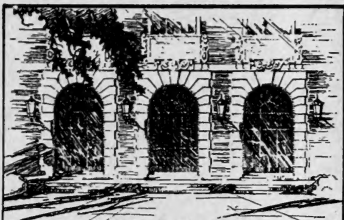


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MANUAL 1



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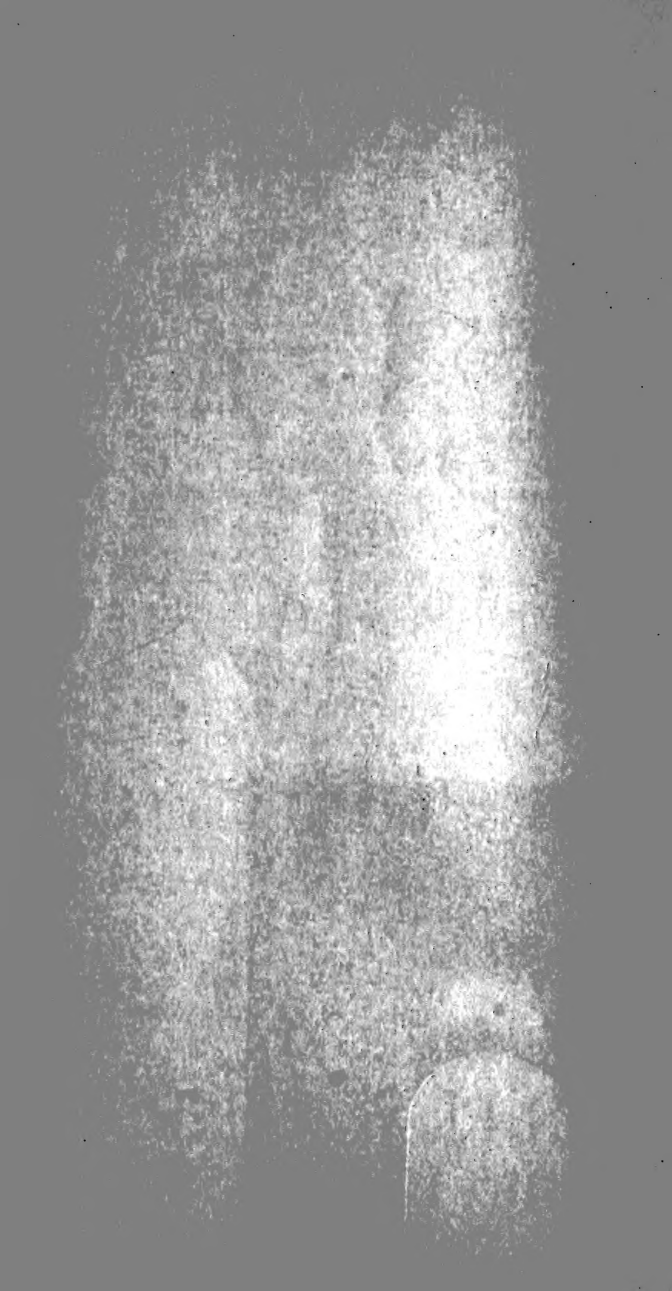
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WILD FLOWERS
of
ILLINOIS



To him who in the love of Nature holds
Communion with her visible forms, she speaks
A various language.

Thanatopsis—WILLIAM CULLEN BRYANT

And he who wanders widest lifts
No more of beauty's jealous veils
Than he who from his doorway sees
The miracle of flowers and trees.

The Last Walk in Autumn—JOHN GREENLEAF WHITTIER

Tantus amor florum

——MOTTO OF LINNAEUS



The Blue Violet, State Flower of Illinois

(See page 201)

Welcome, maids of
honor!
You doe bring
In the Spring
And wait upon her.

She has virgins
many
Fresh and faire;
Yet you are
More sweet than any.

Y'are the maiden
posies
And, so grac't
To be plac't
'Fore damask roses.

