of the ripened fruit.
- PERIGYNIUM. The inflated sac (bract) enclosing the pistillate flower in *Carex*.

PERIGYNOUS. Boine around the ovary and not at its base, as in flowers in which perianth and stamens are borne on the rim of the hypanthium.

PETAL. One of the parts of an apopetalous corolla.

PETALIFEROUS. Petal-bearing.

PETIOLATE. Having a petiole.

PETIOLE. A leaf-stalk.

PETIOLULATE. Having a petiolule.

PETIOLULE. Stalk of a leaflet.

PHYLOPODIC. The basal leaves of the fertile stems normally blade-bearing, as in species of *Carex*.

PILLOSE. Pubescent with soft long straight trichomes.

PILOSULOUS. Minutely pilose.

PINNA. A primary division of a pinnate leaf.

PINNATE (leaf). Compound, with the leaflets on each side of a common petiole or rachis.

PINNATIFID. Cleft or divided in a pinnate manner, the sinuses or lobes narrow or acute.

PINNULE. One of the smaller subdivisions of the primary divisions of a pinnately compound leaf, especially of ferns.

PISTIL. The ovule-bearing part of a flower, comprising ovary, style, and stigma; consisting of a single carpel (simple pistil) or of two or more partly or wholly fused carpels (compound pistil).

PISTILLATE FLOWER. A flower with a pistil but no stamens.

PLACENTA. Any part of the interior of the ovary which bears the ovules.

PLANO-CONVEX. Plane on one side and convex on the other.

PLICATE. Folded like a fan.

PLUMOSE. Feathery; furnished with long hairs, as the beak of the achene in *Clematis*, or the pappus of some Compositae.

POLLEN. Microspores, or partially developed male gametophytes, formed in the anthers of seed plants; the powdery contents of an anther.

POLYGAMOUS. Bearing unisexual and bisexual flowers on the same plant.

POLYPETALOUS. With petals separate.

POME. An accessory fruit composed of the pericarp and enlarged receptacle, as in the apple.

PRICKLE. A sharp-pointed outgrowth of the cortex and epidermis of a stem or leaf, as in rose, blackberry, etc.

PROCUMBENT (stem). Trailing on the ground, but not rooting at the nodes.

PROLIFEROUS. Producing offshoots, sometimes abnormal, as when carpels or stamens give rise to leafy shoots.

PROSTRATE. Lying flat on the ground.

PUBERULENT. Minutely pubescent.

PUBESCENT. Covered with pubescence, an indument of hairs (trichomes).

PULVERULENT. Appearing as if covered with powder or dust.

PUNCTATE. Marked with small dots or translucent glands.

PUNCTULATE. Minutely punctate.

PUNGENT. Terminating in a rigid sharp point; also of acrid flavor.

PYRIFORM. Pear-shaped.

QUADRIFOLIATE. Four-leaved.

QUADRIFOLIOLATE. Having four leaflets.

RACEME. An indeterminate inflorescence with pedicellate flowers on a more or less elongated axis.

RACEMOSE. In a raceme, or resembling a raceme.

RACHILLA. A secondary axis or rachis; in the grasses and sedges the axis that bears the flowers.

RACHIS. An axis bearing flowers or leaflets.

RADIATE. Spreading from a common center; in the Compositae, a head with ray-flowers.

RAY. The branch of an umbel; the marginal flowers (ray-flowers) of an inflorescence

- if differentiated; the strap-shaped part of the corolla of the ray-flowers in Compositae.
- RECEPTACLE. The more or less expanded portion of an axis bearing the organs of a flower or the collected flowers of a head.
- REGULAR (flower). See Actinomorphic.
- RENIFORM. Kidney-shaped; having the width greater than the length, and a wide sinus at the base.
- REPAND. With a slightly sinuate margin.
- RETICULATE. Net-veined; like a network.
- RETRORSE. Turned backward or downward.
- RETUSE. Slightly notched at the rounded apex.
- REVOLUTE. Rolled backward from the margin or apex.
- RHIZOME. A more or less elongated, usually underground, horizontal or ascending stem modified for food storage and asexual reproduction.
- RHOMBIC. Having the shape of a rhomb; oval, but somewhat angular at the sides; obliquely four-sided.
- ROTATE. (corolla). Wheel-shaped; with a flat and circular limb, and a very short tube.
- RUGOSE. Wrinkled.
- RUGULOSE. Minutely rugose.
- RUNCINATE. Pinnatifid; cut into sharp triangular lobes, the points directed backwards.
- SAGITTATE. Shaped like an arrowhead, with the basal lobes directed downward.
- SALVERFORM (flower). With the slender corolla-tube abruptly expanded in a flat limb.
- SAMARA. A dry indehiscent, one-seeded, winged fruit, such as that of elm, ash, or maple.
- SAPROPHYTE. A plant which derives its food from non-living organic matter.
- SCABRELLOUS. See Scabrid.
- SCABRID. Slightly rough to touch.
- SCABROUS. Rough to the touch.
- SCALE. A term applied to several kinds of small usually appressed leaves or bracts.
- SCAPE. A leafless peduncle arising from the ground; it may bear scales or bracts but no leaves and may be one- or several-flowered.
- SCAPIOFORM. Scape-like; having the form of a scape.
- SCAPOSE. Having a scape.
- SCARIOUS. Dry, thin, scale-like; membranous; not green.
- SCORPIOID. Applied to inflorescences which are circinate coiled in the bud, unrolling as the flowers expand, as in some Boraginaceae.
- SECUND. Turned to one side, as the flowers of an inflorescence.
- SEPAL. One of the parts or lobes of a calyx.
- SEPTATE. Divided by septa, or partitions.
- SEPTICIDAL. Dehiscing along or in the partitions; said of a fruit that opens between the locules.
- SEPTUM. A partition.
- SERICEOUS. Silky; pubescent with soft, shining, usually appressed hairs.
- SERRATE. Saw-toothed; having small, forwardly-directed sharp teeth on the margin.
- SERRULATE. Finely serrate.
- SESSILE. Not stalked.
- SETACEOUS. Bristle-like.
- SETOSE. Beset with bristles.
- SETULOSE. Finely setose.
- SHEATH. The basal part of a leaf of a grass; any long and more or less tubular structure surrounding an organ or part.
- SHRUB. A woody plant which does not become tree-like and usually produces several stems from a common base.
- SIMPLE (leaf). With the blade all in one piece; not divided into separate leaflets.
- SINUATE. With a strongly wavy margin.
- SORUS. One of the fruit-dots or clusters of sporangia on the leaves of ferns.
- SPADIX. A thick or fleshy spike of certain plants, as the Araceae, surrounded or subtended by a spathe.
- SPATHACEOUS. Resembling a spathe; spathe-bearing.

- SPATHE. A large protecting bract, often colored or membranous, enclosing the flower or inflorescence, especially of certain Monocotyledons.
- SPATHIFORM. See spathaceous.
- SPATULATE. Spatula-shaped; gradually narrowed from a rounded summit.
- SPIKE. An indeterminate inflorescence with sessile flowers on an elongated axis.
- SPIKELET. A small spike; the unit of inflorescence of grasses and sedges.
- SPINE. A sharp-pointed structure, usually the morphological equivalent of a leaf or part of a leaf.
- SPINESCENT. Becoming spiny; with short spine-like branchlets.
- SPINULOSE. Minutely spiny.
- SPONTANEOUS (spont.). Growing as native; appearing by itself without having been planted.
- SPORANGIUM. The spore-sac, especially in ferns, in which spores are produced.
- SPOROCARP. A pod-like structure containing one or more sporangia, as in Marsileaceae.
- SPOROPHYLL. A specialized spore-bearing leaf, usually more or less modified and unlike the normal leaves.
- SPUR. A sac-like or tubular extension of some part or parts of the perianth, usually nectariferous; a short branchlet with much shortened internodes, usually bearing a cluster of leaves.
- SPURRED. Provided with a spur.
- SQUARROSE. Spreading at the tip, at a right angle or more.
- STAMEN. The pollen-bearing male organ of the flower.
- STAMINATE FLOWER. A flower which bears stamens but no carpels.
- STAMINODE. A sterile stamen, or a structure resembling such and borne in the staminal part of the flower; in some flowers stamindia are petal-like.
- STANDARD. The upper broad petal of papilionaceous flower.
- STELLATE. Star-shaped; said of trichomes with radiating branches, or of a cluster of radiating trichomes.
- STIGMA. The part of the pistil, usually the apex, which receives pollen and upon which pollen grains germinate.
- STIPE. The stalk of a pistil or similar organ.
- STIPEL. A minute stipule on the petiolule of a leaflet.
- STIPITATE. Having a stipe.
- STIPULE. One of a pair of lateral appendages at the base of the petiole of many leaves.
- STIPULATE (leaf). Possessing stipules.
- STOLON. In flowering plants, a slender modified stem or basal branch trailing along the ground and rooting at the nodes; a "runner."
- STOLONIFEROUS. Bearing stolons.
- STRAMINEOUS. Straw-like, especially of the color of straw.
- STRIATE. Marked with fine longitudinal lines.
- STRIGILOSE. Minutely strigose.
- STRIGOSE. With appressed straight and stiff hairs.
- STYLE. The usually attenuated part of the pistil between the ovary and the stigma.
- SUB—. A Latin prefix, usually signifying somewhat, or slightly.
- SUBULATE. Awl-shaped; slender, and tapering to a point.
- SUCCULENT. Juicy; fleshy; soft and thickened.
- SUPERIOR (ovary). Borne above the insertion of the perianth and free from it.
- SYMPETALOUS. Having the petals united into one piece by their margins.
- SYNGENESIOUS. With stamens united by their anthers, as in Compositae.
- TENDRIL. A filiform organ used for climbing, and representing a modified leaflet, or leaf, or stipules, or branch.
- TERETE. Circular in transverse section.
- THALLOID. Resembling or consisting of a thallus; said of Lemnaceae, a family of monocotyledonous aquatic plants distinguished by the absence of a distinct stem or foliage.
- TOMENTOSE. Densely woolly or pubescent; with matted soft wool-like hairiness.
- TOMENTULOSE. Closely and finely tomentose.
- TORULOSI. Diminutive of torose; cylindrical, swelling in knobs at intervals, somewhat moniliform, or like a string of beads.

- TRAILING. A plant unable to support itself, prostrate but not rooting at the nodes.
- TREE. A perennial woody plant, usually with an evident trunk, and attaining a height at maturity of not less than five meters.
- TRICHOME. An outgrowth from the epidermis of plants, as hair, scale, bristle, or prickle.
- TRIFID. Divided into three parts; three-cleft.
- TRIGONAL. Triangular; the same as trigonous.
- TRIPINNATIFID. Thrice pinnatifid.
- TRUNCATE. Ending abruptly, as if cut off.
- TUBER. Enlarged, fleshy, underground stem, commonly borne at the end of a rhizome.
- TUBERCLE. A small swelling, or a little tuber-like body; the persistent base of the style in certain Cyperaceae; the grain-like corky growths on the valves of *Rumex*; enlargements on the roots of leguminous plants produced by symbiotic bacteria.
- TUBERCULATE. Having tubercles.
- TUBULAR (corolla). Prolonged into a tube, without much spreading at the border.
- TWINING. Climbing by twisting spirally around another stem or other support.
- UMBEL. An indeterminate inflorescence with branches (rays) arising from a common point, resembling the framework of an inverted umbrella; characteristic of the Umbelliferae.
- UMBELLATE. Borne in umbels.
- UMBELLET. A small umbel formed at the end of one of the rays of a compound umbel.
- UNDULATE. With wavy surface or margin.
- UNISEXUAL. Of one sex, either staminate or pistillate.
- URCEOLATE. Urn-shaped; ovoid or shortly cylindrical and contracted or constricted at the mouth.
- UTRICLE. A fruit consisting of a single seed enveloped in a thin pericarp and enclosed by the persistent calyx.
- VALVE. The pieces into which a capsule splits or divides; of anthers which open by flaps or lids; the three inner accrescent sepals of *Rumex*.
- VELUTINOUS. Velvety.
- VENATION. Arrangement of veins.
- VERNATION. The arrangement of leaves in bud.
- VERSATILE. Attached by the middle so as to swing freely, as an anther.
- VERTICILLATE. Arranged in a whorl.
- VILLOUS. Provided with long and soft, not matted, hairs; shaggy.
- VILLOSULOUS. Minutely villous.
- VIRGATE. Wand-like; with straight, stiff, erect branches.
- VISCID. Clammy; sticky; glutinous.
- WHORL. An arrangement of three or more leaves or other organs in a circle around the axis.
- ZYGMORPHIC. Bilaterally symmetrical; irregular; applied to flowers capable of being bisected into similar halves along only one plane.

BIBLIOGRAPHY

This is a list of the more important taxonomic articles dealing particularly with the flora (vascular plants) of Illinois. Monographs and manuals are not included. For an extensive bibliography of Illinois botany see A. G. Vestal, A Bibliography of the Ecology of Illinois (Part I) in *Trans. Ill. Acad. Sci.* **27**:163-261, 1934; Part II in manuscript.

- BEBB, M. S. 1857-58—List of plants occurring in the northern counties of the state of Illinois. *Trans. Ill. State Agr. Soc.* **3**:586-587.
- 1860—The flora of Ogle and Winnebago counties. *Prairie Farmer* **22**:182-183.
- BECK, L. C. 1826-28—Contributions toward the botany of the states of Illinois and Missouri. *Am. Journ. Sci.* **10**:257-264, 1826; **11**:167-182, 1826; **14**:112-121, 1828.
- BOGUSCH, E. R. AND ETHEL MOLBY. 1930—Grasses of Champaign County. *Trans. Ill. Acad. Sci.* **23**:104-116.
- BRENDEL, F. 1857-58—Additions and annotations to Mr. Lapham's catalogue of Illinois plants. *Trans. Ill. State Agr. Soc.* **3**:583-585.
- The trees and shrubs in Illinois. *Op. cit.* 588-604.
- The oaks of Illinois. *Op. cit.* 605-631.
- 1860—Notices and additions to Illinois flora. *Prairie Farmer* **22**:294-295.
- 1887—Flora Peoriana. 89 pp. Peoria.
- BUHL, C. A. 1934—Supplement to an annotated flora of the Chicago area by H. S. Pepon. *Bull. Chicago Acad. Sci.* **5**:5-12.
- CROKER, DOROTHY M. 1942—A key to the Illinois species of *Solidago*. *Trans. Ill. Acad. Sci.* **35**:62-63.
- DARLINGTON, H. T. 1923—The introduced weed flora of Illinois. *Loc. cit.* **15**:171-184.
- EATON, S. H. 1931—The ligneous flora of Lawrence County. *Loc. cit.* **23**:149-159.
- EVERS, R. A. 1941—The trees of Adams county. *Loc. cit.* **34**:98-99.
- ENGELMANN, G. 1843—Catalogue of a collection of plants made in Illinois and Missouri by Charles A. Geyer. *Am. Journ. Sci.* **46**:94-104.
- FASSETT, N. C. 1933.—Notes from the Herbarium of the University of Wisconsin.—[corrections of Pepon's Annotated Flora of the Chicago Area]. *Rhodora* **35**:199-203.
- FELDMAN, A. W. 1942—Trees and shrubs of Champaign County. *Trans. Ill. Acad. Sci.* **35**:60-61.
- FERNALD, EVELYN I. 1940—Preliminary check list of herbaceous plants of Winnebago County. 45 pp. (Minneographed). Rockford, Ill.
- FLAGG, W. C. 1878—Catalogue of the flowering and the higher flowerless plants of Illinois. *Rept. Ill. Industr. Univ.* **9**:221-297.
- FULLER, G. D. 1943—A preliminary check list of the vascular plants of Sangamon County. *Trans. Ill. Acad. Sci.* **36**:91-99.
- 1925—The vegetation of the Chicago region. 27 pp. University of Chicago Press.
- , G. M. LINK & A. J. TOMASEK. 1942—Forest Trees of Illinois. Revised edit. 70 pp. Springfield, Ill.
- GATES, F. C. 1923—Contributions to the flora of Cass County. *Trans. Ill. Acad. Sci.* **15**:165-170.
- 1925—Contributions to the flora of Hancock County. *Loc. cit.* **18**:225-234.
- GLASSMAN, S. 1942—A taxonomic study of the Illinois species of *Rumex*. *Loc. cit.* **35**:63-65.

- GLEASON, H. A. 1923—The vegetational history of the Middle West. *Ann. Assoc. Am. Geogr.* **12**:39-85.
- GREENE, E. L. 1869—The botany of central Illinois. *Am. Nat.* **3**:5-8.
- HIGLEY, W. K. & C. S. RADDIN. 1891—The flora of Cook County. *Bull. Chicago Acad. Sci.* **2**: no. 1, 168 pp.
- HILL, E. J. 1912—The fern flora of Illinois. *Fern Bull* **20**:33-43.
- JONES, G. N. 1942—A checklist of the vascular plants of the University of Illinois woodlands. *Trans. Ill. Acad. Sci.* **35**:71-72.
- LAPHAM, I. A. 1856-57.—Catalogue of the plants of the state of Illinois. *Trans. Ill. State Agr. Soc.* **2**:492-550.
- 1856-57—The native, naturalized, and cultivated grasses of the state of Illinois. *Loc. cit.*: 551-613.
- MILLER, R. B. & L. R. TEHON. 1929—The native and naturalized trees of Illinois. *Ill. State Nat. Hist. Surv. Bull.* **18**:1-339.
- MCSHER, EDNA. 1918—The grasses of Illinois. *Univ. Ill. Agr. Exp. Sta. Bull.* **15**:257-425.
- PALMER, E. J. 1921—Botanical reconnaissance of southern Illinois. *Jour. Arnold Arb.* **2**:129-153.
- PATTERSON, H. N. 1874—A list of plants collected in the vicinity of Oquawka, Henderson County, 18 pp.
- 1876—Catalogue of the phaenogamous and vascular cryptogamous plants of Illinois, 54 pp.
- PEARSALL, GORDON S. 1940—List of the fauna and flora of the Forest Preserve, District of Cook County, 36 pp.
- PEATTIE, D. C. 1922—The Atlantic coastal plain element in the flora of the Great Lakes. *Rhodora* **24**:57-70; 80-88.
- PEPOON, H. S. 1927—An annotated flora of the Chicago area. *Chicago Acad. Sci. Bull.* **8**:1-554.
- RIDGWAY, R. 1928—The ligneous flora of Richland County. *Trans. Ill. Acad. Sci.* **20**:105-115.
- ROBERTSON, C. 1928—Flowers and Insects. 221 pp. Science Printing Co., Lancaster, Pa.
- SCHNECK, J. 1876—Catalogue of the flora of the Wabash Valley. *Geol. Surv. Indiana Ann. Rept.* **7**:504-579.
- SMITH, ISABEL. 1909—Native trees of Morgan County. *Trans. Ill. Acad. Sci.* **2**:15-18.
- STEAGALL, MARY M. 1927—Some Illinois Ozark ferns in relation to soil acidity. *Trans. Ill. Acad. Sci.* **19**:113-136.
- STOVER, E. L. 1930—A mesophytic ravine, Rocky Branch. *Bull. of the Eastern Ill. State Teachers Coll., Charleston.* **110**:1-26.
- THONE, F. 1925—Preliminary check list of the vascular plants of Illinois State Park at Starved Rock, La Salle Co. *Trans. Ill. Acad. Sci.* **17**:100-106.
- VASEY, G. 1859-60—Additions to the flora of Illinois. *Trans. Ill. State Agr. Soc.* **4**:667-671.
- VESTAL, A. G. 1931—A preliminary vegetation map of Illinois. *Trans. Ill. Acad. Sci.* **23**:204-217.
- 1934—A bibliography of the ecology of Illinois. *Loc. cit.* **27**:163-261.
- VOSS, J. 1935—*Actinea herbacea*. *Torreya* **35**:61-62.