To Violets—ROBERT HERRICK

STATE OF ILLINOIS
HENRY HORNER, *Governor*

Fieldbook

of

ILLINOIS WILD FLOWERS

*Six hundred fifty of the more common
flowering plants in the state*

ILLINOIS NATURAL HISTORY SURVEY MANUAL 1



DEPARTMENT OF REGISTRATION AND EDUCATION
NATURAL HISTORY SURVEY DIVISION

Printed by authority of the State of Illinois

Urbana, Illinois
March 1936

STATE OF ILLINOIS
HENRY HORNER, *Governor*
DEPARTMENT OF REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, *Director*

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FOREWORD

THIS BOOK is a selection of more than 600 of the more common wild flowers of Illinois. It has not been intended as a complete botanical record, either seasonally or geographically, but rather as a guide to the enjoyment of those flowers most frequently met in walks through our woods and fields. For that reason the descriptions are as non-technical as possible, and the less familiar botanical terms employed are explained in the introductory chapter.

This way of presenting to the people of Illinois, and especially the youth, an ordered description of the state's principal wild flowers originated in a manuscript acquired by the NATURAL HISTORY SURVEY in 1929. It was written by Dr. W. B. MacDougall, then assistant professor of botany in the University of Illinois.

Publication of the book was delayed until a suitable place for it could be found in the SURVEY series, and by the time of its allocation another and inclusive project had been undertaken which materially affected much of the original writing. This project was the Flora of Illinois, for the compilation of which Dr. Herman S. Pepon of Chicago was engaged. To sustain a more perfect agreement between the two texts, Dr. Pepon was consulted on the preparation of this wild flower collection, and to him fell the task of checking the new information and revising the keys. In this manner about one hundred sixty additional species were placed in the work, mostly as footnotes, and all the main descriptions were reworked to conform to the standard of information it was felt that each should supply.

Without the assistance of several Illinois botanists the book could not have merited the confidence of its sponsors or the public to whom it is presented. Dr. MacDougall having removed from the state, it was found necessary to confer with other scientists. It is for this reason that authorship of the book is not ascribed to one writer, and that we record our thanks and appreciation of those friends who have contributed to this endeavor.

Nomenclature, which follows the seventh edition of Gray's Manual except for a few obligatory changes, has been certified by Mr. Paul G. Standley of the Field Museum of Natural History, Chicago. Two sections in the introductory chapter have been prepared by men outside the SURVEY staff—the ecological material entitled "Plants in Their Homes," page 2, by Dr. George D. Fuller, associate professor of botany in the University of Chicago, and the

discussion of fruits, page 20, by Dr. John T. Buchholz, professor of botany in the University of Illinois.

The set of illustrations which accompanied the original manuscript was the work of Mrs. Charlotte Liebttag Grant of the University of Illinois department of botany. Her drawings have for the most part been retained; however, where alterations or new ones were needed they have been furnished by Dr. Carl O. Mohr, associate entomologist and artist for the SURVEY. The frontispiece is a water color by Cecil Vincent Donovan, assistant professor of art in the University of Illinois.

In final form, the book was planned, styled and indexed, and the work of the several contributors unified, by Mr. Carroll Chouinard, editor for the SURVEY.

THEODORE H. FRISON
Chief

Urbana
June 1, 1935.



—'t is and ever was my wish and way
To let all flowers live freely, and all die
(Whene'er their Genius bids their souls depart)
Among their kindred in their native place.
I never pluck the rose; the violet's head
Hath shaken with my breath upon its bank
And not reproacht me; the ever-sacred cup
Of the pure lily hath between my hands
Felt safe, unsoiled, nor lost one grain of gold.

The Life of Flowers—WALTER SAVAGE LANDOR

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Botanist

Go thou to thy learned task,
I stay with the flowers of spring:
Do thou of the Ages ask
What me the Hours will bring.

RALPH WALDO EMERSON

I believe a leaf of grass is no less than the journey work of the stars,

* * *

And the running blackberry would adorn the parlors of heaven,

Song of Myself—WALT WHITMAN

Wild Flowers

WHERE THEY GROW AND HOW THEY ARE FORMED

Ye field flowers! the gardens eclipse you 't is true:
Yet wildlings of nature, I dote upon you,
For ye waft me to summers of old
When the earth teemed around me with fairy delight,
And when daisies and buttercups gladdened my sight,
Like treasures of silver and gold.

Field Flowers—THOMAS CAMPBELL

WHY is the dominant color of vegetation green? It is because most plants contain millions of tiny round or oval bodies which are filled with a substance that happens to be green. Because it is green this substance is called *chlorophyll*, meaning leaf green.

Chlorophyll is one of the most important things on earth because it enables the plants that have it to manufacture food from carbon dioxide and water. Either we eat the plants or animals do; in the first case chlorophyll is of direct importance in human food and in the second it is indirectly concerned, for people may eat the meat of such grazing animals as cattle and sheep. Or, chlorophyll may be important in the lives of things man uses, such as the wood of trees for houses and furniture, herbs for medicines, and numberless extracts in the chemistry of certain industries.

Importance of flowers.—Like other living things, plants grow old and die. Therefore, they must reproduce that there may be a constant supply of plants year after year. Flowers are the structures primarily concerned with reproduction; to understand this relationship is to know the flowers' true importance. Secondly, flowers are beautiful in combinations of colors, shapes, sizes and numbers of parts that are truly astonishing and worthy a lifetime of study.

Indeed, the beauty of many of our wild flowers has largely proved their undoing. A great part of the joy that comes from driving through the country or hiking through fields and woods would be missing if there were no wild flowers there to greet us. But being there, they have moved many thoughtless people to pick them, often in such numbers as to exterminate them from many areas they once dominated.

Legal protection.—In an effort to protect the flowers which are rapidly disappearing at the hands of wanton pickers, the state has given them the protection of law. In 1923 the General Assembly of Illinois enacted a law for the conservation of certain wild plants. This act makes it unlawful to buy, sell or offer for sale any trillium, lady's slipper, gentian, bloodroot, columbine or lotus. It also prohibits the picking of certain kinds of wild flowers without consent of the owner of the property on which they grow. Such a law, of course, is commendable, but lovers of nature as well as legislators must come to the rescue of our vanishing flowers; every effort should be made in schools and homes to teach others the advantages of conserving the beautiful, the interesting and the useful things of nature.

PLANTS IN THEIR HOMES

Plants, like human beings, are social and live in communities. Occasionally on a sandy desert or rocky ledge a solitary plant may be found growing quite alone, but the vast majority are grouped together by similar needs and for the solution of their similar problems. Chief among their common needs are water, light, warmth and space in which to grow and reproduce. Within the limits of Illinois, rainfall is so abundant that most of its native plants usually have sufficient water, and the sunshine gives an abundance of light during the spring and summer days. From April to October it is warm enough for plants to grow, and the soil is so rich that the space in which to develop becomes crowded, often overcrowded.

Plant succession.—With the crowding, some plants are not able to compete with others and they disappear or are found in small numbers only. Plants that need an abundance of sunlight often crowd the surface so much that their own seedlings, unable to grow in the shade of the parents, die out and allow plants that endure shade very well to come in under the sun plants. The earlier communities thus effect changes resulting in their

own destruction at the same time that they prepare the way for other and more highly organized communities. These successor-groups finally reach such a high degree of perfection and stability that we speak of them as *climax* communities, which may endure for centuries with little or no change.

The great plant communities of Illinois are its forests and grasslands, covering many square miles. Then there are smaller communities of its rivers, lakes and ponds, and also some of its rocks and open sandy plains. Since we lack room here to discuss them all, mention of a few of the most important must suffice. Perhaps the forests are most interesting because of the abundance and variety of plants they contain and the beautiful flowers which the trees shelter.