TAXONOMIC MONOGRAPHS AND REVISIONS

The following list of taxonomic monographs and revisions includes those that are of value to students of the vascular plants of Illinois and adjacent areas. When the latest definitive monograph of a group is listed, earlier works often are not mentioned, since it is usually possible to trace these, if necessary, through the monograph cited. For convenience, an author-index is appended.

Spermatophyta

Aceraceae

PAX, F., *Aceraceae*, Das Pflanzenr. IV. **163**:1-89. 1902.—ROUSSEAU, J., Histoire de la nomenclature de l'*Acer saccharophorum*, Contrib. Inst. Bot. Univ. Montréal **35**:1-66. 1940.

Aizoaceae

WILSON, P., *Tetragoniaceae* [*Aizoaceae*], N. Am. Fl. **21**:267-277. 1932.—PAX, F. & K. HOFFMANN, *Aizoaceae*, in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **16c**:179-233. 1930.

Alismaceae

BUCHENAU, FR., *Alismataceae*, Das Pflanzenr. IV. **15**:1-66. 1903.—SMALL, J. K., *Alismaceae*, N. Am. Fl. **17**:43-62. 1909.—SAMUELSSON, G., Die Arten der Gattung *Alisma*, Arkiv för Bot. **24**:1-46. 1932.

Amaranthaceae

STANDLEY, P. C., *Amaranthaceae*, N. Am. Fl. **21**:95-169. 1917.—SCHINZ, H., *Amaranthaceae*, in Engler & Prantl, Die Nat. Pflanzenf., 2 ed. **16c**:7-85. 1934.

Amaryllidaceae

BRACKETT, AMELIA E., Revision of the American species of *Hypoxis*, *Rhodora* **25**:120-147. 1923.—PAX, F. & K. HOFFMANN, *Amaryllidaceae* in Engler & Prantl, Die Nat. Pflanzenf., 2 ed. **15a**:391-431. 1930.

Anacardiaceae

BARKLEY, F. A., A monographic study of *Rhus* and its immediate allies, Ann. Missouri Bot. Gard. **24**:265-498. 1937.

Apocynaceae

WOODSON, R. E., A monograph of the genus *Amsonia*, Ann. Missouri Bot. Gard. **15**:379-434. 1928; *Apocynaceae*, in N. Am. Fl. **29**:103-192. 1938.

Aquifoliaceae

LOESENER, TH., *Aquifoliaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **20b**:36-86. 1942.

Araceae

ENGLER, A., *Araceae-Aroideae*, Das Pflanzenr. IV. **23f**:1-274. 1920.—FERNALD, M. L., What is *Arisaema triphyllum*? *Rhodora* **42**:247-253. 1940.

Aristolochiaceae

SCHMIDT, O. C., *Aristolochiaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **16b**:204-242. 1935.

Asclepiadaceae

VAIL, ANNA M., A revision of the genus *Acerates* in the United States, Bull. Torr. Club **25**:30-38. 1898.—PERRY, LILY M., *Gonolobus* within the Gray's Manual range, *Rhodora* **40**:280-287. 1938.—WOODSON, R. E., The N. Am. *Asclepiadaceae*, I. Perspective of the genera, Ann. Missouri Bot. Gard. **28**:193-244. 1941.

Balsaminaceae

RYDBERG, P. A. *Balsaminaceae*, N. Am. Fl. **25**:93-96. 1910.

Betulaceae

WINKLER, H. *Betulaceae*, Das Pflanzenr. IV. **61**:1-149. 1904.

Boraginaceae

BRAND, A., *Boraginaceae*, Das Pflanzenr. IV. **252**:1-183. 1921; 1-236. 1931.—
 JOHNSTON, I. M., Restoration of the genus *Hackelia*, Contr. Gray Herb. **68**:43-48.
 1923; A synopsis of the Am. native and immigrant borages of the subfam. *Boragini-*
deae, op. cit. **70**:3-44. 1924.—MACKENZIE, K. K., *Onosmodium*, Bull. Torr. Bot.
 Club **32**:495-506. 1905.—WILLIAMS, L. O., A monograph of the genus *Mertensia* in
 N. Am., Ann. Missouri Bot. Gard. **24**:17-159. 1937.

Burmanniaceae

JONKER, F. P., A monograph of the *Burmanniaceae*, Meded. Bot. Mus. Ryks'.
 Univ. Utrecht **51**:1-279. 1938.—PFEIFFER, NORMA E., Morphology of *Thismia amer-*
icana, Bot. Gaz. **57**:122-135. 1914.—SCHLECHTER, R., Die *Thismieae*. Notizbl. Bot.
 Gart. Berlin **8**:31-45. 1921.

Cactaceae

BRITTON, N. L. & J. N. ROSE, The Cactaceae, in Carnegie Inst. Washington, Publ.
 248, **1**:1-236, 1919; **2**:1-239, 1920; **3**:1-255, 1922; **4**:1-318, 1923.

Callitrichaceae

PAX, F., & K. HOFFMANN, *Callitrichaceae* in Engler & Prantl, Die Nat. Pflanzenf.
 2 ed. **19c**:236-240. 1931.

Capparidaceae

PAX, F., & K. HOFFMANN, *Capparidaceae* in Engler & Prantl, Die Nat. Pflanzenf.
 2 ed. **17b**:146-223. 1936.

Caprifoliaceae

JONES, G. N., A monograph of the genus *Symphoricarpos*, Journ. Arnold Arb. **21**:
 201-252. 1940.—REHDER, A. Synopsis of the genus *Lonicera*, Ann. Rept. Missouri
 Bot. Gard. **14**:27-232. 1903.—WIEGAND, K. M., Notes on *Triosteum perfoliatum* and
 related species, Rhodora **25**:199-203. 1923.

Caryophyllaceae

ROSSBACH, RUTH P., *Spergularia* in N. & S. Am., Rhodora **42**:57-83; 105-143.
 1940.—PAX, F. & K. HOFFMANN, *Caryophyllaceae* in Engler & Prantl, Die Nat.
 Pflanzenf. 2 ed. **16c**:275-364. 1934.

Celastraceae

LOESENER, TH., *Celastraceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **20b**:
 87-197. 1942.

Chenopodiaceae

AELLEN, P., Beitrag zur Systematik der *Chenopodium*-Arten Amerikas, Rep. Spec.
 Nov. Reg. Veg. **26**:31-64, 119-160. 1929.—AELLEN, P. & TH. JUST, Key and
 Synopsis of the Am. Species of the Genus *Chenopodium*, Am. Midl. Nat. **30**:
 47-76. 1943.—HALL, H. M., & F. E. CLEMENTS, The genus *Atriplex*, Carnegie Inst.
 Washington Publ. **326**:235-346. 1923.—JUST, TH., *Chenopodiaceae* in Deam, Flora
 of Indiana 418-427. 1940.—STANDLEY, P. C., *Chenopodiaceae*, N. Am. Fl. **21**:1-93.
 1916.—ULBRICH, E., *Chenopodiaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed.
16c:379-584. 1934.

Cistaceae

GROSSER, W., *Cistaceae*, Das Pflanzenr. IV. **193**:1-161. 1903.—HODGDON, A. R.,
 A taxonomic study of *Lechea*, Rhodora **40**:29-69; 87-131. 1938.—JANCHEN, E.,
Cistaceae in Engler & Prantl, Die Nat. Pflanzenf., 2 ed. **21**: 289-313. 1925.

Commelinaceae

ANDERSON, E., & R. E. WOODSON, The species of *Tradescantia* indigenous to the
 U. S. Contr. Arnold Arb. **9**:1-132. 1935.—FERNALD, M. L., The varieties of *Com-*
melina erecta, Rhodora **42**:435-441. 1940.—PENNELL, F. W., The genus *Commelina*
 in the U. S., Bull. Torr. Bot. Club **43**:96-111. 1916.

Compositae

CRONQUIST, A., The separation of *Erigeron* from *Conyza*, Bull. Torr. Bot. Club
70:629-632. 1943.—FERNALD, M. L., The dwarf *Antennarias* of n.e. Am., Rhodora
26:95-102. 1924; *Taraxacum* in e. N. Am., loc. cit. **35**:369-386. 1933.—A synopsis

of *Boltonia*, loc. cit. 42:482-492. 1940.—FRIESNER, R. C., The genus *Solidago* in n.e. N. Am., Butler Univ. Bot. Studies 3:1-64. 1933.—GLEASON, H. A., *Vernoniaeae*, N. Am. Fl. 33:47-110. 1922.—GREENE, E. L., *Antennaria* in the Middle West. Am. Midl. Nat. 2:73-90. 1911.—GREENMAN, J. M., Monograph of the N. & Centr. Am. species of the genus *Senecio*, Ann. Missouri Bot. Gard. 2:573-626. 1915. 3:85-194. 1916.—HALL, H. M., & F. E. CLEMENTS, The genus *Artemisia*, Carnegie Inst. Washington Publ. 326:31-156. 1923.—MILLSPAUGH, C. F., & E. E. SHERFF, *Xanthium*, N. Am. Fl. 33:37-44. 1922.—PERRY, LILY M., Notes on *Silphium*, *Rhodora* 39:281-297. 1937.—PETRAK, F., Die nordamerikanischen Arten der Gattung *Cirsium*, Bot. Centralbl. Beihefte 35:223-567. 1917.—POPHAM, R. A., A key to the genera of the *Compositales* of n.e. N. Am., Ohio Biol. Surv. Bull. 7:103-129. 1941.—RYDBERG, P. A., *Carduaceae: Heleniceae*, N. Am. Fl. 34:1-75. 1914; *Tageteae*, op. cit. 81-180. 1915; *Anthemideae*, op. cit. 181-288. 1916; *Ambrosiaceae, Carduaceae*, loc. cit. 33:1-37. 1922.—ST. JOHN, H., & D. WHITE, The genus *Galinsoga* in N. Am., *Rhodora* 22:97-101. 1920.—SHARP, W. M., A critical study of certain epappose genera [incl. *Ratibida*, *Echinacea*, *Balsamorhiza*, et al.] of the *Heliantheae-Verbesiniceae*, Ann. Missouri Bot. Gard. 22:51-152. 1935.—SHERFF, E. E., The N. Am. species of *Taraxacum*, Bot. Gaz. 70:329-359. 1920; The genus *Bidens*, Publ. Field Mus. Nat. Hist. Bot. Series 16:1-709. 1937; Revision of the genus *Coreopsis*, loc. cit. 11:279-475. 1936.—SHINNERS, L. H., The genus *Aster* in Wisconsin, Am. Midl. Nat. 26:398-420. 1941.—A revision of the *Liatriis scariosa* complex, loc. cit. 29:27-41. 1943.—STANDLEY, P. C., A revision of the cichoriaceous genera *Krigia*, *Cynthia*, and *Adopogon*, Contr. U. S. Nat. Herb. 13:351-358. 1911.—STEYERMARK, J. A., A monograph of the N. Am. species of *Grindelia*, Ann. Missouri Bot. Gard. 21:433-608. 1934.—WATSON, E. E., Contributions to a monograph of the genus *Helianthus*, Papers Michigan Acad. Sci. 9:305-475. 1929.—WIDDER, F. J., Die Arten der Gattung *Xanthium*, Rep. Spec. Nov. Reg. Veg. Beihefte 20:1-222. 1923.—WIEGAND, K. M., *Eupatorium purpureum* and its allies, *Rhodora* 22:57-70. 1920; *Aster lactiflorus* and some of its relatives, loc. cit. 30:161-179. 1928; *Aster paniculatus* and some of its relatives, loc. cit. 35:16-38. 1933.—WIEGAND, K. M., & C. A. WEATHERBY, The nomenclature of the verticillate *Eupatoria*, loc. cit. 39:297-306. 1937.

Convolvulaceae

HOUSE, H. D., Studies in the N. Am. *Convolvulaceae*, Bull. Torr. Bot. Club 34:143-149. 1907; loc. cit. 36:595-603. 1909; The N. Am. species of the genus *Ipomoea*, Ann. New York Acad. Sci. 18:181-263. 1908.—TRYON, R. M., The varieties of *Convolvulus spithameus* and of *C. sepium*, *Rhodora* 41:415-423. 1939. YUNCKER, T. G., The *Convolvulaceae* of Indiana, Proc. Indiana Acad. Sci. 1922:273-280. 1923; Revision of the N. Am. and West Indian species of *Cuscuta*, Univ. of Illinois Biol. Monogr. 6:1-141. 1921; The genus *Cuscuta*, Mem. Torr. Bot. Club 18:113-331. 1932.

Cornaceae

WANGERIN, W., *Nyssaceae* [Cornaceae], Das Pflanzenr. IV. 56a:1-20. 1910; *Cornaceae* loc. cit. 1-110.

Crassulaceae

BERGER, A., *Crassulaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 18a:352-483. 1930.—BRITTON, N. L., & J. N. ROSE, *Crassulaceae*, N. Am. Fl. 22:7-74. 1905.—RYDBERG, P. A., *Penthoraceae*, N. Am. Fl. 22:75. 1905.

Cruciferae

BAILEY, L. H., The cultivated brassicas, Gentes Herb. 1:53-108. 1922; loc. cit. 2:211-267. 1930.—DETTLING, L. E., A revision of the N. Am. species of *Descurainia*, Am. Midl. Nat. 22:481-520. 1939.—FERNALD, M. L., Some variations of *Cañile edentula*, *Rhodora* 24:21-23. 1922; *Draba* in temperate e. N. Am., loc. cit. 36:241-261; 285-305; 314-344; 353-371; 392-404. 1934.—HITCHCOCK, C. LEO, The genus *Lepidium* in the U. S., Madroño 3:265-320. 1936.—HOPKINS, M., *Arabis* in e. and centr. N. Am., *Rhodora* 39:63-98; 106-148; 155-186. 1937.—PAYSON, E. B., A monograph of the genus *Lesquerella*, Ann. Missouri Bot. Gard. 8:103-236. 1922.—ROLLINS, R. C., Systematic study of *Iodanthus*, Contr. Dudley Herb. Stanford Univ. 3:209-239.

1942; A monographic study of *Arabis* in w. N. Am., *Rhodora* **43**:289-325; 348-411; 425-481, 1941.—SCHULZ, O. E., *Cruciferae*, *Das Pflanzenr.* IV. **105**:1-290, 1919; 1-100, 1923; 1-388, 1924; 1-396, 1927; also in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **17b**:227-658, 1936.

Cucurbitaceae

BAILEY, L. H., *Species of Cucurbita*, *Gentes Herb.* **6**:265-322, 1943.

Cupressaceae

PILGER, R., *Cupressaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **13**:361-403, 1926.

Cyperaceae

BUSH, B. F., The N. Am. species of *Fuirena*, *Ann. Rept. Missouri Bot. Gard.* **16**:87-99, 1905.—CORE, E. L., The Am. species of *Scleria*, *Brittonia* **2**:1-105, 1936.—FERNALD, M. L., The N. Am. species of *Eriophorum*, *Rhodora* **7**:81-92; 129-136, 1905; Studies in N. Am. species of *Scirpus*, loc. cit. **45**:279-296, 1943.—FERNALD, M. L., & AMELIA E. BRACKETT, The representatives of *Eleocharis palustris* in N. Am., *Rhodora* **31**:57-77, 1929.—FRIEDLAND, S., The Am. species of *Hemicarpha*, *Am. Jour. Bot.* **28**:855-861, 1941.—GALE, SHIRLEY, *Rhynchospora*, sect. *Eurhynchospora* in Canada, U. S. & W. Ind., *Rhodora* **46**:89-134; 159-197; 207-249; 255-278, 1944.—KÜKENTHAL, G., *Cyperaceae—Scirpoideae—Cyperaceae*, *Das Pflanzenr.* IV. **20**:1-671, 1935.—MCGIVNEY, Sr. M. VINCENT DE PAUL, A revision of the subgen. *Eucyperus* found in the U. S., *Contr. Biol. Lab. Catholic Univ. Amer.* **26**:1-74, 1938.—MACKENZIE, K. K., *Cyperaceae—Cariceae*, *N. Am. Fl.* **18**:1-478, 1931-1935; Keys to the N. Am. species of *Carex*, 80 pp., *New York Bot. Gard.*, 1941; *N. Am. Cariceae*, pl. 1-539, 1940.—SVENSON, H. K., Monographic studies in the genus *Eleocharis*, *Rhodora* **31**:121-135; 152-163; 167-191; 199-219; 224-242, 1929; **34**:193-203; 215-227, 1932; **36**:377-389, 1934; **39**:210-231; 236-273, 1937; **41**:1-19; 43-77; 90-110, 1939.

Dioscoreaceae

BARTLETT, H. H., *Dioscoreaceae* in the U. S., U. S. Dept. Agr. Plant Ind. Bull. **189**:1-25, 1910.—KNUTH, R., *Dioscoreaceae*, *Das Pflanzenr.* IV. **43**:1-387, 1924, *Dioscoreaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **15a**:438-463, 1930.

Droseraceae

DIELS, L., *Droseraceae*, *Das Pflanzenr.* IV. **112**:1-136, 1906; also in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **17b**:766-784, 1936.—WYNNE, FRANCES E., *Drosera* in eastern N. Am., *Bull. Torr. Bot. Club* **71**:166-174, 1944.

Elatinaceae

FERNALD, M. L., The genus *Elatine* in N. Am., *Rhodora* **19**:10-15, 1917; *Elatine americana* and *E. triandra*, loc. cit. **43**:208-211, 1941.—NIEDENZU, F., *Elatinaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **21**:270-276, 1925.

Ericaceae

ADAMS, J. E., A systematic study of the genus *Arctostaphylos*, *Journ. Elisha Mitchell Sci. Soc.* **56**:1-62, 1940.—CAMP, W. H., The genus *Caylussacia* in N. Am. n. of Mexico, *Bull. Torr. Bot. Club* **62**:129-132, 1935.—PORSILD, A. E., The cranberry in Canada, *Can. Field Nat.* **52**:116-118, 1938.—RYDBERG, P. A., *Pyrolaceae*, *N. Am. Fl.* **29**:19-32, 1914.—SMALL, J. K., *Monotropaceae*, *N. Am. Fl.* **29**:11-18, 1914; *Ericaceae*, op. cit. 33-102.

Eriocaulaceae

MOLDENKE, H. N., *Eriocaulaceae*, *N. Am. Fl.* **19**:17-50, 1937.—RUHLAND, W., *Eriocaulaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **15a**:39-58, 1930.

Escalloniaceae

BRITTON, N. L., *Iteaceae* [*Escalloniaceae*], *N. Am. Fl.* **22**:181, 1905.