Most of our forests are old. They have occupied their places for centuries. We can, however, still find some young ones in abandoned farms and pastures that are no longer grazed. There the trees are likely to be small, some of them mere shrubs like the sumachs, the thorn and crab apples. Then there are the aspens, the sassafras and the red cedars. All these need an abundance of sunlight, consequently their seedlings do not develop well in their own shade but give way to oaks, hickories and maples, and in the southern part of the state to beech and tulip. While these changes in the forest communities are going on—changes that require centuries to accomplish—the soils too are changing and eventually there develops a luxuriant climax forest on a rich climax soil.

Forest flowers.—We may for the present disregard the trees and examine some of the other plant citizens in the forest community and see how they have solved their problems. Each forest community in the succession which has led to the climax has its own group of wild flowers, but the finest collection is found in the richest forests. There they form a seasonal succession from early spring to late autumn.

The early spring flowers have a good water supply, for the winter snows and spring rains have thoroughly moistened the soil. In order to get plenty of sunlight they have stored material in bulbs, roots and rootstocks so that the spring beauties, the bloodroots, the dogtooth violets, the Dutchman's breeches, the harbinger of spring, the hepaticas, the blue phlox and their associates are able to expand their leaves and open their flowers days and weeks before the trees have come into full foliage and

shaded the ground. At this time, too, the forest floor has on it few larger leafy plants and hence the smaller spring plants are not submerged by their taller neighbors. Under such conditions the vernal plants open their petals and expand their leaves, and many of them ripen their seeds before the taller plants come into leaf.

There is another group of early flowers, growing where the soil is thinly spread over the rocks, which, because they find that only in spring is there enough water, come up early, flower quickly in spring and spend the dry summer as resting bulbs or dry seeds. In this group are the little draba, the small white forget-me-not, the purple oxalis, and the nodding wild onion.

SUMMER AND AUTUMN FOREST FLOWERS

As the expanding leaves of the forest shade its floor, the flowers of the late spring and summer appear. These are plants with broad thin leaves that thrive in the shade. They grow taller, completely carpet the forest floor, and quite conceal the early spring flowers. To this group belong the May apple with its broad umbrella leaves, the baneberry and the blue cohosh, the yellow celandine poppy, the waterleaf, the purple wild geranium and the blue Virginia cowslip. Besides, there are the wild parsnip and its many relatives, including the yellow pimpermells, the white sweet cicely, the honeworts and the sanicles. There are also scores of other broad-leaved shade plants that crowd one another in the cool depth of the forest.

At the same time, the ferns expand and claim a portion of the forest's shade. There are the shield and Christmas ferns on the hillsides and the spleenworts and delicate maidenheads of the deep woods, while in the moister spots the interrupted and cinnamon ferns may be found.

As the summer advances, another group of flowers appears. It includes the asters, goldenrods, thoroughworts, white snake-root and wood sunflowers, all of which belong to the great Composite family. About the same time, the tall American bellflower opens its blue blossoms and the yellow flowers of the false foxgloves appear. During all these months many less common flowers will be found to enrich the seasonal succession of bloom.

Prairie flowers.—On the grasslands the problem of light is much different than in the forest. There is no midsummer

shade for prairie flowers and hence the broad-leaved shade plants are absent from the grasslands. The level prairie surface is not well drained, and hence the soil in early spring is too wet for many spring flowers. A little later, however, the prairie violets come in, and late in spring the fields may be pink with phlox and nodding wild onions, while nearby are the pale blue spikes of the wild hyacinth and the golden clumps of the puccoons.

By midsummer an abundance of plants will have overtopped the grasses and opened their flowers in the full sunlight. Among the conspicuous ones are the white and purple prairie clovers, the milkweeds, the wild morning glories and the verbenas. Late summer brings its mobs of the daisy family, which includes the purple ironweeds and blazing stars, the white and purple asters, and the yellow flowers of the goldenrods, compass plants, coneflowers and sunflowers. Thus the beauty of the spring flowers of the forest is surpassed by the gorgeous display of the prairies in July and August.

Other flower homes.—Among the floral displays found in other communities are the marsh marigolds and spring cress of the stream side, the violets and yellow buttercups of the flood-plains, and the water lilies of the ponds and lakes. All the communities are worth careful study, and will disclose to the student some insight into the ways of nature and repay the observer with pictures of varying beauty.

PLANT STRUCTURE

A. VEGETATIVE

The three fundamental kinds of vegetative parts possessed by flowering plants are roots, stems and leaves. These parts are a means of reproduction in many plants, but more generally they are concerned with growth and the preservation of the individual.

Roots.—The true, scientific definition of a root differs markedly from the ideas about roots held by people in general. It will serve our purpose here, however, to observe in a general way how roots serve the plant, so that essential ideas of what a root is and does may be gained.

Roots generally are descending structures dividing at irregular intervals, having a protective structure over the growing

cells at the tip, called a *root cap*, and discharging three principal functions—anchorage, absorption of water and certain mineral salts, and food storage.

They may be grouped into two common systems—*taproot* and *diffuse*. The taproot system is like that of the parsnip, with a main central root extending vertically into the soil and having many much smaller branches. In the diffuse root system there are numerous roots of approximately equal size that extend downward and outward in all directions. The majority of diffuse-rooted plants have very fine or *fibrous* roots, as corn or other grasses, but some like asparagus and rhubarb have many thick roots of diffuse arrangement. Roots of most flowering plants are in the ground but in some instances they are aerial or in water, and it is to be remembered that not all underground structures are roots.

Stems.—That portion of the plant that bears the leaves is the *stem*, and that place on the stem where the leaves are normally borne is called a *node*. Also at the nodes, branch stems are developed from the sides of the main stem. There are many modifications of stems which at times are not easy to recognize; of them the following will be met in the descriptions of plants in this book: rhizome, tuber, bulb, corm, stolon, tendril and scape.

MODIFIED FORMS OF STEMS

The *rhizome* or *rootstock* is an underground stem which is usually elongated and horizontal. It grows from a terminal bud and produces lateral buds at its nodes. A curious thing about the rootstocks of perennials is that all of them in the same species are found at approximately the same distance beneath the surface of the soil. If in growing through the soil these underground stems encounter a depression, they grow downward; if they encounter an elevation they grow upward, so as to maintain their usual distance beneath the surface. This phenomenon, which is not well understood, is sometimes called the "law of level."

A fleshy underground stem, much enlarged and short, usually ovoid or oblong, and also bearing a terminal and several lateral buds, is called a *tuber*. The common potato is our best example.

A *bulb* is a short underground stem, tipped by a bud, from

which rise many fleshy and food-storing scales or modified leaves that overlap and form a hard-packed, ovoid mass. The lily and the onion grow from bulbs.

That form of underground stem which is short and solid, usually flattened from top to bottom, and stored with plant food, is called a *corm*, of which the Jack in the pulpit is a good example.

A *stolon*, frequently called a *runner*, is a horizontal stem which extends over the ground until the tip takes root and

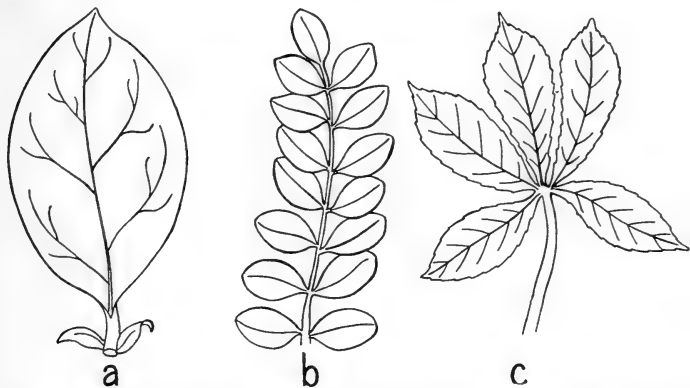


Fig. 1.—COMPLETE, SIMPLE AND COMPOUND LEAVES. **a.**—Simple leaf, complete with stipules. **b.**—Pinnately compound leaf. **c.**—Palmately compound leaf.

at the same place produces leaves and flowers, propagating a new plant. Runners of the strawberry are known to everyone.