Euphorbiaceae

FERGUSON, A. M., *Crotons* of the U. S., *Ann. Rept. Missouri Bot. Gard.* **12**:33-73, 1901.—PAX, F., & K. HOFFMANN, *Euphorbiaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **19c**:11-233, 1941.—WEATHERBY, C. A., The group of *Acalypha*

virginica in e. N. Am., *Rhodora* **29**:193-204. 1927, also loc. cit. **39**:14-16. 1937.—WHEELER, L. C., *Euphorbia*, subgenus *Chamaesyce* in Canada and the U. S., *Rhodora* **43**:97-154; 168-205; 223-286. 1941.

Fagaceae

DYAL, SARAH C., A key to the species of oaks of eastern N. Am., *Rhodora* **38**:53-63. 1936.—PALMER, E. J., The red oak complex in the U. S., *Am. Midl. Nat.* **27**:732-740. 1942.—TRELEASE, W., The American oaks, *Mem. Nat. Acad. Sci.* **20**:1-255. 1924.

Gentianaceae

CARD, H. H., A revision of the genus *Frasera*, *Ann. Missouri Bot. Gard.* **18**:245-282. 1931.—ST. JOHN, H., Revision of the genus *Swertia* of the Americas and the reduction of *Frasera*, *Am. Midl. Nat.* **26**:1-29. 1941.

Geraniaceae

FERNALD, M. L., *Geranium carolinianum* and allies of northeastern N. Am., *Rhodora* **37**:295-301. 1935.—HANKS, L. T., & J. K. SMALL, *Geraniaceae*, *N. Am. Fl.* **25**:1-24. 1907.—JONES, G. N., & F. F. JONES, A revision of the perennial species of *Geranium* of the United States and Canada, *Rhodora* **45**:5-26; 32-53. 1943.—KNUTH, R., *Geraniaceae* in Engler & Prantl, *Die Nat. Pflanzenf.*, 2 ed. **19a**:43-66. 1931.

Gramineae

FERNALD, M. L., Five common rhizomatous species of *Muhlenbergia*, *Rhodora* **45**:221-239. 1943.—HITCHCOCK, A. S., *Manual of the Grasses of the U. S.*, U. S. Dept. Agr. Misc. Publ. **200**:1-1040. 1935; *Poaceae (Gramineae)*, *N. Am. Fl.* **17**:289-354. 1931; 355-482, 483-542. 1935; 543-638. 1939.

Grossulariaceae

BERGER, A., A taxonomic review of currants and gooseberries, *New York Agric. Exp. Sta. Tech. Bull.* **109**:1-118. 1924.—COVILLE, F. V., & N. L. BRITTON, *Grossulariaceae*, *N. Am. Fl.* **22**:193-225. 1908.

Haloragidaceae

SCHINDLER, A. K., *Haloragidaceae*, *Das Pflanzenr.* IV. **225**:1-133. 1905.

Hamamelidaceae

BRITTON, N. L., *Hamamelidaceae*, *N. Am. Fl.* **22**:185-187. 1905.—HARMS, H., *Hamamelidaceae* in Engler & Prantl, *Die Nat. Pflanzenf.* 2 ed. **18a**:303-345. 1930.—WILSON, P., *Altingiaceae*, op. cit. 189. 1905.

Hydrangeaceae

ST. JOHN, H., A critical revision of *Hydrangea arborescens*, *Rhodora* **23**:203-208. 1922.—REIDER, A., *Philadelphus verrucosus* spontaneous in Illinois, *Jour. Arnold Arb.* **2**:153-156. 1921.—SMALL, J. K., & P. A. RYDBERG, *Hydrangeaceae*, *N. Am. Fl.* **22**:159-178. 1905.

Hydrocharitaceae

MARIE-VICTORIN, FR., *Anacharis canadensis*, *Contr. Inst. Bot. Univ. Montreal* **18**:1-43. 1931; *Les Vallisnèries Américaines*, loc. cit. **46**:1-38. 1943. RYDBERG, P. A., *Elodeaceae*, *N. Am. Fl.* **17**:67-71. 1909; *Hydrocharitaceae*, op. cit. **17**:73-74. 1909.—ST. JOHN, H., The genus *Elodea* in New Engl., *Rhodora* **22**:17-29. 1920.

Hydrophyllaceae

BRAND, A., *Hydrophyllaceae*, *Das Pflanzenr.* IV. **251**:1-210. 1913.—CHITTENDEN, R. J., & W. B. TURRILL, Taxonomic and genetical notes on some species of *Nemophila*, *Kew Bull. Misc. Inf.* **1926**:1-12. 1926.—CONSTANCE, L., The genus *Nemophila*, *Univ. Calif. Publ. Bot.* **19**:341-398. 1941; The genera of the tribe *Hydrophyllae*, *Madroño* **5**:28-33. 1939; The genus *Ellisia*, *Rhodora* **42**:33-39. 1940; The genus *Hydrophyllum*, *Am. Midl. Nat.* **27**:710-731. 1942.

Hypericaceae

SVENSON, H. K., Woody Species of *Hypericum*, *Rhodora* **42**:8-19. 1940.

Illecebraceae

CORE, E. L., The N. Am. species of *Paronychia*, Am. Midl. Nat. **26**:369-397. 1941.

Iridaceae

ANDERSON, E., The problem of species in the northern blue flags, *Iris versicolor* and *Iris virginica*. Ann. Missouri Bot. Gard. **15**:241-332. 1928.—FOSTER, R. C., A cytotoxic survey of the N. Am. species of *Iris*, Contr. Gray Herb. **119**:1-82. 1937.

Juglandaceae

LITTLE, E. L., Notes on the nomenclature of *Carya*, Am. Midl. Nat. **29**:493-508. 1943.—SARGENT, C. S., Notes on N. Am. Trees, II, *Carya*, Bot. Gaz. **66**:229-258. 1918.—TRELEASE, W., *Juglandaceae* of the U. S., Ann. Rept. Missouri Bot. Gard. **7**:25-46. 1896.

Juncaceae

BUCHENAU, F., *Juncaceae*, Das Pflanzenr. IV. **36**:1-284. 1906. HERMANN, F. J., *Juncaceae* in Deam, Flora of Indiana, 290-302. 1940.—WIEGAND, K. M., *Juncus tenuis* and some of its N. Am. allies, Bull. Torr. Bot. Club **27**:511-527. 1900.

Labiatae

BICKNELL, E. P., The genus *Teucrium* in the e. U. S., Bull. Torr. Bot. Club. **28**:166-172. 1901.—EPLING, C., Preliminary revision of Am. *Stachys*, Rep. Spec. Nov. Beih. **80**:1-75. 1934; A revision of *Salvia*, subgen. *Calosphace*, op. cit. **110**:1-380. 1938; The American species of *Scutellaria*, Univ. Calif. Publ. Bot. **20**:1-146. 1942; —EPLING, C., & W. S. STEWART, A revision of *Hedeoma*, Rep. Spec. Nov. Beih. **115**:1-49. 1939; A study of *Pycnanthemum*, Univ. Calif. Publ. Bot. **20**:195-240. 1943.—FERNALD, M. L., The indigenous varieties of *Prunella vulgaris* in N. Am., Rhodora **15**:179-186. 1913.—HERMANN, F. J., Diagnostic characteristics in *Lycopus*, Rhodora **38**:373-375. 1936.—LEONARD, E. C., The N. Am. species of *Scutellaria*, Contr. U. S. Nat. Herb. **22**:703-748. 1927.—McCLINTOCK, E., & C. EPLING, A review of the genus *Monarda*, Univ. Calif. Publ. Bot. **20**:147-194. 1942.—PENLAND, C. W., Notes on N. Am. Scutellarias, Rhodora **26**:61-79. 1924.

Leguminosae

BLAKE, S. F., Notes on Am. Lespedezas, Rhodora **26**:25-34. 1924;—BRITTON, N. L., & J. N. ROSE, *Mimosaceae*, N. Am. Fl. **23**:1-76, 77-136, 137-194. 1928; *Caesalpinjiaceae*, loc. cit. 201-268, 269-349. 1930.—FASSETT, N. C., *Vicia cracca* and its relatives in N. Am., Rhodora **38**:187-189. 1936; The leguminous plants of Wisconsin, 157 pp., Univ. Wisconsin Press, 1939.—FERNALD, M. L., The variations of *Lathyrus palustris* in e. Am., Rhodora **13**:47-52. 1911; *Lathyrus japonicus* versus *L. maritimus*, loc. cit. **34**:177-187. 1932; Some varieties of *Lespedeza capitata* and *L. hirta*, loc. cit. **43**:572-587. 1941.—FREEMAN, FLORENCE L., The variations of *Psoralea psoraloides*, loc. cit. **39**:425-428. 1937.—HOPKINS, M., *Cercis* in N. Am., loc. cit. **44**:193-211. 1942.—LARISEY, MARY M., Monograph of the genus *Baptisia*, Ann. Missouri Bot. Gard. **27**:119-244. 1940.—PALMER, E. J., Conspectus of the genus *Amorpha*, Jour. Arnold Arb. **12**:157-197. 1931.—RYDBERG, P. A., *Psoraleae* in N. Am. Fl. **24**:1-64. 1919, 65-136. 1920; *Fabaceae* (*Calegeae*), loc. cit. **24**:137-462. 1929; Genera of the N. Am. *Fabaceae*, I. Tribe *Calegeae*, Am. Jour. Bot. **10**:485-498. 1923, Part II, loc. cit. **11**:470-482. 1924, Part III, Tribe *Psoraleae*, loc. cit. **15**:195-203. 1928, Part IV, loc. cit. 425-432, Part V, *Astragalus* and related genera, loc. cit. 584-595. 1928, Part VI, loc. cit. **16**:197-206. 1929, Part VII, loc. cit. **17**:231-238. 1930, Bull. Torr. Bot. Club **53**:161-169. 1926, Part VIII, loc. cit. **54**:13-23. 1927, Part IX, loc. cit. 321-336. 1927, Parts X and XI, loc. cit. **55**:119-132, 155-164. 1928.—SCHUBERT, BERNICE G., *Desmodium*, Preliminary studies I, Contr. Gray Herb. **129**:3-31. 1940;—II, loc. cit. **136**:78-115. 1941.—SENN, H. A., Experimental data for a revision of the genus *Lathyrus*, Am. Jour. Bot. **25**:67-78. 1938; The N. Am. species of *Crotalaria*, Rhodora **41**:317-367. 1939.—SHAFFER, J. H., The American Sennas (*Cassia*), Torreya **4**:177-181. 1904.—VAIL, ANNA M., A study of the genus *Psoralea* in America, Bull. Torr. Bot. Club. **21**:91-119. 1894.

Lemnaceae

HICKS, L. E., The *Lemnaceae* of Indiana, Am. Midl. Nat. **18**:774-789. 1937.—

THOMPSON, C. H., Revision of the Am. *Lemnaceae*, Ann. Rept. Missouri Bot. Gard. 9:21-42. 1898.

Liliaceae

ANDERSON, W. A., Notes on the flora of Tennessee: the genus *Trillium*, Rhodora 36:119-128. 1934.—BAILEY, L. H., *Hemerocallis*, Gentes Herb. 2:143-156. 1930.—BARKSDALE, L., The pedicellate species of *Trillium* found in the southern Appalachians, Jour. Elisha Mitchell Sci. Soc. 54:271-296. 1938.—BUSH, B. F., The species of *Polygonatum*, Am. Midl. Nat. 10:385-400. 1927.—BUTTERS, F. K., Taxonomic studies in the genus *Maianthemum*, Minnesota Studies Pl. Sci. 6:429-444. 1927.—COKER, W. C., The woody smilaxes of the U. S., Jour. Elisha Mitch. Sci. Soc. 60:27-69. 1944.—GATES, R. R., A systematic study of the N. Am. genus *Trillium*, Ann. Missouri Bot. Gard. 4:43-92. 1917; A revision of the genus *Polygonatum* in N. Am., Bull. Torr. Bot. Club 44:117-126. 1917.—GLEASON, H. A., The pedunculate species of *Trillium*, Bull. Torr. Bot. Club 33:387-396. 1906.—GOULD, F. W., A systematic treatment of the genus *Camassia*, Am. Midl. Nat. 28:712-742. 1942.—MARIE-VICTORIN, FR., Les Liliiflores du Québec (Pontederiacées, Iridacées Joncacées), Contr. Inst. Bot. Univ. Montréal 14:1-202. 1929.

Limnanthaceae

RYDBERG, P. A., *Limnanthaceae*, N. Am. Fl. 25:97-100. 1910.

Linaceae

SMALL, J. K., *Linaceae*, N. Am. Fl. 25:67-87. 1907.—WINKLER, H., *Linaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 19a:82-130. 1931.

Lobeliaceae

McVAUGH, R., *Lobelioideae* [*Campanulaceae: Lobelioideae*], N. Am. Fl. 32A:1-134. 1943; A key to the N. Am. species of *Lobelia*, Am. Midl. Nat. 24:681-702. 1940.

Loranthaceae

ENGLER, A., & K. KRAUSE, *Loranthaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 16b:98-203. 1935.—TRELEASE, W., The genus *Phoradendron*, 224 pp. Univ. Illinois Press, Urbana, 1916.

Lythraceae

KOEHNE, E., *Lythraceae*, Das Pflanzenr. IV. 216:1-326. 1903.

Magnoliaceae

DANDY, J. E., The genera of *Magnoliaceae*, Kew Bull. Misc. Inf. 1927:257-264. 1927; Key to the species of *Magnolia*, Jour. Roy. Hort. Soc. 52:260-264. 1927.

Malvaceae

KEARNEY, T. H., The N. Am. species of *Sphaeralcea*, subgen. *Eusphaeralcea*, Univ. Calif. Publ. Bot. 19:1-128. 1935.—MORTON, C. V., The correct names of the small-flowered mallows, Rhodora 39:98-99. 1937.

Martyniaceae

VAN ESELTINE, G. P., A preliminary study of the unicorn plants, New York State Agric. Exp. Sta. Bull. 149:1-41. 1929.

Melastomaceae

FERNALD, M. L., *Rhexia* in n.e. N. Am., Rhodora 37:169-173. 1935.

Menispermaceae

DIELS, L., *Menispermaceae*, Das Pflanzenr. IV. 94:1-345. 1910.

Naiadaceae

CLAUSEN, R. T., Studies in the genus *Najas* in the n. U. S., Rhodora 38:333-345. 1936.—RENDLE, A. B., *Najadaceae*, Das Pflanzenr. IV. 12:1-21. 1901.—TAYLOR, N., *Naiadaceae*, N. Am. Fl. 17:33-35. 1909.

Nyctaginaceae

HEIMERL, A., *Nyctaginaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 16c:86-134. 1934.—STANDLEY, P. C., The *Allionioceae* [*Nyctaginaceae*] of the U. S., Contr.

U. S. Nat. Herb. **12**:303-390. 1909; *Allioniaceae* [*Nyctaginaceae*], N. Am. Fl. **21**: 171-254. 1918; Studies of American Plants: *Nyctaginaceae*, Field Mus. Nat. Hist. Publ. Bot. **8**:304-310. 1931.

Nymphaeaceae

CONARD, H. S., The waterlilies: a monograph of the genus *Nymphaea*, i-xiii. 1-279. Washington, 1905.—MILLER, G. S., & P. C. STANDLEY, The N. Am. species of *Nymphaea*, [i.e., *Nuphar*], Contr. U. S. Nat. Herb. **16**:63-108. 1912.

Oleaceae

LINGELSHHEIM, A., *Fraxinaceae*, Das Pflanzenr. IV. **243**:1-66. 1920.

Onagraceae

FERNALD, M. L.—The identities of *Epilobium lineare*, *E. densum*, and *E. ciliatum*, Rhodora **46**:377-386. 1944.—MUNZ, P. A., Studies in the *Onagraceae* IX. The subgen. *Raimannia*, Am. Jour. Bot. **22**:645-663. 1935; Part X, The subgen. *Kneiffia*, Bull. Torr. Bot. Club. **64**:287-306. 1937; Part XI, A revision of the genus *Gaura*, loc. cit. **65**:105-211. 1938; Part XIII, The Am. species of *Ludwigia*, loc. cit. **71**:151-166. 1944.—TRELEASE, W., The species of *Epilobium* occurring n. of Mexico, Ann. Rept. Missouri Bot. Gard. **2**:69-117. 1891.

Orchidaceae

AMES, O., The genus *Habenaria* in N. Am., Orchidaceae, fasc. 4, 1910; An enumeration of the orchids of the U. S. and Canada, i-viii, 1-120. Boston, 1924.—RYDBERG, P. A., The Am. species of *Limnorchis* and *Piperia* n. of Mexico, Bull. Torr. Bot. Club **28**:605-643. 1901.

Orobanchaceae

ACHEY, DAISY M., A revision of the sect. *Gymnocaulis* of the genus *Orobanche*, Bull. Torr. Bot. Club **60**:441-451. 1933.—BECK-MANNAGETTA, G., *Orobanchaceae*, Das Pflanzenr. IV. **261**:1-348. 1930.—MUNZ, P. A., The N. Am. species of *Orobanche*, sect. *Myzorrhiza*, Bull. Torr. Bot. Club **57**:611-624. 1931.

Oxalidaceae

KNUTH, R., *Oxalidaceae*, Das Pflanzenr. IV. **130**:1-481. 1930; also in Engler & Prantl, Die Nat. Pflanzenf. ed. 2. **19a**:11-42. 1931.—SMALL, J. K., *Oxalidaceae*, N. Am. Fl. **25**:25-58. 1907.—WIEGAND, K. M., *Oxalis corniculata* and its relatives in N. Am., Rhodora **27**:113-124, 133-139. 1925.

Papaveraceae

FEDDE, F., *Papaveraceae*, Das Pflanzenr. IV. **104**:1-430. 1909; also in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **17b**:5-145. 1936.—HUTCHINSON, J., Key to *Papaveraceae*, Kew Bull. Misc. Inf. **1925**:161-168. 1925.

Parnassiaceae

PAGE, LULA, *Parnassia* and some allied genera, Bot. Gaz. **54**:306-329. 1912.—RYDBERG, P. A., *Parnassiaceae*, N. Am. Fl. **22**:77-80. 1905.

Passifloraceae

KILLIP, E. P., The Am. species of *Passifloraceae*, Field Mus. Nat. Hist. Publ. Bot. **19**:1-331; 335-613. 1938.

Phytolaccaceae

HEIMERL, A., *Phytolaccaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **16c**:135-164. 1934.—WALTER, H., *Phytolaccaceae*, Das Pflanzenr. IV. **83**:1-154. 1909.—WILSON, P., *Petiveriaceae* [incl. *Phytolacca*], N. Am. Fl. **21**:257-266. 1932.

Pinaceae

PILGER, R., in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **13**:271-342. 1926.

Plantaginaceae

PILGER, R., *Plantaginaceae*, Das Pflanzenr. IV. **269**:1-466. 1937.

Platanaceae

GLEASON, H. A., *Platanaceae*, N. Am. Fl. **22**:227-229. 1908.

Polemoniaceae

BRAND, A., *Polemoniaceae*, Das Pflanzenr. IV. **250**:1-203. 1907.—WHERRY, E. T., The eastern subulate-leaved phloxes, *Bartonia* **11**:5-35. 1929; The eastern long-styled phloxes, loc. cit. **13**:18-37. 1932, **14**:14-26. 1932; The eastern veiny-leaved phloxes, loc. cit. **15**:14-26. 1933; Miscellaneous eastern *Polemoniaceae*, loc. cit. **18**:52-59. 1936; The genus *Polemonium* in America, Am. Midl. Nat. **27**:741-760. 1942; Review of the genera *Collomia* and *Gymnosteris*, loc. cit. **31**:216-231. 1944.

Polygalaceae

BLAKE, S. F., *Polygalaceae*, N. Am. Fl. **25**:305-379. 1924.

Polygonaceae

HOLM, TH., *Polygonum*: sect. *Tovara*, Bot. Gaz. **84**:1-26. 1927.—NIEUWLAND, J. A., Our Amphibious *Persicarias*, Am. Midl. Nat. **2**:1-24. 1911; sect. *Potamo callis* in Peattie, D. C., Flora of the Indiana Dunes, 167-169. 1930.—RECHINGER, K. H., The N. Am. species of *Rumex*, Field Mus. Nat. Hist. Publ. Bot. **17**:1-151. 1937.—SMALL, J. K., A monograph of the N. Am. species of the genus *Polygonum*, Columbia Univ. Dept. Bot. Mem. **1**:1-183. 1895.—STANFORD, E. E., The amphibious group of *Polygonum*, subgen. *Persicaria*, *Rhodora* **27**:156-166. 1925; *Polygonum pennsylvanicum* and related species, loc. cit. 173-184; *Polygonum hydropiperoides* and *P. opelusanum*, loc. cit. **28**:11-17; 22-29. 1926; *Polygonum hydropiper* in Eur. and N. Am., loc. cit. **29**:77-87. 1927.

Pontederiaceae

ALEXANDER, E. J., *Pontederiaceae*, N. Am. Fl. **19**:51-60. 1937.—SCHWARTZ, O., *Pontederiaceae*, in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **15a**: 181-188. 1930.

Portulacaceae

PAX, F., & K. HOFFMANN, *Portulacaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **16c**:234-262. 1934.—POELLNITZ, K., Monographie der Gattung *Talinum*, Rep. Spec. Nov. Reg. Veg. **35**:1-34. 1934.—RYDBERG, P. A., *Portulacaceae*, N. Am. Fl. **21**:279-336. 1932.—WILSON, P., *Talinum*, loc. cit. **21**:280-289. 1932.

Potamogetonaceae

ASCHERSON, P., & P. GRAEBNER, *Potamogetonaceae*, Das Pflanzenr. IV. **11**:1-184. 1907.—FERNALD, M. L., The linear-leaved N. Am. species of *Potamogeton*, sect. *Axilares*, Mem. Gray Herb. Harv. Univ. **3**:1-183. 1932.—OGDEN, E. C., The broad-leaved species of *Potamogeton* of N. Am. n. of Mexico, *Rhodora* **45**:57-105; 119-163; 171-214. 1943.—TAYLOR, N., *Zannichelliaceae*, N. Am. Fl. **17**:13-27. 1909.

Primulaceae

FASSETT, N. C., *Dodecatheon* in e. N. Am., Am. Midl. Nat. **31**:455-486. 1944.—FERNALD, M. L., *Primula*, sect. *Farinosae* in America, *Rhodora* **30**:59-77; 85-104. 1928.—PAX, F., & R. KNUTH, *Primulaceae*, Das Pflanzenr. IV. **237**:1-386. 1905; ROBBINS, G. T., N. Am. species of *Androsaceae*, Am. Midl. Nat. **32**:137-163. 1944.

Ranunculaceae

BENSON, L., The N. Am. subdivisions of *Ranunculus*, Am. Jour. Bot. **27**:799-807. 1940; N. Am. *Ranunculi*, Bull. Torr. Bot. Club **68**:157-172; 477-490. 1941; loc. cit. **69**:298-316. 1942.—BOIVIN, B., Am. *Thalictra* and their Old World allies, *Rhodora* **46**:337-377, 391-445, 453-487. 1944.—DREW, W. B., N. Am. representatives of *Ranunculus*, sect. *Batrachium*, loc. cit. **38**:1-47. 1936.—DRUMMOND, J. R., & J. HUTCHINSON, A revision of *Isopyrum* and its nearer allies, Kew Bull. Misc. Inf. **1920**:145-169. 1920.—ERICKSON, R. O., Taxonomy of *Clematis*, sect. *Viorna*, Ann. Missouri Bot. Gard. **30**:1-62. 1943.—FERNALD, M. L., The N. Am. species of *Anemone*, sect. *Anemonanthea*, *Rhodora* **30**:180-188. 1928; *Ranunculus abortivus* and its e. N. Am. allies, loc. cit. **40**:416-420. 1938.—HUTCHINSON, J., Key to *Ranunculaceae*, Kew Bull. Misc. Inf. **1923**:81-89. 1923.—PAYSON, E. B., The N. Am. species of *Aquilegia*, Contr. U. S. Nat. Herb. **20**:133-157. 1919.

Rhamnaceae

VAN RENNELAER, M., & H. E. McMINN, A systematic study of the genus *Ceano-*

thus, Publ. Santa Barbara Bot. Gard. i-xii, 1-308. 1942.—WOLF, C. B., The N. Am. species of *Rhamnus*, Monogr. Rancho Santa Ana Bot. Gard. 1:1-136. 1938.

Rosaceae

BAILEY, L. H., Enumeration of the *Eubati* (dewberries and blackberries) native in N. Am., Gentes Herb. 1:203-300. 1925; The blackberries of N. Am., loc. cit. 2:271-471. 1932; The genus *Rubus* in N. Am., loc. cit. 5:1-228. 1941, 229-462. 1943, 463-588. 1944.—BOLLE, F., Eine Übersicht über die Gattung *Ceum*, Rep. Spec. Nov. Reg. Veg. 72:1-119. 1933.—FERNALD, M. L., & C. A. WEATHERBY, Varieties of *Ceum canadense*, Rhodora 24:47-50. 1922.—FERNALD, M. L., The identities of the sand cherries of e. Am., Rhodora 25:69-74. 1923.—JONES, G. N., A synopsis of the N. Am. species of *Sorbus*, Jour. Arnold Arb. 20:1-43. 1939; The Am. species of *Amelanchier*, Univ. Illinois Biol. Monogr. 20: 1945.—PALMER, E. J., Synopsis of N. Am. Crataegi, Jour. Arnold Arb. 6:5-128. 1925.—RYDBERG, P. A., A monograph of the N. Am. *Potentilleae*, Mem. Dept. Bot. Columbia Univ. 2:1-221. 1898; *Rosaceae*, N. Am. Fl. 22:239-388. 1908; 389-480. 1913; 481-533. 1918.—WIEGAND, K. M., The genus *Amelanchier* in e. N. Am., Rhodora 14:117-161. 1922.—WIGHT, W. F., Native Am. species of *Prunus*, U. S. Dept. Agric. Bull. 179:1-75. 1915.

Rubiaceae

STANDLEY, P. C., *Rubiaceae*, N. Am. Fl. 32:1-86. 1918; 87-158. 1921; 159-300. 1934.

Rutaceae

ENGLER, A., *Rutaceae* in Die Nat. Pflanzenf., 2 ed. 19a:187-359. 1931.—WILSON, P., *Rutaceae*, N. Am. Fl. 25:173-224. 1911.

Salicaceae

SCHNEIDER, C., Notes on American willows, Bot. Gaz. 67:309-346. 1919; Jour. Arnold Arb. 1:1-32. 1919; 2:1-25, 65-90. 1920; 2:185-204. 1921.

Santalaceae

PILGER, R., *Santalaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 16b:52-91. 1935.

Sapotaceae

CLARK, R. B., A revision of the genus *Bumelia* in the U. S., Ann. Missouri Bot. Gard. 29:155-182. 1942.

Sarraceniaceae

MACFARLANE, J. M., *Sarraceniaceae*, Das Pflanzenr. IV. 110:1-38. 1908.—UPHOF, J. C. TH., *Sarraceniaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 17b:704-727. 1936.—WHERRY, E. T., The geographic relations of *Sarracenia purpurea*, Bartoniana 15:1-6. 1933.

Saxifragaceae

ENGLER, A., & E. IRMSCHER, *Saxifraga*, Das Pflanzenr. IV. 117:1-709. 1916; *Saxifragaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 18a: 74-226. 1930.—JOHNSON, A. M., A revision of the N. Am. species of the sect. *Boraphila*, genus *Saxifraga*, Univ. Minnesota Stud. Biol. Sci. 4:1-110. 1923.—ROSENDAHL, C. O., A revision of the genus *Sullivantia*, loc. cit. 6:401-427. 1927; A revision of the genus *Mitella*, Engler's Bot. Jahrb. 50:375-397. 1914.—ROSENDAHL, C. O., F. K. BUTTERS, & OLGA LAKELA, A monograph on the genus *Heuchera*, Minnesota Studies Pl. Sci. 2:1-180. 1936.—SMALL, J. K., & P. A. RYDBERG, *Saxifragaceae*, N. Am. Fl. 22:81-158. 1905.

Scheuchzeriaceae

BRITTON, N. L., *Scheuchzeriaceae*, N. Am. Fl. 17:41-42. 1909.—BUCHENAU, FR., *Scheuchzeriaceae*, Das Pflanzenr. IV. 14:1-19. 1903.

Scrophulariaceae

GRANT, ADELE L., A monograph of the genus *Mimulus*, Ann. Missouri Bot. Gard. 11:99-388. 1925.—MUNZ, P. A., The *Antirrhinoideae-Antirrhineae* of the New World, Proc. Calif. Acad. Sci. (ser. 4) 15:323-397. 1926.—NEWSOM, VESTA M., A revision of the genus *Collinsia*, Bot. Gaz. 87:260-301. 1929.—PENNEL, F. W., Scro-

phulariaceae of eastern temperate N. Am., Acad. Nat. Sci. Philadelphia, Monograph 1:1-650. 1935.

Simarubaceae

ENGLER, A., *Simarubaceae*, in Engler & Prantl, Die Nat. Pflanzenf. 19:359-405. 1931.—SMALL, J. K., *Simarubaceae*, N. Am. Fl. 25:227-239. 1911.

Solanaceae

HITCHCOCK, C. LEO, A monographic study of the genus *Lycium* of the western hemisphere, Ann. Missouri Bot. Gard. 19:179-374. 1932.—RYDBERG, P. A., The N. Am. species of *Physalis* and related genera, Mem. Torr. Bot. Club 4:297-374. 1896.—SAFFORD, W. E., Synopsis of the genus *Datura*, Jour. Washington Acad. Sci. 11:173-189. 1921.

Sparganiaceae

FERNALD, M. L., Notes on *Sparganium*, Rhodora 24:26-34. 1922.—GRAEBNER, P., *Sparganiaceae*, Das Pflanzenr. IV. 10:1-26. 1900.—RYDBERG, P. A., *Sparganiaceae*, N. Am. Fl. 17:5-10. 1909.

Staphyleaceae

KRAUSE, J., *Staphyleaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 20b:255-321. 1942.

Styracaceae

PERKINS, J., *Styracaceae*, Das Pflanzenr. IV. 241:1-111. 1907.

Taxaceae

PILGER, R., *Taxaceae*, Das Pflanzenr. IV. 5:1-24. 1903; *Taxaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 13:199-211. 1926.

Taxodiaceae

PILGER, R., *Taxodiaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. 13:342-360. 1926.

Tiliaceae

BUSH, B. F., The glabrate species of *Tilia*, Bull. Torr. Bot. Club 54:231-248. 1927.—SARGENT, C. S., Notes on N. Am. Trees, III. *Tilia*, Bot. Gaz. 66:421-438. 1918.

Typhaceae

GRAEBNER, P., *Typhaceae*, Das Pflanzenr. IV. 8:1-18. 1900.—WILSON, P. *Typhaceae*, N. Am. Fl. 17:3-4. 1909.

Umbelliferae

COULTER, J. M., & J. N. ROSE, Monograph of the N. Am. *Umbelliferae*, Contr. U. S. Nat. Herb. 7:9-256. 1900; suppl., loc. cit. 12:441-451. 1909.—MATHIAS, MILDRED, & L. CONSTANCE, A synopsis of N. Am. species of *Eryngium*, Am. Midl. Nat. 25:361-387. 1941; A synopsis of the Am. species of *Cicuta*, Madroño 6:145-151. 1942.—WOLFF, H., *Umbelliferae*, Das Pflanzenr. IV. 228:1-214. 1910; 1-305. 1913; 1-398. 1927.

Valerianaceae

DYAL, SARAH C., *Valerianella* in N. Am., Rhodora 40:185-212; 465-467. 1938.

Verbenaceae

PERRY, LILY M., A revision of the N. Am. species of *Verbena*, Ann. Missouri Bot. Gard. 20:239-362. 1933.

Violaceae

BAIRD, VIOLA B., Wild Violets of N. Am. 1-225. Univ. Calif. Press, Berkeley, 1942.—BRAINERD, E., Violets of N. Am., Vermont Agr. Exp. Sta. Bull. 224:1-172. 1921.—HOLM, TH., Comparative studies of N. Am. Violets, Beih. Bot. Centralb. 50:135-182. 1932.—MORTON, C. V., The genus *Hybanthus* in continental N. Am., Contr. U. S. Nat. Herb. 29:74-82. 1944.—SCHULZE, G. K., Morphologisch-systematische Studien über die Gattung *Hybanthus*, Bot. Jahrb. 67:437-492. 1936.

Vitaceae

BAILEY, L. H., The species of grapes peculiar to N. Am., Gentes Herb. 3:151-244. 1934.

*Xyridaceae*MALME, G. O. A., *Xyridaceae*, N. Am. Fl. **19**:3-15. 1937.*Zygophyllaceae*ENGLER, A., *Zygophyllaceae* in Engler & Prantl, Die Nat. Pflanzenf. 2 ed. **19a**: 144-184. 1931. VAIL, ANNA M., & P. A. RYDBERG, *Zygophyllaceae*, N. Am. Fl. **25**:103-116. 1910.**Pteridophyta**

BENEDICT, R. C., *Osmundaceae*, N. Am. Fl., **16**:27-28. 1909.—BROUN, M., Index to N. Am. Ferns. 1-217. Orleans, Mass., 1938.—CLAUSEN, R. T., A monograph of the *Ophioglossaceae*, Mem. Torr. Bot. Club. **19**:1-77. 1938.—FERNALD, M. L., *Polypodium virginianum* and *P. vulgare*, Rhodora **24**:125-142. 1922; American representatives of *Asplenium ruta-muraria*, loc. cit. **30**:37-43. 1928.—FRIESNER, R. C., Key to genera of ferns and fern-allies, Butler Univ. Studies Bot. **1**:55-60. 1929; Key to species and varieties of ferns and fern-allies of n.e. N. Am., loc. cit. **4**:142-162. 1940.—LLOYD, F. E., & L. M. UNDERWOOD, A review of the species of *Lycopodium* of N. Am., Bull. Torr. Bot. Club **27**:147-168. 1900.—MARIE-VICTORIN, FR., Les Filicinées du Québec, Revue trimestrielle Canad. suppl. **9**:1-98. 1923; Les Lycopodiinées du Québec, Contr. Inst. Bot. Univ. Montréal **3**:1-121. 1925.—PINKERTON, M. ELIZABETH, Ferns and fern allies of Missouri, Ann. Missouri Bot. Gard. **20**:45-78. 1933.—PFEIFFER, NORMA E., Monograph of the *Isoetaceae*, loc. cit. **9**:79-232. 1922.—SCHAFFNER, J. H., N. Am. species of *Equisetum*, Am. Fern. Journ. **11**:65-75. 1921; Diagnostic key to the species of *Equisetum*, loc. cit. **22**:69-75; 122-128. 1932.—SVENSON, H. K., The New World species of *Azolla*, loc. cit. **34**:69-84. 1944.—TRYON, R. M., A revision of the genus *Pteridium*, Rhodora **43**:1-31. 1941.—Underwood, L. M. & R. C. BENEDICT, *Ophioglossaceae*, N. Am. Fl. **16**:1-13. 1909. WEATHERBY, C. A., A list of varieties and forms of the ferns of e. N. Am., Am. Fern Jour. **25**:45-51, 95-100. 1935; loc. cit. **26**:11-16, 60-69, 94-99, 130-136. 1936; loc. cit. **27**:20-24, 51-56. 1937; A new variety of *Cystopteris fragilis*, Rhodora **37**:373-378. 1935; The group of *Polypodium polypodioides*, Contr. Gray Herb. **124**:22-35. 1939.—WHERRY, E. T., Guide to eastern ferns, (ed. 2) 1-252. 1942.—WILSON, L. R., The spores of the genus *Lycopodium* in the U. S. and Canada, Rhodora **36**:13-19. 1934.