A *tendrill* is a coiled slender outgrowth of a leaf or stem which usually assists in supporting the plant, and is commonly observed on vines.

A *scape* is a naked flower stalk that rises from the ground and has the true stem structure. A tulip is probably the most familiar example.

Leaves.—Leaves vary considerably in different kinds of plants, and so are used much more than roots and stems for purposes of identification.

A *complete* leaf is composed of three parts: blade, petiole and stipules, fig. 1 **a**. The essential part of the leaf is the *blade*,

which has many forms but in the majority of cases is broad, thin and flat, so as to provide a large surface for absorption of the light that is needed in manufacturing plant food, and for water loss by evaporation. The *petiole*, if it is present, is the stalk by which the blade is attached to the stem. The base of the blade is its usual place of attachment to the petiole, but the attachment may be to the under surface as in the garden nasturtium, in which case the leaf is said to be *peltate*. *Stipules*

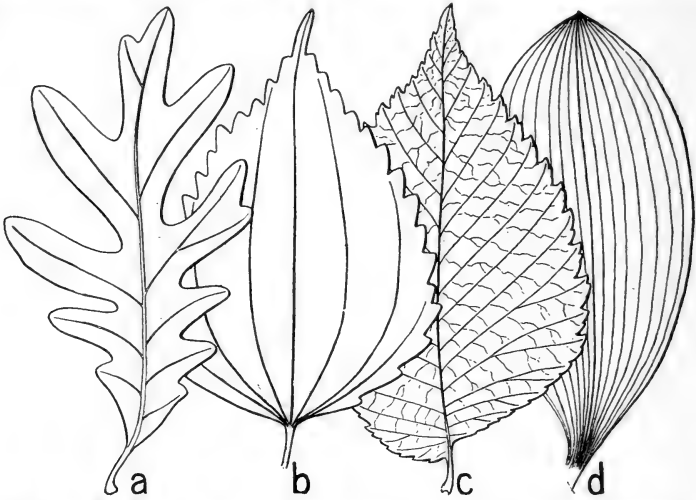


Fig. 2.—LEAF MARGINS AND VENATION. a.—Pinnately veined, lobed leaf of oak. b.—Palmately veined, toothed leaf of nettle. c.—Netted-veined, doubly toothed leaf of elm. d.—Parallel-veined, entire leaf of false Solomon's seal.

are the outgrowths, frequently leaflike, from either side of the petiole base.

Leaves may be modified into forms not easily recognized, as, for example, the spines of cactus and the scales of the onion bulb. Quite commonly they retain a familiar shape but are *incomplete* by absence of stipules, petiole or both. On many kinds of leaves no stipules develop, from others they drop when the leaf is young, and on the complete leaf they persist, of course, through maturity. The fine scars on the stem at the bases of the petioles, left as the stipules drop off, are called