Author Index

- ACHEY, DAISY M.—Orobanchaceae.....293
 ADAMS, J. E.—Ericaceae.....289
 AELLEN, P.—Chenopodiaceae.....287
 ———, & TH. JUST—Chenopodiaceae 287
 ALEXANDER, E. J.—Pontederiaceae.....294
 AMES, O.—Orchidaceae.....293
 ANDERSON, E.—Iridaceae.....290
 ———, & R. E. WOODSON—
 Commelinaceae.....287
 ANDERSON, W. A.—Liliaceae.....292
 ASCHERSON, P., & P. GRAEBNER—
 Potamogetonaceae.....294
 BAILEY, L. H.—Cruciferae, Cucurbita
 ceae, Liliaceae, Rosaceae, Vitaceae
 288, 292, 295, 296
 BAIRD, VIOLA B.—Violaceae.....296
 BARKLEY, F. A.—Anacardiaceae.....286
 BARKSDALE, L.—Liliaceae.....292
 BARTLETT, H. H.—Dioscoreaceae.....289
 BECK-MANNAGETTA, G.—Oroban-
 chaceae.....293
 BENEDICT, R. C.—Pteridophyta.....297
 BENSON, L.—Ranunculaceae.....294
 BERGER, A.—Crassulaceae, Grossulari-
 aceae.....288, 290
 BICKNELL, E. P.—Labiatae, Rosa-
 ceae.....291, 295
 BLAKE, S. F.—Leguminosae, Poly-
 galaceae.....291, 294
 BOLLE, F.—Rosaceae.....295
 BRACKETT, AMELIA E.—Amarylli-
 daceae.....286
 BRAINERD, E.—Violaceae.....296
 BRAND, A.—Boraginaceae, Hydro-
 phyllaceae, Polemoniaceae.....
 287, 290, 294
 BRITTON, N. L.—Hamamelidaceae,
 Escalloniaceae, Scheuchzeriaceae
 290, 289, 295
 ———, & J. N. ROSE—Cactaceae,
 Crassulaceae, Leguminosae 287, 288, 291
 BROUN, M.—Pteridophyta.....297
 BUCHENAU, F.—Alismaceae, Junca-
 ceae, Scheuchzeriaceae.....286, 291, 295
 BUSII, B. F.—Cyperaceae, Liliaceae,
 Tiliaceae.....289, 292, 296
 BUTTERS, F. K.—Liliaceae.....292
 CAMP, W. H.—Ericaceae.....289
 CARD, H. H.—Gentianaceae.....290
 CHITTENDEN, R. J., & W. B. TURRILL
 —Hydrophyllaceae.....290
 CLARK, R. B.—Sapotaceae.....295
 CLAUSEN, R. T.—Gentianaceae, Nai-
 adaceae, Pteridophyta.....290, 292, 297
 COKER, W. C.—Liliaceae.....292
 CONARD, H. S.—Nymphaeaceae.....293
 CONSTANCE, L.—Hydrophyllaceae.....290
 CORE, E. L.—Cyperaceae, Illecebra-
 ceae.....289, 290
 COULTER, J. M., & J. N. ROSE—
 Umbelliferae.....296
 COVILLE, F. V., & N. L. BRITTON—
 Grossulariaceae.....290
 CRONQUIST, A.—Compositae.....287
 DANDY, J. E.—Magnoliaceae.....292
 DETLING, L. E.—Cruciferae.....288
 DIELS, L.—Droseraceae, Menisperm-
 aceae.....289, 292
 DREW, W. B.—Ranunculaceae.....294
 DRUMMOND, J. R., & J. HUTCHINSON
 —Ranunculaceae.....294
 DYAL, SARAH C.—Fagaceae, Valeri-
 anaceae.....289, 296
 ENGLER, A.—Araceae, Rutaceae, Sim-
 arulaceae, Zygophyllaceae.....
 286, 295, 296, 297
 ———, & E. IRMSCHER—Saxifraga-
 ceae.....295
 ———, & K. KRAUSE—Loranthaceae 292
 EPLING, C.—Labiatae.....291
 ———, & W. S. STEWART—Labiatae 291
 ERICKSON, R. O.—Ranunculaceae.....294
 FASSETT, N. C.—Leguminosae, Primu-
 laceae.....291, 294
 FEDDE, F.—Papaveraceae.....293
 FERGUSON, A. M.—Euphorbiaceae.....289
 FERNALD, M. L.—Araceae, Comme-
 linaceae, Compositae, Cruciferae,
 Cyperaceae, Elatinaceae, Gerania-
 ceae, Gramineae, Labiatae, Leg-
 uminosae, Melastomaceae, Onagra-
 ceae, Potamogetonaceae, Primula-
 ceae, Pteridophyta, Ranunculaceae,
 Rosaceae, Sparganiaceae.....
 286, 287, 288, 289, 289, 290,
 291, 292, 293, 294, 295, 296, 297
 ———, & AMELIA E. BRACKETT—
 Cyperaceae.....289
 ———, & C. A. WEATHERBY—Ros-
 aceae.....295
 FOSTER, R. C.—Iridaceae.....290
 FREEMAN, FLORENCE L.—Legumin-
 osae.....291
 FRIEDLAND, S.—Cyperaceae.....289
 FRIESNER, R. C.—Compositae, Pteri-
 dophyta.....287, 297

| | | | |
|-------------------------------------|---------------|---------------------------------------|--------------------|
| GALE, SHIRLEY—Cyperaceae | 289 | MACKENZIE, K. K.—Boraginaceae, | |
| GATES, R. R.—Liliaceae | 292 | Cyperaceae | 287, 289 |
| GLEASON, H. A.—Compositae, Lilia- | | McCLINTOCK, E., & C. EPLING— | |
| ceae, Platanaceae | 287, 292, 293 | Labiatae | 291 |
| GOULD, F. W.—Liliaceae | 292 | McGIVNEY, SR. M. VINCENT DE PAUL | |
| GRAEBNER, P.—Sparganiaceae, Ty- | | —Cyperaceae | 289 |
| phaceae | 296 | McVAUGH, R.—Lobeliaceae | 292 |
| GRANT, ADELE L.—Scrophulariaceae | 295 | MALME, G. O. A.—Xyridaceae | 296 |
| GREENE, E. L.—Compositae | 287 | MARIE-VICTORIN, FR.—Hydrochari- | |
| GREENMAN, J. M.—Compositae | 287 | taceae, Liliaceae, Pteridophyta | 290, 292, 297 |
| GROSSER, W.—Cistaceae | 287 | MATHIAS, MILDRED, & L. CONSTANCE | |
| HALL, H. M., & F. E. CLEMENTS— | | Umbelliferae | 296 |
| Chenopodiaceae, Compositae | 287 | MILLER, G. S., & P. C. STANDLEY— | |
| HANKS, L. T., & J. K. SMALL— | | Nymphaeaceae | 293 |
| Geraniaceae | 290 | MILLSPAUGH, C. F., & E. E. SHERFF | |
| HARMS, H.—Hamamelidaceae | 290 | —Compositae | 287 |
| HEIMERL, A.—Nyctaginaceae, Phyto- | | MOLDENKE, H. N.—Eriocaulaceae | 289 |
| laccaceae | 292, 293 | MORTON, C. V.—Malvaceae, Viola- | |
| HERMANN, F. J.—Juncaceae, Labiatae | 291 | ceae | 292, 296 |
| HICKS, L. E.—Lemnaceae | 291 | MUNZ, P. A.—Onagraceae, Orobanch- | |
| HITCHCOCK, A. S.—Gramineae | 290 | chaceae, Scrophulariaceae | 293, 295 |
| HITCHCOCK, C. LEO—Cruciferae, So- | | NEWSOM, VESTA M.—Scrophularia- | |
| lanaceae | 288, 296 | ceae | 295 |
| HODGDON, A. R.—Cistaceae | 287 | NIEDENZU, F.—Elatinaceae | 289 |
| HOLM, TH.—Polygonaceae, Violaceae | 294, 296 | NIEUWLAND, J. A.—Polygonaceae | 294 |
| HOPKINS, M.—Cruciferae, Legumin- | | OGDEN, E. C.—Potamogetonaceae | 294 |
| osae | 288, 291 | PACE, LULA—Parnassiaceae | 293 |
| HOUSE, H. D.—Convolvulaceae | 288 | PALMER, E. J.—Fagaceae, Legumin- | |
| HUTCHINSON, J.—Papaveraceae, Ran- | | osae, Rosaceae | 289, 291, 295 |
| unculaceae | 293, 294 | PAX, F.—Aceraceae | 286 |
| JANCHEN, E.—Cistaceae | 287 | —, & K. HOFFMANN—Aizoaceae, | |
| JOHNSON, A. M.—Saxifragaceae | 295 | Amaryllidaceae, Callitrichaceae, Cap- | |
| JOHNSTON, I. M.—Boraginaceae | 287 | paridaceae, Caryophyllaceae, Eu- | |
| JONES, G. N.—Caprifoliaceae, Rosa- | | phorbiaceae, Portulacaceae | 286, 287, 289, 294 |
| ceae | 287, 295 | —, & R. KNUTH—Primulaceae | 294 |
| —, & FLORENCE F. JONES— | | PAYSON, E. B.—Cruciferae, Ranun- | |
| Geraniaceae | 290 | culaceae | 288, 294 |
| JONKER, F. P.—Burmanniaceae | 287 | PENLAND, C. W.—Labiatae | 291 |
| JUST, TH.—Chenopodiaceae | 287 | PENNELL, F. W.—Commelinaceae, | |
| KEARNEY, T. H.—Malvaceae | 292 | Scrophulariaceae | 287, 295 |
| KILLIP, E. P.—Passifloraceae | 293 | PERKINS, J.—Styracaceae | 296 |
| KNUTH, R.—Dioscoreaceae, Gerani- | | PERRY, LILY M.—Asclepiadaceae, | |
| aceae, Oxalidaceae | 289, 290, 293 | Compositae, Verbenaceae | 286, 287, 296 |
| KOEHNE, E.—Lythraceae | 292 | PETRAK, F.—Compositae | 287 |
| KRAUSE, J.—Staphyleaceae | 296 | PFEIFFER, NORMA E.—Burmanniaceae, | |
| LARISEY, MARY M.—Leguminosae | 291 | Pteridophyta | 287, 297 |
| LEONARD, E. C.—Labiatae | 291 | PILGER, R.—Cupressaceae, Pinaceae, | |
| LINGELSHEIM, A.—Oleaceae | 293 | Plantaginaceae, Santalaceae, Taxa- | |
| LITTLE, E. L.—Juglandaceae | 291 | ceae, Taxodiaceae | 289, 293, 295, 296 |
| LLOYD, F. E., & L. M. UNDERWOOD | | PINKERTON, M. ELIZABETH—Pterido- | |
| —Pteridophyta | 297 | phyta | 297 |
| LOESENER, TH.—Aquifoliaceae, Celas- | | POELLNITZ, K.—Portulacaceae | 294 |
| traceae | 286, 287 | POPHAM, R. A.—Compositae | 287 |
| MACFARLANE, J. M.—Sarraceniaceae | 295 | PORSILD, A. E.—Ericaceae | 289 |
| | | RECHINGER, K. H.—Polygonaceae | 294 |

- REHDER, A.—Caprifoliaceae, Hydrangeaceae287, 290
- RENDEL, A. B.—Naiadaceae.....292
- ROBBINS, G. T.—Primulaceae294
- ROLLINS, R. C.—Cruciferae288
- ROSENDAHL, C. O.—Saxifragaceae.....295
- , F. K. BUTTERS, & OLGA LAKELA—Saxifragaceae295
- ROSSBACH, RUTH P.—Caryophyllaceae287
- ROUSSEAU, J.—Aceraceae286
- RUHLAND, W.—Eriocaulaceae289
- RYDBERG, P. A.—Caprifoliaceae, Compositae, Crassulaceae, Ericaceae, Hydrocharitaceae, Leguminosae, Limnathaceae, Orchidaceae, Parnassiaceae, Portulacaceae, Rosaceae, Solanaceae, Sparganiaceae.....287, 288, 289, 290, 291, 292, 293, 294, 295, 296
- ST. JOHN, H.—Gentianaceae, Hydrangeaceae, Hydrocharitaceae.....290
- , & D. WHITE—Compositae.....287
- SAFFORD, W. E.—Solanaceae.....296
- SAMUELSSON, G.—Alismaceae.....286
- SARGENT, C. S.—Juglandaceae, Tiliaceae291, 296
- SCHAFFNER, J. H.—Pteridophyta.....297
- SCHINDLER, A. K.—Haloragidaceae.....290
- SCHLECHTER, R.—Burmanniaceae287
- SCHINZ, H.—Amaranthaceae.....286
- SCHMIDT, O. C.—Aristolochiaceae.....286
- SCHNEIDER, C.—Salicaceae.....295
- SCHUBERT, BERNICE G.—Leguminosae 291
- SCHULZ, O. E.—Cruciferae288
- SCHULZE, G. K.—Violaceae.....296
- SCHWARTZ, O.—Pontederiaceae.....294
- SENN, H. A.—Leguminosae.....291
- SHAFFER, J. H.—Leguminosae.....291
- SHARP, W. M.—Compositae.....287
- SHERFF, E. E.—Compositae.....287
- SHINNERS, L. H.—Compositae.....287
- SMALL, J. K.—Alismaceae, Ericaceae, Linaceae, Oxalidaceae, Polygonaceae, Simarubaceae286, 289, 292, 293, 294, 296
- , & P. A. RYDBERG—Hydrangeaceae, Saxifragaceae.....290, 295
- STANDLEY, P. C.—Amaranthaceae, Chenopodiaceae, Compositae, Nyctaginaceae, Rubiaceae 286, 287, 292, 295
- STANFORD, E. E.—Polygonaceae.....294
- STEYERMARK, J. A.—Compositae.....287
- SVENSON, H. K.—Cyperaceae, Hypericaceae, Pteridophyta.....289, 290, 297
- TAYLOR, N.—Naiadaceae, Potamogetonaceae.....292, 294
- THOMPSON, C. H.—Lemnaceae.....291
- TRELEASE, W.—Fagaceae, Juglandaceae, Loranthaceae, Onagraceae.....289, 291, 292, 293
- TRYON, R. M.—Convolvulaceae, Pteridophyta288, 297
- ULBRICH, E.—Chenopodiaceae287
- UNDERWOOD, L. M. & R. C. BENEDICT—Pteridophyta297
- UPHOF, J. C. TH.—Sarraceniaceae.....295
- VAIL, ANNA M.—Asclepiadaceae, Leguminosae286, 291
- , & P. A. RYDBERG—Zygophyllaceae297
- VAN ESELTINE, G. P.—Martyniaceae 292
- VAN RENSSELAER, M., & H. E. MC-MINN—Rhamnaceae294
- WALTER, H.—Phytolaccaceae.....293
- WANGERIN, W.—Cornaceae.....288
- WATSON, E. E.—Compositae.....287
- WEATHERBY, C. A.—Euphorbiaceae, Pteridophyta289, 297
- WHEELER, L. C.—Euphorbiaceae.....289
- WHERRY, E. T.—Polemoniaceae, Pteridophyta, Sarraceniaceae 294, 297, 295
- WIDDER, F. J.—Compositae.....287
- WIEGAND, K. M.—Caprifoliaceae, Compositae, Juncaceae, Oxalidaceae, Rosaceae.....287, 291, 293, 295
- , & C. A. WEATHERBY—Compositae287
- WIGHT, W. F.—Rosaceae.....295
- WILLIAMS, L. O.—Boraginaceae287
- WILSON, L. R.—Pteridophyta297
- WILSON, P.—Aizoaceae, Hamamelidaceae, Phytolaccaceae, Portulacaceae, Rutaceae, Typhaceae.....286, 290, 293, 294, 295, 296
- WINKLER, H.—Betulaceae, Linaceae286, 292
- WOLF, C. B.—Rhamnaceae.....294
- WOLFF, H.—Umbelliferae.....296
- WOODSON, R. E.—Apocynaceae, Asclepiadaceae286
- WYNNE, FRANCES E.—Droseraceae 289
- YUNCKER, T. G.—Convolvulaceae.....288

Index of Plant Names*

| | | | |
|-----------------------------|----------|---------------------------|----------|
| Absinth | 266 | Amaranthus | 121 |
| Abutilon | 183 | AMARYLLIDACEAE | 96 |
| Acalypha | 174 | Amaryllis Family | 96 |
| ACANTHACEAE | 233 | Ambrosia | 247 |
| Acanthus Family | 233 | <i>Ambrosiaceae</i> | 242 |
| Acer | 178 | Amelanchier | 154 |
| ACERACEAE | 178 | Ammannia | 189 |
| Acerates | 208 | Ammophila | 57 |
| Achillea | 265 | Amorpha | 164 |
| <i>Acmispon</i> | 163 | Ampelamus | 208 |
| Acnida | 121 | Ampelopsis | 181 |
| Acorus | 87 | Amphicarpa | 170 |
| <i>Acrostichum</i> | 38 | Amsonia | 206 |
| Actaea | 129 | <i>Amygdalus</i> | 157 |
| Actinea | 264 | ANACARDIACEAE | 177 |
| <i>Actinella</i> | 264 | Anacharis | 46 |
| Actinomeris | 262 | Anagallis | 202 |
| <i>Acuan</i> | 161 | <i>Anaphalis</i> | 258 |
| Adder's-tongue | 33 | <i>Anchistea</i> | 39 |
| Adder's-tongue Family | 33 | <i>Androcera</i> | 225 |
| <i>Adelia</i> | 204 | Andromeda | 199 |
| Adiantum | 39 | Andropogon | 67 |
| <i>Adopogon</i> | 270 | Androsace | 201 |
| Aesculus | 179 | Anemone | 131 |
| <i>Agalinis</i> | 230 | Anemonella | 132 |
| Agastache | 219 | Anethum | 198 |
| Agave | 96 | Angelica | 198 |
| Agoseris | 272 | <i>Anisostichus</i> | 233 |
| Agrimonia | 151 | ANNONACEAE | 126 |
| Agrimony | 151 | <i>Anoplanthus</i> | 232 |
| Agropyron | 54 | Antennaria | 258 |
| Agrostemma | 125 | Anthemis | 265 |
| Agrostis | 57 | Anthoxanthum | 62 |
| Ague-tree | 134 | <i>Anychia</i> | 122 |
| Ailanthus | 173 | <i>Aphyllon</i> | 232 |
| AIZOACEAE | 123 | Apios | 169 |
| Alder | 107, 108 | Aplectrum | 101 |
| Aletris | 96 | APOCYNACEAE | 205 |
| Alfalfa | 163 | Apeccynum | 206 |
| Alisma | 45 | Apple | 155 |
| Alismaceae | 44 | Apple of Peru | 224 |
| Alliaria | 140 | AQUIFOLIACEAE | 177 |
| Allionia | 122 | Aquilegia | 128 |
| Allium | 93 | Arabidopsis | 142 |
| Alnus | 107 | Arabis | 141, 142 |
| Aloe | 96 | ARACEAE | 86 |
| Alopecurus | 57 | Aralia | 194 |
| <i>Alsine</i> | 124 | ARALIACEAE | 194 |
| Althaea | 182 | Arbor-vitae | 41 |
| Alumroot | 145 | Arctium | 268 |
| Alyssum | 142 | Arctostaphylos | 200 |
| Amaranth | 121 | Arenaria | 124 |
| AMARANTHACEAE | 121 | <i>Argentina</i> | 150 |
| Amaranth Family | 121 | Arisaema | 86 |

* Family names appear in caps and small caps; synonyms are indicated by italic type.

| | | | |
|---------------------------|----------|------------------------------|----------|
| Aristida | 60 | Bee Balm | 221 |
| Aristolochia | 114 | Beech | 108 |
| ARISTOLOCHACEAE | 114 | Beech-drops | 232 |
| Armoracia | 142 | Beech Family | 108 |
| Aronia | 155 | Beggar-ticks | 263 |
| Arrhenatherum | 56 | Belamcanda | 97 |
| Arrow-grass | 44 | Bellflower | 241 |
| Arrow-grass Family | 44 | Bellflower Family | 241 |
| Arrowhead | 45 | Bellwort | 94 |
| Artemisia | 266 | <i>Benzoin</i> | 134 |
| Arum Family | 86 | BERBERIDACEAE | 133 |
| Arunacus | 149 | Bergamot Mint | 221 |
| Arundinaria | 50 | Berteroa | 142 |
| Asarum | 114 | Berula | 196 |
| ASCLEPIADACEAE | 206 | <i>Besseya</i> | 230 |
| Asclepias | 206, 208 | Betula | 107 |
| Asclepiodora | 208 | BETULACEAE | 106 |
| Ascyrum | 183 | <i>Bicuculla</i> | 135 |
| Ash | 203 | Bidens | 263 |
| Asimina | 126 | <i>Bignonia</i> | 233 |
| Asparagus | 94 | Bignonia | 233 |
| Aspen | 102 | BIGNONIACEAE | 233 |
| Asphodel | 93 | Bindweed | 118, 209 |
| <i>Aspidium</i> | 36 | Birch Family | 106 |
| Asplenium | 38 | Birch | 107 |
| <i>Asplenosorus</i> | 38 | Birthwort | 114 |
| Aster | 252 | Birthwort Family | 114 |
| Astragalus | 165 | Bishop's-cap | 145 |
| Athyrium | 38 | Bishop's-weed | 197 |
| <i>Atragene</i> | 132 | Bittercress | 141 |
| Atriplex | 121 | Bittersweet | 177 |
| Aureolaria | 230 | Blackberry | 152, 153 |
| Avena | 56 | Blackberry-lily | 97 |
| Avens | 151 | Black Cohosh | 128 |
| Azalea | 199 | Black-eyed Susan | 260 |
| Azolla | 39 | Black Gum | 194 |
| | | Black-haw | 237 |
| Bachelor's Button | 269 | Black Medic | 163 |
| Bacopa | 228 | Bladdernut | 178 |
| Bald Cypress | 40 | Bladdernut Family | 178 |
| Balm of Gilead | 102 | Bladder-pod | 143 |
| Balsam-apple, Wild | 241 | Bladderwort | 231 |
| BALSAMINACEAE | 172 | Bladderwort Family | 231 |
| <i>Balsamita</i> | 266 | Blazing-star | 249 |
| Baneberry | 129 | <i>Blephariglottis</i> | 99 |
| Baptisia | 162 | Blephilia | 221 |
| Barbarea | 139 | <i>Blitum</i> | 119 |
| Barberry Family | 133 | Bloodroot | 135 |
| Barley | 55 | Blue Beech | 108 |
| Bartonia | 205 | Bluebells | 214 |
| Basil | 221 | Blueberry | 200 |
| Basswood | 181 | Blue Cohosh | 133 |
| <i>Batodendron</i> | 200 | Bluecurls | 218 |
| <i>Batrachium</i> | 129 | Blue-eyed grass | 97 |
| Bayberry Family | 105 | Blue-eyed Mary | 227 |
| Beaked-rush | 74 | Blue Hearts | 231 |
| Bean | 169 | Bluestem | 55, 68 |
| Bearberry | 200 | Bluets | 235 |
| Beckmannia | 61 | Bluevine | 208 |
| Bedstraw | 236 | Blueweed | 215 |

| | | | |
|--------------------------|---------------|-----------------------------|----------|
| <i>Boebera</i> | 265 | Butterfly Pea | 170 |
| Boehmeria | 113 | Butterfly-weed | 192, 207 |
| Bog-rosemary | 199 | Butternut | 105 |
| Boltonia | 252 | Butterprint | 183 |
| <i>Bonamia</i> | 209 | Butterweed | 268 |
| Boneset | 248 | Buttonbush | 235 |
| Borage Family | 213 | Buttonweed | 236 |
| BORAGINACEAE | 213 | | |
| Botrychium | 34 | Cabomba | 132 |
| Bouncing Bet | 126 | Cacalia | 267 |
| Bouteloua | 61 | CACTACEAE | 188 |
| Box-elder | 179 | Cactus Family | 188 |
| <i>Brachyactis</i> | 257 | Cakile | 138 |
| Brachyelytrum | 59 | Calamagrostis | 57 |
| Bracken | 39 | <i>Calamintha</i> | 221 |
| Bramble | 152 | Calamovilfa | 57 |
| <i>Bramia</i> | 228 | Callirhoe | 182 |
| Brasenia | 132 | CALLITRICHACEAE | 176 |
| Brassica | 138 | Callitriche | 176 |
| <i>Brauneria</i> | 260 | Calopogon | 100 |
| <i>Breweria</i> | 209 | Caltha | 128 |
| Bristly Aralia | 194 | Caltrop | 172 |
| Briza | 53 | Caltrop Family | 172 |
| Bromus | 50 | Calycocarpum | 134 |
| Brookweed | 201 | Camas | 94 |
| Broomcorn Millet | 63 | Camassia | 94 |
| Broomrape | 232 | Camelina | 143 |
| Broomrape Family | 232 | Campanula | 241 |
| Broom-sedge | 68 | CAMPANULACEAE | 241 |
| Brown-eyed Susan | 259 | <i>Campanulastrum</i> | 241 |
| <i>Bruniera</i> | 87 | Campion | 126 |
| Brunnichia | 119 | Campsis | 233 |
| Buchnera | 231 | Camptosorus | 38 |
| Buckbean | 205 | Cane | 50 |
| Buckbean Family | 205 | CANNABINACEAE | 112 |
| Buckbrush | 239 | Cannabis | 112 |
| Buckeye | 179 | Caper Family | 143 |
| Buckthorn | 179, 180, 203 | <i>Capnoides</i> | 135 |
| Buckthorn Family | 179 | CAPPARIDACEAE | 143 |
| Buckwheat | 118 | CAPRIFOLIACEAE | 237 |
| Buckwheat Family | 114 | <i>Capriola</i> | 61 |
| Buffalo-berry | 188 | Capsella | 143 |
| Buffalo-bur | 225 | Cardamine | 141 |
| Bugbane | 128 | Cardaria | 143 |
| Bugseed | 121 | Cardinal-flower | 242 |
| Bulbostylis | 72 | <i>Carduaceae</i> | 242 |
| Bulrush | 73 | Carduus | 269 |
| Bumelia | 203 | Carex | 75 |
| Bunchberry | 194 | Carpenter-weed | 220 |
| Bunchflower | 93 | Carpetweed | 123 |
| Burdock | 268 | Carpetweed Family | 123 |
| BURMANNIACEAE | 98 | Carpinus | 108 |
| Burmannia Family | 98 | Carrión Flower | 96 |
| Bur-reed | 41 | Carrot | 196 |
| Bur-reed Family | 41 | Carya | 105 |
| <i>Bursa</i> | 143 | CARYOPHYLLACEAE | 123 |
| Bush-clover | 167 | Cassia | 161 |
| Butter-and-Eggs | 228 | <i>Castalia</i> | 133 |
| Buttercup Family | 127 | Castanea | 108 |
| Buttercup | 129, 130 | Castilleja | 231 |

| | | | |
|---------------------------------|-----|----------------------------|----------|
| Catalpa | 233 | Cinna | 57 |
| Catchfly | 125 | Cinquefoil | 149, 150 |
| <i>Cathartolinum</i> | 171 | Circaea | 192 |
| Catnip | 219 | Cirsium | 268 |
| Cat-tail | 41 | Cissus | 181 |
| Cat-tail Family | 41 | CISTACEAE | 185 |
| Caulophyllum | 133 | <i>Cistus</i> | 185 |
| Ceanothus | 180 | Cladium | 75 |
| <i>Cebatha</i> | 134 | Clammyweed | 144 |
| Cedar | 41 | Claytonia | 123 |
| Celandine | 135 | Cladrastis | 162 |
| CELASTRACEAE | 177 | Clearweed | 113 |
| Celastrus | 177 | Clematis | 132 |
| Celtis | 111 | Cleome | 144 |
| Cenchrus | 67 | Cliff-brake | 39 |
| Centaurea | 269 | Climbing Bittersweet | 177 |
| Centaureium | 204 | Clinopodium | 221 |
| Centaury | 204 | Clitoria | 170 |
| Centunculus | 201 | Clover | 162, 163 |
| Ceanothus | 180 | Clubmoss | 32 |
| Cephalanthus | 235 | Clubmoss Family | 32 |
| Cerastium | 123 | Cocklebur | 247 |
| CERATOPHYLLACEAE | 133 | Cocculus | 134 |
| Ceratophyllum | 133 | <i>Cocloglossum</i> | 99 |
| Cercis | 161 | Coffee-weed | 161 |
| <i>Chaenorrhinum</i> | 228 | Cohosh | 128, 133 |
| Chaerophyllum | 196 | Colic-root | 96 |
| <i>Chaetochloa</i> | 67 | Collinsia | 227 |
| Chaffweed | 201 | Collinsonia | 223 |
| <i>Chamaecrista</i> | 161 | Collomia | 212 |
| Chamaedaphne | 200 | Columbo | 205 |
| Chamomile | 265 | Columbine | 128 |
| <i>Chamaenerion</i> | 190 | Comandra | 113 |
| <i>Chamaepericlymenum</i> | 194 | <i>Comarum</i> | 150 |
| Chamaesyce | 175 | Comfrey | 215 |
| Cheat | 51 | Commelina | 88 |
| Checkerberry | 200 | COMMELINACEAE | 88 |
| Cheilanthes | 39 | Compass-plant | 259 |
| <i>Cheirinia</i> | 140 | COMPOSITAE | 242 |
| Chelidonium | 135 | Composite Family | 242 |
| Chelone | 226 | Comptonia | 105 |
| CHENOPODIACEAE | 119 | Ccnflower | 259, 260 |
| Chenopodium | 119 | Conioselinum | 198 |
| Cherry | 157 | Conium | 197 |
| Chervil | 196 | Conobea | 229 |
| Chestnut | 108 | Conopholis | 232 |
| Chicory | 270 | Conringia | 140 |
| Chickweed | 124 | CONVOLVULACEAE | 209 |
| Chimaphila | 199 | Convolvulus | 209 |
| Chloris | 61 | Coralberry | 239 |
| Chokeberry | 155 | Corallorrhiza | 101 |
| Chokecherry | 158 | Coralroot | 101 |
| Chrysanthemum | 266 | Coreopsis | 263 |
| Chrysopsis | 249 | Corispermum | 121 |
| Chrysosplenium | 145 | CORNACEAE | 193 |
| Chufa | 69 | Corn Cockle | 125 |
| <i>Cichoriaceae</i> | 242 | Corn-salad | 240 |
| Cichorium | 270 | Cornus | 193, 194 |
| Cicuta | 197 | Coronilla | 165 |
| Cimicifuga | 128 | Corydalis | 135, 136 |

| | | | |
|----------------------------|----------|---------------------------|----------|
| Corylus | 108 | Datura | 225 |
| Cota | 265 | Daucus | 196 |
| Cotton Sedge | 74 | Dayflower | 88 |
| Cottonwood | 101, 102 | Day Lily | 93 |
| Cowbane | 197 | Deadly Nightshade | 225 |
| Cow-herb | 126 | Dead-nettle | 220 |
| Cow-parsnip | 198 | Death Camas | 92 |
| Cow Pea | 169 | <i>Decemium</i> | 212 |
| Crab-apple | 155 | Decodon | 189 |
| Cracca | 164 | <i>Delopyrum</i> | 118 |
| Cranberry | 200 | Delphinium | 128 |
| Cranberry-bush | 238 | Dennstaedtia | 36 |
| Cranesbill | 170 | <i>Denslovia</i> | 95 |
| CRASSULACEAE | 144 | Dentaria | 140 |
| Crataegus | 155 | Deschampsia | 56 |
| Cristatella | 144 | Descurainia | 140 |
| <i>Crocanthemum</i> | 185 | Desmanthus | 161 |
| Cross-vine | 233 | Desmodium | 165 |
| Crotalaria | 162 | Dianthera | 233 |
| Croton | 174 | <i>Diarina</i> | 54 |
| Crotonopsis | 174 | Diarrhena | 54 |
| Crown-vetch | 165 | Dicentra | 135 |
| CRUCIFERAE | 136 | <i>Dicksonia</i> | 36 |
| Cryptogramma | 39 | <i>Didiplis</i> | 189 |
| Cryptotaenia | 196 | Diervilla | 239 |
| <i>Cubelium</i> | 186 | Digitaria | 62 |
| Cucumber Tree | 126 | <i>Diodella</i> | 236 |
| Cucurbita | 241 | Diodia | 236 |
| CUCURBITACEAE | 241 | <i>Discopleura</i> | 197 |
| Cudweed | 258 | Dioscorea | 96 |
| Culver-root | 229 | DIOSCOREACEAE | 96 |
| Cunila | 222 | Diospyros | 203 |
| Cuphea | 189 | Diplazium | 38 |
| Cup-plant | 259 | Diplotaxis | 138 |
| CUPRESSACEAE | 41 | DIPSACACEAE | 241 |
| Cupseed | 134 | Dipsacus | 241 |
| Currant | 147 | Dirca | 188 |
| Cuscuta | 210 | <i>Discopleura</i> | 197 |
| Custard-apple Family | 126 | <i>Ditremexa</i> | 161 |
| <i>Cyanococcus</i> | 200 | Dock | 115 |
| <i>Cyclachaena</i> | 247 | Dodder | 210 |
| Cycloloma | 120 | Dodecatheon | 202 |
| Cynodon | 61 | <i>Doellingeria</i> | 256 |
| Cynoglossum | 213 | Dogbane Family | 205 |
| <i>Cynoxylon</i> | 194 | Dogbane | 206 |
| <i>Cynthia</i> | 270 | Dog-fennel | 265 |
| CYPERACEAE | 68 | Dogwood | 193, 194 |
| Cyperus | 69 | Dogwood Family | 193 |
| Cypripedium | 98 | Doll's Eyes | 128 |
| Cystopteris | 36 | Draba | 140 |
| | | Dracocephalum | 219 |
| Dactylis | 54 | Dragonhead | 219 |
| Dactyloctenium | 61 | Dragonroot | 86 |
| Dalea | 164 | Dropseed | 59 |
| Dandelion | 272 | Drosera | 144 |
| Danthonia | 57 | DROSERACEAE | 144 |
| Darnel | 56 | <i>Drupaceae</i> | 147 |
| <i>Dasiphora</i> | 151 | <i>Dryocallis</i> | 150 |
| Dasistoma | 231 | Dryopteris | 36, 37 |
| <i>Dasystema</i> | 230 | Duckweed | 87 |

| | | | |
|------------------------------|-----|-------------------------------|-----|
| Duckweed Family | 87 | Evening-primrose | 191 |
| Dulichium | 70 | Evening-primrose Family | 189 |
| Dutchman's-breeches | 135 | Everlasting | 258 |
| Dutchman's-pipe | 114 | | |
| Dyssodia | 265 | FAGACEAE | 108 |
| | | Fagopyrum | 118 |
| EBENACEAE | 203 | Fagus | 108 |
| Ebony Family | 203 | <i>Falcata</i> | 170 |
| Echinacea | 260 | False Boneset | 249 |
| Echinochloa | 67 | False Bugbane | 131 |
| Echinops | 268 | False Dandelion | 272 |
| Echinocystis | 241 | False Dragonhead | 219 |
| Echinodorus | 45 | False Foxglove | 230 |
| Echium | 215 | False Garlic | 93 |
| Eclipta | 259 | False Gromwell | 215 |
| Eelgrass | 46 | False Indigo | 164 |
| ELAEAGNACEAE | 188 | False Loosestrife | 190 |
| ELATINACEAE | 126 | False Mermaid | 172 |
| Elatine | 126 | False Nettle | 113 |
| Elder | 237 | False Pennyroyal | 218 |
| Elecampane | 258 | False Rue Anemone | 128 |
| Elephantopus | 248 | False Solomon's-seal | 94 |
| Elephant's-foot | 248 | Farkleberry | 200 |
| Eleocharis | 70 | Featherfoil | 201 |
| Eleusine | 60 | Fern, Bladder | 36 |
| Ellisia | 212 | Brake | 39 |
| Elm | 111 | Broad Beech | 37 |
| Elm Family | 111 | Chain | 39 |
| <i>Elodea</i> | 46 | Christmas | 36 |
| Elymus | 55 | Cinnamon | 34 |
| Enchanter's-nightshade | 192 | Cliff | 36 |
| <i>Epibaterium</i> | 134 | Common Wood | 37 |
| Epifagus | 232 | Crested Wood | 37 |
| Epigaea | 200 | Family | 34 |
| Epilobium | 190 | Filmy | 34 |
| <i>Epipactis</i> | 100 | Glade | 38 |
| <i>Epiphegus</i> | 232 | Goldie's | 37 |
| EQUISETACEAE | 32 | Grape | 34 |
| Equisetum | 32 | Hay-scented | 36 |
| Eragrostis | 53 | Interrupted | 34 |
| Erechtites | 267 | Lady | 38 |
| Erianthus | 68 | Lip | 39 |
| ERICACEAE | 198 | Long Beech | 37 |
| Erigenia | 196 | Maidenhair | 39 |
| Erigeron | 257 | Marginal Wood | 37 |
| ERIOCAULACEAE | 88 | Marsh | 36 |
| Eriocaulon | 88 | Mosquito | 39 |
| Eriophorum | 74 | New York | 36 |
| Erodium | 171 | Oak | 37 |
| Eryngium | 196 | Ostrich | 36 |
| Erysimum | 140 | Royal | 34 |
| Erythronium | 94 | Sensitive | 36 |
| ESCALLONIAEAE | 146 | Spinulose Wood | 37 |
| Escallonia Family | 146 | Walking | 38 |
| Eulophus | 196 | Festuca | 51 |
| Euonymus | 177 | Feverfew | 259 |
| Eupatorium | 248 | Figwort | 227 |
| Euphorbia | 175 | Figwort Family | 225 |
| EUPHORBIAEAE | 174 | Filipendula | 150 |
| <i>Euthamia</i> | 249 | Filmy Fern Family | 34 |

| | | | |
|---------------------------|----------|--------------------------|----------|
| Fimbristylis | 72 | Goldenseal | 128 |
| Firepink | 125 | Gonolobus | 208 |
| Fireweed | 267 | <i>Gonopyrum</i> | 118 |
| Flax | 171 | Good-King-Henry | 120 |
| Flax Family | 171 | Goodyera | 100 |
| Fleabane | 257 | Gooseberry | 146, 147 |
| Floerkia | 172 | Gooseberry Family | 146 |
| Flower-of-an-hour | 183 | Goose-grass | 236 |
| Forestiera | 204 | Goosefoot | 119, 120 |
| Forget-me-not | 214 | Goosefoot Family | 119 |
| Forked-chickweed | 122 | Gourd Family | 241 |
| Four-o'clock Family | 122 | GRAMINEAE | 46 |
| Foxtail | 57, 67 | Grape | 180, 181 |
| Fragaria | 149 | Grape Family | 180 |
| Frasera | 205 | Gratiola | 228 |
| Fraxinus | 203 | Grass, Autumn Bent | 57 |
| Froelichia | 122 | Barnyard | 67 |
| Frogbit | 46 | Beach | 57 |
| Frogbit Family | 45 | Bent | 57 |
| Frog-fruit | 216 | Bermuda | 61 |
| Frostweed | 185 | Billion-dollar | 67 |
| Fuirena | 72 | Blue | 52 |
| Fumaria | 136 | Blue-joint | 57 |
| FUMARIACEAE | 135 | Bottlebrush | 55 |
| Fumitory | 136 | Brome | 50 |
| Fumitory Family | 135 | Canada Blue | 52 |
| Galactia | 170 | Canary | 62 |
| <i>Calceorchis</i> | 99 | Catchfly | 62 |
| Galinsoga | 260 | Common Crab | 62 |
| Galium | 236 | Cord | 61 |
| Garlic | 93 | Crowfoot | 61 |
| Gaultheria | 200 | Cut | 62 |
| Gaura | 192 | Dune | 55 |
| Gaylussacia | 200 | Family | 46 |
| <i>Gemmingia</i> | 97 | Fescue | 51 |
| Gentian | 205 | Gamma | 68 |
| Gentiana | 205 | Goose | 60 |
| GENTIANACEAE | 204 | Gramma | 61 |
| Gentian Family | 204 | Hair | 56 |
| GERANIACEAE | 170 | Hungarian | 67 |
| Geranium | 170 | Indian | 68 |
| Geranium Family | 170 | Johnson | 68 |
| Gerardia | 230 | June | 56 |
| Geum | 151 | Kentucky Blue | 52 |
| Gillenia | 149 | Manna | 51 |
| Ginseng | 194 | Meadow | 52 |
| Ginseng Family | 194 | Munro | 64 |
| Glecoma | 219 | Northern Reed | 57 |
| Gleditsia | 161 | Oat | 57 |
| Globe-thistle | 268 | Orchard | 54 |
| Glyceria | 51 | Plume | 68 |
| Glycine | 169, 170 | Porcupine | 60 |
| Gnaphalium | 258 | Quack | 55 |
| Goat's-beard | 149, 270 | Quaking | 53 |
| Goat's-rue | 164 | Redtop | 57 |
| Golden-alexanders | 197 | Reed | 57 |
| Golden-aster | 249 | Reed Canary | 62 |
| Goldenglow | 259 | Rice | 60 |
| Goldenrod | 249 | Rye | 56 |
| | | Sand | 54 |