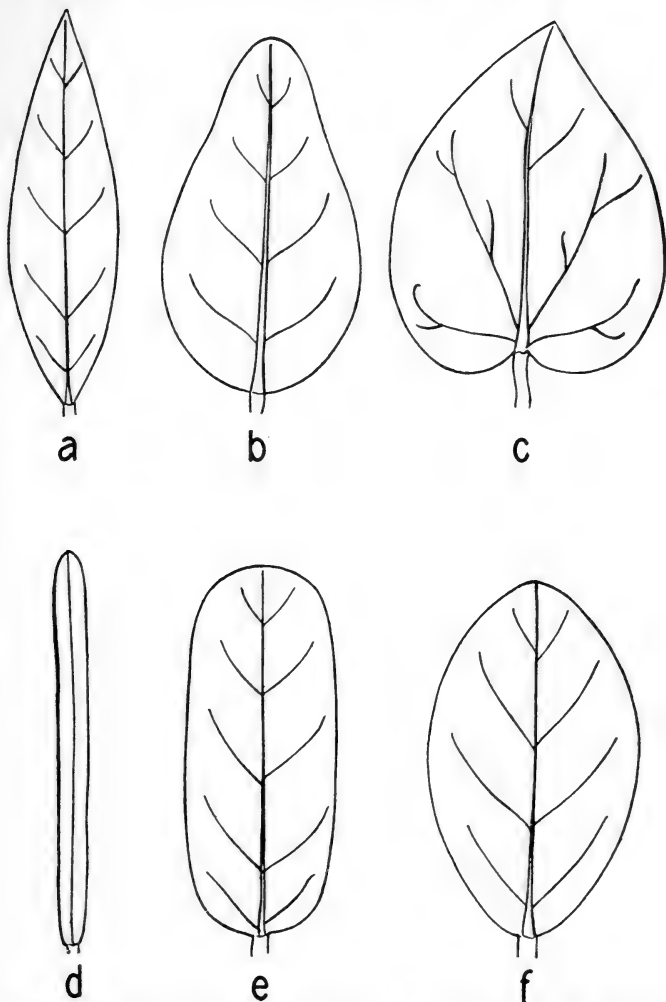


Fig. 3.—THE SHAPES OF LEAVES. a.—Lanceolate. b.—Ovate. c.—Heart-shaped or cordate. d.—Linear. e.—Oblong. f.—Oval.

the *stipular lines*, which are helpful in identifying certain kinds of plants. Sometimes the petiole is lacking and the blade is

attached directly to the stem, in which case the leaf is said to be *sessile*. In other cases where the petiole is absent, as in the grasses and grasslike plants, a lower portion of the leaf clasps or encloses the stem, and either splits down one side or forms a complete tube. In either case the clasping segment is called a *leaf sheath*.

SIMPLE AND COMPOUND LEAVES

A *simple* leaf is one in which the leaf blade is a single piece, fig. 1 a.

A *compound* leaf is one in which the blade is divided into leaflike parts, called *leaflets*. If the leaflets are arranged like pinnae of a feather the leaf is *pinnately compound*, fig. 1 b; arranged like fingers of the hand, the leaf is *palmately compound*, fig. 1 c. Sometimes the leaflets are divided, so that the leaf is said to be twice compound, and subdivision of these latter parts makes the leaf three times compound. A leaf whose petiole has three main divisions is ternately compound; each of these divisions may have its little petiole, or *petiolule*, divided three times to make the leaf twice ternately compound. The leaf which simply has three leaflets is called *trifoliate*, and the term *ternate* is usually reserved for leaves two or three times ternately compound.

VENATION AND SHAPE OF LEAVES

Pinnate and *palmate* are terms used also to describe arrangement of the principal veins of the leaf. If there is a midvein and the other large veins branch from it like pinnae, the leaf is *pinnately veined*, fig. 2 a; but if all the main veins start from the base of the blade, the leaf is *palmately veined*, fig. 2 b.

In many leaves numerous small veins connect the larger ones, to form a network. Such a leaf is said to be *netted veined*, fig. 2 c. In other cases, such as the leaves of orchids, lilies and grasses, there are none of these small cross-veins; all veins run in approximately the same direction and are nearly parallel, fig. 2 d. Such leaves are said to be *parallel veined*.

The commonest shapes of leaves are shown in fig. 3. Sometimes a *lanceolate*, a, or *ovate*, b, leaf may have the broadest part near the tip instead of the base, in which case the terms *oblancheolate* and *obovate* are used. The *heart-shaped* leaf, c, is another common form. The terms *linear*, d, and *oblong*, e, describe leaves such as those of the larger blue flag and common

milkweed, respectively. Common chickweed is an example of a plant bearing *oval* leaves, **f**.