| | | | |
|---------------------------------|----------|-----------------------------|--------|
| Slough | 61 | Hemerocallis | 93 |
| Smooth Crab | 62 | Hemicarpha | 72 |
| Sprangle-top | 61 | Hemlock | 40 |
| Squirrel-tail | 55 | Hemlock-parsley | 198 |
| Stink | 53 | Hemp | 112 |
| Sweet | 61 | Henbit | 220 |
| Sweet Vernal | 62 | Hepatica | 132 |
| Switch | 63 | Heracleum | 198 |
| Tall Oat | 56 | Hercules'-club | 194 |
| Tickle | 57 | Heteranthera | 89 |
| Three-awned | 60 | Heuchera | 145 |
| Velvet | 57 | Hibiscus | 183 |
| Wedge | 56 | Hieracium | 272 |
| Wheat | 54 | Hierochloe | 61 |
| White | 62 | Hickory | 106 |
| Windmill | 61 | <i>Hicoria</i> | 105 |
| Witch | 64 | HIPPOCASTANACEAE | 179 |
| Grass-of-Parnassus | 145 | Hippuris | 193 |
| Grass-of-Parnassus Family | 145 | Hog-peanut | 170 |
| Gratiola | 228 | Holcus | 57, 68 |
| Greenbrier | 95 | Holly | 177 |
| Green Dragon | 86 | Holly Family | 177 |
| Green Violet | 186 | Hollyhock | 182 |
| Grindelia | 249 | <i>Homalocenchrus</i> | 62 |
| Gromwell | 214 | Honewort | 196 |
| <i>Grossularia</i> | 146 | Honey Locust | 161 |
| GROSSULARIACEAE | 146 | Honeysuckle | 239 |
| Ground-cherry | 224 | Honeysuckle Family | 237 |
| Ground-hemlock | 40 | Hop | 112 |
| Groundnut | 169 | Hop-clover | 163 |
| Groundsel | 268 | Hop-hornbeam | 108 |
| Gumweed | 249 | Hop-tree | 173 |
| Gymnocladus | 161 | Hordeum | 55 |
| Habenaria | 99 | Horehound | 219 |
| Hackberry | 111, 112 | Horned Pondweed | 44 |
| <i>Hackelia</i> | 214 | Hornwort | 133 |
| <i>Halerpestes</i> | 129 | Hornwort Family | 133 |
| Halesia | 203 | Horse-chestnut | 179 |
| HALORAGIDACEAE | 192 | Horse-chestnut Family | 179 |
| HAMAMELIDACEAE | 147 | Horse-gentian | 239 |
| Hamamelis | 147 | Horse-nettle | 225 |
| Harbinger-of-spring | 196 | Horseradish | 142 |
| Hardhack | 149 | Horsetail | 33 |
| <i>Hartmannia</i> | 191 | Horsetail Family | 32 |
| Hawkweed | 272 | Horseweed | 257 |
| Hawthorn | 155 | Hosackia | 163 |
| Hazel | 108 | Hottonia | 201 |
| Heath Family | 198 | hound's-tongue | 213 |
| Hedge-apple | 112 | Houstonia | 235 |
| Hedge-nettle | 220 | Huckleberry | 200 |
| Hedge Parsley | 196 | Hudsonia | 185 |
| Hedeoma | 221 | Humulus | 112 |
| Helenium | 265 | Hybanthus | 186 |
| Heleochloa | 59 | Hydrangea | 146 |
| Helianthemum | 185 | HYDRANGEACEAE | 146 |
| Helianthus | 260 | Hydrangea Family | 146 |
| Heliopsis | 259 | <i>Hydrantheium</i> | 228 |
| Heliotrope | 213 | Hydrastis | 128 |
| Heliotropium | 213 | HYDROCHARITACEAE | 45 |
| | | Hydrolea | 213 |

| | | | |
|---------------------------|-----|----------------------------|----------|
| HYDROPHYLLACEAE | 212 | Juncus | 89 |
| Hydrophyllum | 212 | Juniper | 41 |
| Hymenocallis | 96 | Juniperus | 41 |
| Hymenopappus | 264 | Jussiaea | 190 |
| HYMENOPHYLLACEAE | 34 | | |
| HYPERICACEAE | 183 | Kallstroemia | 172 |
| Hypericum | 183 | Kentucky Coffee-tree | 161 |
| <i>Hypopitys</i> | 199 | <i>Kickxia</i> | 228 |
| Hypoxis | 96 | Kidney Bean | 169 |
| Hyssop | 219 | Kinnikinnick | 200 |
| Hystrix | 55 | Knapsweed | 269 |
| | | <i>Kneiffia</i> | 191, 192 |
| ILLECEBRACEAE | 122 | Knotweed | 116, 118 |
| Ilex | 177 | Kochia | 120 |
| <i>Ilysanthes</i> | 228 | Koeleria | 56 |
| Impatiens | 172 | <i>Koellia</i> | 222 |
| Indian Corn | 68 | <i>Korycarpus</i> | 54 |
| Cucumber-root | 95 | <i>Kraunhia</i> | 165 |
| Mallow | 183 | Krigia | 270 |
| Paint Brush | 231 | Kuhnia | 249 |
| Physic | 149 | Kyllingia | 70 |
| Pipe | 199 | LABIATAE | 216 |
| Plantain | 267 | <i>Lacinaria</i> | 249 |
| Turnip | 86 | Lactuca | 270 |
| Inula | 258 | Lady's Slipper | 98 |
| Iodanthus | 141 | Lady's Thumb | 118 |
| <i>Ionactis</i> | 256 | Ladies' Tresses | 100 |
| <i>Ionoxalis</i> | 171 | Lamb's Quarter | 120 |
| Ipecac | 149 | Lamium | 220 |
| Ipomoea | 210 | Laportea | 113 |
| IRIDACEAE | 97 | Lappula | 214 |
| Iris | 97 | Larch | 40 |
| Iris Family | 97 | Larkspur | 128 |
| Ironweed | 247 | Larix | 40 |
| Ironwood | 108 | Lathyrus | 168 |
| Isanthus | 218 | LAURACEAE | 134 |
| <i>Isnardia</i> | 190 | Laurel Family | 134 |
| Isoetes | 32 | Lead-plant | 164 |
| ISOETACEAE | 32 | Leafcup | 259 |
| Isopyrum | 128 | Leather-flower | 132 |
| Italian Millet | 67 | Leatherleaf | 200 |
| Itea | 146 | Leatherwood | 188 |
| <i>Iteaceae</i> | 146 | Lechea | 185 |
| Iva | 247 | Leersia | 62 |
| | | LEGUMINOSAE | 158 |
| Jack-in-the-Pulpit | 86 | Lemna | 87 |
| Japanese Millet | 67 | LEMNACEAE | 87 |
| Jeffersonia | 133 | LENTIBULARIACEAE | 231 |
| Jerusalem Artichoke | 262 | Lecnurus | 220 |
| Jerusalem Oak | 119 | <i>Leontodon</i> | 272 |
| Jewel-weed | 172 | <i>Lepachys</i> | 260 |
| Jewel-weed Family | 172 | <i>Lepadena</i> | 176 |
| Jimson-weed | 225 | Lepidium | 143 |
| Joe-pye Weed | 248 | <i>Leptamium</i> | 232 |
| Jointweed | 118 | <i>Leptandra</i> | 229 |
| JUGLANDACEAE | 105 | <i>Leptilon</i> | 257 |
| Juglans | 105 | Leptochloa | 61 |
| JUNCAGINACEAE | 44 | <i>Leptoglottis</i> | 161 |
| JUNCACEAE | 89 | Leptoloma | 62 |
| <i>Juncoides</i> | 91 | <i>Leptorchis</i> | 100 |

| | | | |
|---------------------------|----------|--------------------------|----------|
| Lespedeza | 167 | Magnolia | 126 |
| Lesquerella | 143 | MAGNOLIACEAE | 126 |
| Lettuce | 270 | Magnolia Family | 126 |
| <i>Leucanthemum</i> | 266 | Maianthemum | 94 |
| Leucospora | 229 | Maize | 68 |
| Liatriis | 249 | <i>Malaceae</i> | 147 |
| LILIACEAE | 91 | Malaxis | 100 |
| Lilium | 93 | Mallow | 182 |
| Lily | 93 | Mallow Family | 181 |
| Lily Family | 91 | Malus | 155 |
| LIMNANTHACEAE | 172 | Malva | 182 |
| Limnobium | 46 | MALVACEAE | 181 |
| <i>Limnorchis</i> | 99 | Malvastrum | 182 |
| <i>Limodorum</i> | 100 | Mandrake | 133 |
| LINACEAE | 171 | Manfreda | 96 |
| Linaria | 227 | Maple | 178, 179 |
| Linden | 181 | Maple Family | 178 |
| Linden Family | 181 | Mare's-tail | 193 |
| Lindera | 134 | Marijuana | 112 |
| Lindernia | 228 | <i>Mariscus</i> | 75 |
| Linnaea | 239 | Marrubium | 219 |
| Linum | 171 | Marsh-elder | 247 |
| Liparis | 100 | Marsh-marigold | 128 |
| <i>Lippia</i> | 216 | Marsilea | 39 |
| Liquidambar | 147 | MARSILEACEAE | 39 |
| Liriodendron | 126 | <i>Martusia</i> | 170 |
| Lithospermum | 214 | <i>Maruta</i> | 265 |
| Lizard-tail | 101 | Martynia | 233 |
| Lizard-tail Family | 101 | MARTYNIACEAE | 233 |
| Lobelia | 242 | <i>Matelea</i> | 209 |
| LOBELIACEAE | 242 | Matricaria | 266 |
| Lobelia Family | 242 | Matrimony-vine | 224 |
| Locust | 164 | <i>Matteuccia</i> | 36 |
| Lolium | 56 | Mayapple | 133 |
| Lonicera | 239 | Mayweed | 265 |
| Lophotocarpus | 45 | Mazus | 229 |
| Lopseed | 234 | Meadow-beauty | 189 |
| Lopseed Family | 234 | Meadow-parsnip | 197 |
| Loosestrife | 189, 202 | Meadow-rue | 130, 131 |
| Loosestrife Family | 189 | Meadowsweet | 150 |
| LORANTHACEAE | 114 | Medeola | 95 |
| Lotus | 132 | Medicago | 163 |
| Lotus Family | 132 | Megalodonta | 264 |
| Ludwigia | 190 | <i>Meibomia</i> | 165 |
| Lupine | 162 | <i>Megapterium</i> | 191 |
| Lupinus | 162 | Melampyrum | 231 |
| Luzula | 91 | <i>Melandrium</i> | 126 |
| Lychnis | 126 | Melanthium | 93 |
| Lycium | 224 | MELASTOMACEAE | 189 |
| LYCOPODIACEAE | 32 | Melastoma Family | 189 |
| Lycopodium | 32 | Melica | 54 |
| <i>Lycopsis</i> | 214 | Melilotus | 163 |
| Lycopus | 222 | Melissa | 221 |
| <i>Lysias</i> | 99 | MENISPERMACEAE | 134 |
| Lysimachia | 202 | Menispermum | 134 |
| LYTHRACEAE | 189 | Mentha | 223 |
| Lythrum | 189 | <i>Menthaceae</i> | 216 |
| Maclura | 112 | MENYANTHACEAE | 205 |
| <i>Macuillamia</i> | 228 | Menyanthes | 205 |
| Madder Family | 235 | Mermaid-weed | 193 |

| | | | |
|----------------------------|--------------------|-----------------------------|--------------------|
| Mertensia | 214 | <i>Myrica</i> | 105 |
| Mesadenia | 267 | MYRICACEAE | 105 |
| Mexican Tea | 119 | Myriophyllum | 192 |
| Mezereum Family | 188 | <i>Myzorrhiza</i> | 232 |
| <i>Micranthelium</i> | 241 | <i>Nabalus</i> | 271 |
| <i>Micranthes</i> | 145 | Naiad | 42 |
| Mikania | 249 | NAIADACEAE | 42 |
| Milium | 59 | Naiad Family | 42 |
| Milk Pea | 170 | Naias | 42 |
| Milk-vetch | 165 | Nannyberry | 237 |
| Milkweed | 206, 207, 208 | Napaea | 182 |
| Milkweed Family | 206 | Nasturtium | 142 |
| Milkwort | 173 | <i>Negundo</i> | 179 |
| Milkwort Family | 173 | <i>Nelumbium</i> | 132 |
| Mimosa | 161 | Nelumbo | 132 |
| Mimulus | 228 | NELUMBONACEAE | 132 |
| Mint | 223 | <i>Nemexia</i> | 95 |
| Mint Family | 216 | Nemopanthus | 177 |
| Mirabilis | 122 | Neobeckia | 142 |
| Mist Flower | 249 | Nepeta | 219 |
| Mistletoe | 114 | Neslia | 142 |
| Mistletoe Family | 114 | Nettle | 113 |
| Mitchella | 236 | Nettle Family | 113 |
| Mitella | 145 | New Jersey Tea | 180 |
| Miterwort | 145 | Nicandra | 224 |
| Mockernut | 106 | Nightshade | 225 |
| Mock-orange | 146 | Nightshade Family | 224 |
| <i>Moehringia</i> | 124 | Nimble Will | 58 |
| <i>Moldavica</i> | 219 | Ninebark | 149 |
| Mollugo | 123 | <i>Nothocalais</i> | 272 |
| Monarda | 221 | <i>Notholcus</i> | 57 |
| Moneywort | 202 | Nothoscordum | 93 |
| Monkey Flower | 228 | Nuphar | 133 |
| Monotropa | 199 | Nut-rush | 75 |
| Moonseed | 134 | NYCTAGINACEAE | 122 |
| Moonseed Family | 134 | Nymphaea | 132, 133 |
| MORACEAE | 112 | NYPHAEACEAE | 133 |
| <i>Morongia</i> | 161 | <i>Nymphozanthus</i> | 133 |
| Morus | 112 | Nyssa | 194 |
| Morning-glory | 210 | Oak | 108, 109, 110, 111 |
| Morning-glory Family | 209 | <i>Oakesia</i> | 94 |
| Motherwort | 220 | <i>Oakesiella</i> | 94 |
| Mountain-ash | 154 | Oat | 56 |
| Mountain Holly | 177 | Obolaria | 205 |
| Mountain Mint | 222 | <i>Odontostephana</i> | 208 |
| Mouse-ear Chickweed | 123, 124 | Oenothera | 191 |
| Mouse-ear Cress | 142 | OLEACEAE | 203 |
| Mousetail | 128 | Oleaster Family | 188 |
| Mud-plantain | 89 | <i>Oligoneuron</i> | 249 |
| Muhlenbergia | 58, 59 | Olive Family | 203 |
| Mulberry | 112 | ONAGRACEAE | 189 |
| Mulberry Family | 112 | Onion | 93 |
| Mullein | 226 | Onoclea | 36 |
| Mullein Foxglove | 231 | Onosmodium | 215 |
| <i>Muricauda</i> | 86 | OPHIOGLOSSACEAE | 33 |
| Muscle Tree | 108 | Ophioglossum | 33 |
| Mustard | 138, 139, 140, 142 | <i>Opulaster</i> | 149 |
| Mustard Family | 136 | Opuntia | 188 |
| Myosotis | 214 | | |
| Myosurus | 128 | | |

| | | | |
|-----------------------------|---------|----------------------------|---------------|
| <i>Orbexilum</i> | 164 | <i>Peltandra</i> | 87 |
| Orchid | 99, 100 | Pencil-flower | 168 |
| ORCHIDACEAE | 98 | <i>Peniophyllum</i> | 192 |
| Orchid Family | 98 | Pennycress | 143 |
| Orchis | 99 | Pennyroyal | 221 |
| Ornithogalum | 94 | Penstemon | 227 |
| OROBANCHACEAE | 232 | Penthorum | 145 |
| Orobanche | 232 | Peplis | 189 |
| Oryzopsis | 60 | <i>Pepo</i> | 241 |
| Osage-orange | 112 | Peppergrass | 143 |
| Osmorhiza | 196 | Peppermint | 223 |
| Osmunda | 34 | Pepper-vine | 181 |
| OSMUNDACEAE | 34 | <i>Peramium</i> | 100 |
| Ostrya | 108 | <i>Perideridia</i> | 196 |
| <i>Otophylla</i> | 230 | Perilla | 223 |
| OXALIDACEAE | 171 | Periwinkle | 206 |
| Oxalis | 171 | <i>Persicaria</i> | 116 |
| Ox-eye Daisy | 266 | Persimmon | 203 |
| <i>Oxybaphus</i> | 122 | <i>Perularia</i> | 99 |
| Oxycoccus | 200 | Peruvian Daisy | 260 |
| <i>Oxygraphis</i> | 129 | Petalostemum | 164 |
| Oxypolis | 198 | Phacelia | 213 |
| Oyster Plant | 269 | Phalaris | 62 |
| <i>Padus</i> | 158 | <i>Pharbitis</i> | 210 |
| Panax | 194 | Phaseolus | 169, 170 |
| <i>Panicularia</i> | 51 | Phegopteris | 37 |
| Panicum | 63 | Philadelphus | 146 |
| Pansy | 188 | Phleum | 58 |
| Papaver | 135 | Phlox | 211 |
| PAPAVERACEAE | 134 | Phlox Family | 211 |
| Parietaria | 113 | Phoradendron | 114 |
| Parnassia | 145 | Phragmites | 54 |
| PARNASSIACEAE | 145 | Phryma | 234 |
| Paronychia | 122 | PHRYMACEAE | 234 |
| <i>Parosela</i> | 164 | Phyla | 216 |
| Parsley Family | 194 | Phyllanthus | 175 |
| Parsnip | 198 | Physalis | 224 |
| Parthenium | 259 | <i>Physalodes</i> | 224 |
| Parthenocissus | 181 | <i>Physocarpa</i> | 149 |
| Partridge-berry | 236 | Physocarpus | 149 |
| Partridge-pea | 162 | Physostegia | 219 |
| Paspalum | 62 | Phytolacca | 122 |
| Pasque-flower | 131 | PHYTOLACCACEAE | 122 |
| Passiflora | 188 | Pickernelweed | 89 |
| PASSIFLORACEAE | 188 | Pickernelweed Family | 89 |
| Passion-flower | 188 | <i>Picradenia</i> | 264 |
| Passion-flower Family | 188 | Pigweed | 119, 120, 121 |
| Pastinaca | 198 | Pilea | 113 |
| Paulownia | 233 | Pimpernel | 202 |
| Pawpaw | 126 | PINACEAE | 40 |
| Pea | 158 | Pine | 40 |
| Peach | 157 | Pineapple-weed | 266 |
| Pea Family | 158 | Pine Family | 40 |
| Pear | 155 | Pinesap | 199 |
| Pearlwort | 124 | Pineweed | 184 |
| Pecan | 105 | Pink Family | 123 |
| Pedicularis | 231 | Pinweed | 185 |
| Pellaea | 39 | Pinus | 40 |
| Pellitory | 113 | Pipewort | 88 |
| | | Pipewort Family | 88 |

| | | | |
|----------------------------|----------|----------------------------|----------|
| Pipsissewa | 199 | Prickly Sida | 183 |
| Pitcher-plant | 144 | Primrose | 201 |
| Pitcher-plant Family | 144 | Primrose Family | 201 |
| Planera | 111 | Primrose-willow | 190 |
| Plane-tree | 147 | Primula | 201 |
| Plane-tree Family | 147 | PRIMULACEAE | 201 |
| PLANTAGINACEAE | 234 | Prince's-feather | 118 |
| Plantago | 234 | Princess Tree | 233 |
| Plantain | 234 | Proserpinaca | 193 |
| Plantain Family | 234 | Prunella | 220 |
| PLATANACEAE | 147 | Prunus | 157 |
| <i>Platanthera</i> | 99 | <i>Psedera</i> | 181 |
| Platanus | 147 | Psoralea | 163 |
| <i>Plectoetania</i> | 198 | <i>Psoralidium</i> | 164 |
| Pluchea | 257 | Ptelea | 173 |
| Plum | 157 | Pteretis | 36 |
| Poa | 52 | Pteridium | 39 |
| Podophyllum | 133 | <i>Pteris</i> | 39 |
| Pogonia | 100 | Ptilimnium | 197 |
| Poinsettia | 176 | <i>Pulsatilla</i> | 131 |
| Poison-hemlock | 197 | Puncture-weed | 172 |
| Poison-ivy | 177 | Purpletop | 54 |
| Pokeweed | 122 | Purslane | 123 |
| Pokeweed Family | 122 | Purslane Family | 123 |
| Polanisia | 144 | Puttyroot | 101 |
| Polemonium | 212 | Pycnanthemum | 222 |
| POLEMONIACEAE | 211 | Pyrola | 199 |
| Polygala | 173 | Pyrrhopappus | 272 |
| POLYGALACEAE | 173 | Pyrus | 155 |
| POLYGONACEAE | 114 | Quamasia | 94 |
| Polygonatum | 94 | Quamoclit | 210 |
| Polygonella | 118 | Quassia Family | 173 |
| Polygonum | 116 | Quercus | 108 |
| Polymnia | 259 | Quillwort | 32 |
| POLYPODIACEAE | 34 | Quillwort Family | 32 |
| Polypodium | 38 | Racoon-grape | 181 |
| Polypody | 38 | <i>Radicula</i> | 139, 142 |
| Polystichum | 36 | Radish | 138 |
| Polytaenia | 198 | Ragweed | 247 |
| Pond-lily | 133 | Ragwort | 267 |
| Pondweed | 42 | Raimannia | 191 |
| Pondweed Family | 42 | RANUNCULACEAE | 127 |
| Pontederia | 89 | Ranunculus | 129 |
| PONTERIACEAE | 89 | <i>Raphanistrum</i> | 138 |
| Poplar | 101, 102 | Raphanus | 138 |
| Poppy | 135 | Raspberry | 152 |
| Poppy Family | 134 | Ratibida | 260 |
| Populus | 101 | Rattle-box | 162 |
| Portulaca | 123 | Rattlesnake-master | 196 |
| PORTULACACEAE | 123 | Rattlesnake-plantain | 100 |
| Possumhaw | 177 | Redbud | 161 |
| Potamogeton | 42 | Redtop | 57 |
| POTAMOGETONACEAE | 42 | Reed | 54 |
| Potentilla | 149 | RHAMNACEAE | 179 |
| Prairie-clover | 164 | Rhamnus | 179 |
| Prairie-dock | 259 | Rhexia | 189 |
| Prairie Meadowsweet | 150 | <i>Rhinanthaceae</i> | 225 |
| Prenanthes | 271 | <i>Rhinanthus</i> | 230 |
| Prickly-ash | 173 | | |
| Prickly-pear | 188 | | |

| | | | |
|------------------------------|---------------|--------------------------|----------------|
| Rhododendron | 199 | Saponaria | 126 |
| Rhus | 177 | SAPOTACEAE | 203 |
| Rhynchospora | 74 | <i>Sarcosiphon</i> | 98 |
| Ribes | 146 | Sarothra | 184 |
| Richweed | 223 | Sarracenia | 144 |
| Robinia | 164 | SARRACENIACEAE | 144 |
| Rock-brake | 39 | Sassafras | 134 |
| Rockcress | 141, 142 | <i>Satureia</i> | 221, 222 |
| Rockrose Family | 185 | SAURURACEAE | 101 |
| Rock Pink | 123 | Saururus | 101 |
| Rorippa | 139, 142 | <i>Savastana</i> | 61 |
| Rosa | 153 | Savory | 221 |
| ROSACEAE | 147 | Sawbrier | 95 |
| Rose | 153, 154 | SAXIFRAGACEAE | 145 |
| Rose Family | 147 | <i>Saxifraga</i> | 145 |
| Rose Mallow | 183 | <i>Saxifrage</i> | 145 |
| Rose-pink | 205 | Saxifrage Family | 145 |
| Rosinweed | 259 | Schedonnardus | 61 |
| Rotala | 189 | Scheuchzeria | 44 |
| Royal Fern Family | 34 | <i>Schmaltzia</i> | 177 |
| RUBIACEAE | 235 | Schrankia | 161 |
| Rubus | 152 | Scirpus | 72, 73 |
| Rudbeckia | 259 | <i>Scleranthus</i> | 122 |
| Rue-anemone | 132 | Scleria | 75 |
| Rue Family | 172 | Scouring-rush | 33 |
| Ruellia | 234 | Scrophularia | 227 |
| Rumex | 115 | SCROPHULARIACEAE | 225 |
| Rush | 89 | Scutellaria | 218 |
| Rush Family | 89 | Sea Rocket | 138 |
| RUTACEAE | 172 | Secale | 55 |
| Rye | 55 | Sedge | 69, 72, 74, 75 |
| <i>Rynchospora</i> | 74 | Sedge Family | 68 |
| | | Sedum | 144 |
| Sabatia | 205 | Seedbox | 190 |
| <i>Saccharodendron</i> | 179 | Selaginella | 32 |
| Sage | 220 | SELAGINELLACEAE | 32 |
| Sagina | 124 | Selfheal | 220 |
| Sagittaria | 45 | Seneca Snakeroot | 173 |
| St. Andrew's-cross | 183 | Senecio | 267 |
| St. John's-wort | 183, 184, 185 | Sensitive-brier | 161 |
| St. John's-wort Family | 183 | Serinia | 269 |
| SALICACEAE | 101 | Serviceberry | 154 |
| Salix | 102 | Setaria | 67 |
| Salsify | 269 | Shadbush | 154 |
| Salsola | 121 | Shepherdia | 188 |
| Saltwort | 121 | Shepherd's Purse | 143 |
| Salvia | 220 | Shinleaf | 199 |
| SALVINIACEAE | 39 | Shooting-star | 202 |
| Sambucus | 237 | <i>Sibara</i> | 141 |
| Samolus | 201 | Sicklepod | 142 |
| Sandalwood Family | 113 | Sicycos | 241 |
| Sandbur | 67 | Sida | 183 |
| Sandwort | 124 | <i>Sidopsis</i> | 182 |
| Sand Rocket | 138 | <i>Sieversia</i> | 151 |
| Sanguinaria | 135 | Silene | 125 |
| Sanguisorba | 151 | Silphium | 259 |
| Sanicle | 196 | Silverbell Tree | 203 |
| Sanicula | 196 | Silverweed | 150 |
| SANTALACEAE | 113 | SIMARUBACEAE | 173 |
| Sapodilla Family | 203 | <i>Sisymbrium</i> | 139, 142 |

| | | | |
|----------------------------|----------|------------------------------|---------------|
| Sisyrinchium | 97 | Star-of-Bethlehem | 94 |
| Sium | 197 | Star-thistle | 269 |
| Skullcap | 218 | <i>Steironema</i> | 202 |
| Skunk-cabbage | 86 | Stellaria | 124 |
| Smartweed | 117 | Stenanthium | 92 |
| Smilacina | 94 | <i>Stenophragma</i> | 142 |
| Smilax | 95 | <i>Stenophyllus</i> | 72 |
| Snailseed | 135 | Stickseed | 214 |
| Snakeroot | 114, 249 | Stipa | 60 |
| Sneezeweed | 265 | <i>Stomosia</i> | 232 |
| Snowberry | 238 | Stonecrop | 144, 145 |
| Snow-on-the-Mountain | 176 | Stonecrop Family | 144 |
| <i>Soja</i> | 169 | Stone Mint | 222 |
| SOLANACEAE | 224 | Storax | 203 |
| Solanum | 225 | Storax Family | 203 |
| Solidago | 249 | Storksbill | 171 |
| Solomon's-seal | 94 | Strawberry | 149 |
| Sonchus | 271 | Strophostyles | 169 |
| <i>Sophia</i> | 140 | Stylisma | 209 |
| Sorbus | 154 | Stylophorum | 135 |
| Sorghastrum | 68 | Stylosanthes | 168 |
| Sorghum | 68 | STYRACACEAE | 203 |
| Sorrel | 115, 171 | Styrax | 203 |
| Southernwood | 266 | Sugarberry | 112 |
| Sow-thistle | 271 | Sullivantia | 145 |
| Soy Bean | 169 | Sumac | 177, 178 |
| Spanish Needles | 263 | Sumac Family | 177 |
| SPARGANIACEAE | 41 | Summer Cypress | 120 |
| Sparganium | 41 | Sundew | 144 |
| Spartina | 61 | Sundew Family | 144 |
| <i>Spathyema</i> | 86 | Sundrops | 191 |
| Spearmint | 223 | Sunflower | 260, 261, 262 |
| Specularia | 242 | <i>Svida</i> | 193 |
| Speedwell | 229 | Swamp-candle | 202 |
| Spermacece | 236 | Sweet Alyssum | 142 |
| Spermolepis | 197 | Sweetbriar | 153 |
| Sphaeralcea | 182, 183 | Sweet Cicely | 196 |
| Sphenopholis | 56 | Sweet Clover | 163 |
| Spice-bush | 134 | Sweetfern | 105 |
| Spider Lily | 96 | Sweetflag | 87 |
| Spiderwort | 88 | Sweet-gum | 147 |
| Spiderwort Family | 88 | Sweet William | 125 |
| Spikenard | 194 | Sycamore | 147 |
| Spike Rush | 70 | Symphoricarpos | 238 |
| Spiraea | 149 | Symphytum | 215 |
| Spiranthes | 100 | Symplocarpus | 86 |
| Spirodela | 87 | Synandra | 219 |
| Spleenwort | 38 | <i>Syndesmon</i> | 132 |
| Sporobolus | 59 | <i>Synosma</i> | 267 |
| Spring Beauty | 123 | <i>Syntherisma</i> | 62 |
| Spurge | 175, 176 | Synthyris | 230 |
| Spurge Family | 174 | <i>Tabernaemontana</i> | 206 |
| Squawroot | 232 | Taenidia | 197 |
| Squirrel-corn | 135 | Talinum | 123 |
| Stachys | 220 | Tamarack | 40 |
| Staff-tree Family | 177 | Tanacetum | 266 |
| Staphylea | 178 | Tansy | 266 |
| STAPHYLEACEAE | 178 | Taraxacum | 272 |
| Star-flower | 201 | TAXACEAE | 40 |
| Star-grass | 96 | | |

| | | | |
|----------------------------|----------|------------------------------|----------|
| TAXODIACEAE | 40 | Trumpet-creeper | 233 |
| Taxodium | 40 | Trumpet-creeper Family | 233 |
| Taxus | 40 | Tsuga | 40 |
| Teasel | 241 | Tulip Tree | 126 |
| Teasel Family | 241 | Tumbleweed | 121 |
| <i>Tecoma</i> | 233 | Tupelo | 194 |
| Tephrosia | 164 | Tupelo Gum | 194 |
| <i>Tetraneris</i> | 264 | Turnip | 138 |
| Teucrium | 218 | <i>Turritis</i> | 141 |
| <i>Thalesia</i> | 232 | Turtlehead | 226 |
| Thalictrum | 130, 132 | Twayblade | 100 |
| Thaspium | 197 | Twig-rush | 75 |
| <i>Thelypteris</i> | 36, 37 | Twinflower | 239 |
| Thismia | 98 | Twinleaf | 133 |
| Thistle | 268 | Typha | 41 |
| Thlaspi | 143 | TYPHACEAE | 41 |
| Thoroughwort | 248 | ULMACEAE | 111 |
| Three-seeded Mercury | 174 | Ulmus | 111 |
| THYMELEACEAE | 188 | UMBELLIFERAE | 194 |
| Thyme | 222 | Umbrella Sedge | 72 |
| Thymus | 222 | Umbrella-wort | 122 |
| Thuja | 41 | <i>Unania</i> | 256 |
| Tick-clover | 165 | Unicorn-plant | 233 |
| Tickseed | 263 | Unicorn-plant Family | 233 |
| Tilia | 181 | Uniola | 54 |
| TILLACEAE | 181 | Urtica | 113 |
| Timothy | 58 | URTICACEAE | 113 |
| <i>Tithymalopsis</i> | 176 | <i>Urticastrum</i> | 113 |
| Tofieldia | 93 | Utricularia | 231 |
| <i>Tomanthera</i> | 230 | Uvularia | 94 |
| Tomatillo | 224 | <i>Vaccaria</i> | 126 |
| Toothwort | 140 | Vaccinium | 200 |
| Torilis | 196 | <i>Vagnera</i> | 94 |
| <i>Torresia</i> | 61 | Valerian | 240 |
| Touch-me-not | 172 | Valeriana | 240 |
| <i>Toxicodendron</i> | 177 | VALERIANACEAE | 240 |
| <i>Tracaulon</i> | 118 | Valerianella | 240 |
| Trachelospermum | 206 | Valerian Family | 240 |
| Tradescantia | 88 | Vallisneria | 46 |
| Tragopogon | 269 | Vegetable Oyster | 270 |
| Trailing Arbutus | 200 | Velvet-leaf | 183 |
| Trautvetteria | 131 | Venus' Looking-glass | 242 |
| Tree of Heaven | 173 | Veratrum | 93 |
| Triadenum | 185 | Verbascum | 226 |
| Tribulus | 172 | Verbena | 215 |
| Trichomanes | 34 | Verbena Family | 215 |
| Trichostema | 218 | VERBENACEAE | 215 |
| <i>Tridens</i> | 54 | Verbesina | 262 |
| Trientalis | 201 | Vernonia | 247 |
| Trifolium | 162 | Veronica | 229 |
| Triglochin | 44 | Veronicastrum | 229 |
| Trillium | 95 | Vervain | 215 |
| Triodia | 54 | Vetch | 168 |
| Triosteum | 239 | Viburnum | 237 |
| Triphora | 100 | Vicia | 168 |
| Triplasis | 54 | Vigna | 169 |
| Tripsacum | 68 | Vinca | 206 |
| Triticum | 55 | <i>Vincetoxicum</i> | 208, 209 |
| Trout Lily | 94 | | |
| <i>Troximon</i> | 272 | | |

| | | | |
|-----------------------------|---------------|--------------------------------|----------|
| Viola | 186 | Indigo | 162 |
| VIOLACEAE | 186 | Leek | 93 |
| Violet | 186, 187, 188 | Licorice | 236 |
| Violet Family | 186 | Millet | 59 |
| <i>Viorna</i> | 132 | Oat | 56 |
| Virginia Creeper | 181 | Pansy | 188 |
| Virginia Snakeroot | 114 | Pea | 168 |
| Virginia Willow | 146 | Rice | 62 |
| Virgin's-Bower | 132 | Rye | 55 |
| VITACEAE | 180 | Sarsaparilla | 194 |
| Vitis | 180, 181 | Sweet-potato | 210 |
| Wafer-ash | 173 | Willow | 102 |
| Wahoo | 177 | Willow Family | 101 |
| Wallflower | 140 | Willowherb | 190 |
| Walnut | 105 | Winterberry | 177 |
| Walnut Family | 105 | Wintercress | 139 |
| <i>Washingtonia</i> | 196 | Wintergreen | 199, 200 |
| Watercress | 142 | Wisteria | 165 |
| Water Elm | 111 | Witch-hazel | 147 |
| Water-hemp | 121 | Witch-hazel Family | 147 |
| Water Horehound | 222 | Wolfberry | 238 |
| Water Hyssop | 228 | Wolffia | 87 |
| Waterleaf | 212 | Woodbine | 181 |
| Waterleaf Family | 212 | Woodrush | 91 |
| Waterlily | 133 | Woodsia | 36 |
| Waterlily Family | 133 | Wood Nettle | 113 |
| Water Locust | 161 | Wood-sorrel | 171 |
| Water-marigold | 264 | Wood-sorrel Family | 171 |
| Water-milfoil | 192 | Woodwardia | 39 |
| Water-milfoil Family | 192 | Wormwood | 266 |
| Water-parsnip | 197 | Xanthium | 247 |
| Water-pepper | 117 | <i>Xanthoxalis</i> | 171 |
| Water-plantain | 45 | <i>Xylosteon</i> | 239 |
| Water-plantain Family | 44 | XYRIDACEAE | 88 |
| Water-purslane | 189 | Xyris | 88 |
| Watershield | 132 | Yam | 96 |
| Water-stargrass | 89 | Yam Family | 96 |
| Water-starwort | 176 | Yarrow | 265 |
| Water-starwort Family | 176 | Yellow Cress | 139 |
| Waterweed | 46 | Yellow-eyed grass | 88 |
| Water-willow | 233 | Yellow-eyed grass Family | 88 |
| Waterwort | 126 | Yellow Ironweed | 262 |
| Waterwort Family | 126 | Yellow-wood | 162 |
| Waxweed | 189 | Yew | 40 |
| Wheat | 55 | Yew Family | 40 |
| Whitetop | 257 | Zanichellia | 44 |
| Whitlowcress | 140 | Zanthoxylum | 173 |
| Whitlow-wort Family | 122 | Zea | 68 |
| Wild Balsam-apple | 241 | Zigadenus | 92 |
| Barley | 56 | Zizia | 197 |
| Bean | 169 | Zizania | 62 |
| Celery | 46 | <i>Zosterella</i> | 89 |
| Comfrey | 214 | ZYGOPHYLLACEAE | 172 |
| Geranium | 170 | | |
| Ginger | 114 | | |
| Hyacinth | 94 | | |