CHARACTERISTICS OF LEAF PARTS

Tips, bases and margins of leaves are described in a number of ways that assist and sometimes clinch the identification of plants. Bases and tips may commonly be referred to as *rounded* or *narrowed*. Short blunt tips are called *obtuse*, sharp *acute*, and long sharp points *acuminate*. The margins of leaves or leaflets may be, as shown also in fig. 2, *lobed*, **a**, *toothed*, **b**, or *entire*, **c**. Teeth may be coarse or fine, sharp or blunt; or the leaf may be *doubly toothed*—having large teeth whose margins have small teeth, fig. 2 **c**. The lobes or the teeth vary greatly. They may be small or large, round or pointed, deep or shallow, and their margins may be entire or toothed. The indentation between two lobes is called a *sinus*.

Leaves originate as outgrowths from the sides of developing young stems while these are still in the bud. At the nodes or points of attachment for the leaves there may frequently be seen buds just above the leaf or above the scar left by the leaf when it drops. This position in the angle between leaf and stem is called the *axil* of the leaf, and buds developing there are *axillary* buds.

ARRANGEMENTS OF LEAVES ON STEMS

There are three possible arrangements for the leaves at the nodes. If there is one leaf at a node the arrangement is *spiral*, sometimes called *alternate*, since the leaves range round the stem so that no one is directly over the leaf at the node next below. Two leaves at a node form the arrangement called *opposite*; and three or more at a node the *whorled*. A whorl of leaves immediately below a flower or flower group is called an *involucre*; a secondary whorl of modified leaf structures above the involucre is called an *involucel*.

Some or all of the leaves may be *basal*. In such case they spring from or near the base of the stem, and may be few and sessile or on long petioles, or many forming a *rosette* at the surface of the soil.

Leaves divide into two great classes according to the length of time they remain on the stem. If they stay all winter, persisting until after new leaves develop, they are *evergreen*; however, if they drop off in autumn they are known as *deciduous*.

B. REPRODUCTIVE

Plants that propagate by means of their vegetative parts, such as by stolons as we have noted, have an *asexual* or *vegetative* means of reproduction. Plants that grow anew from seed have a *sexual* means of reproduction through the functioning of specialized organs in the flower.

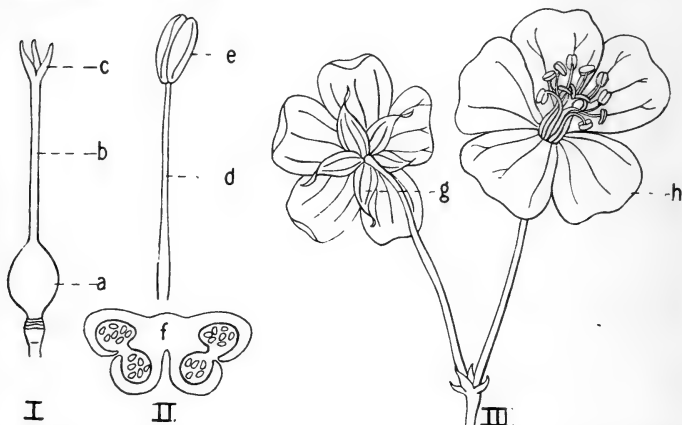


Fig. 4.—THE COMPLETE FLOWER. I.—Pistil; a, ovary; b, style; c, stigma. II.—Stamen; d, filament; e, anther, gross view; f, anther, cross-section. III.—Perianth; g, sepal; h, petal.

THE FLOWER

The complete flower.—A *complete* flower, fig. 4, consists of four kinds or sets of organs—pistils, stamens, petals and sepals. There is a type of flower in which these parts are spirally arranged around a central axis, but in all other flowers each set of organs makes up its own circle around the center of the flower and is called a *whorl*. In many flowers the organs are distinct and easily recognized; in others they are considerably modified.

Pistils.—The innermost whorl comprises one or more *pistils*. A pistil, fig. 4 I, usually has three parts. The enlarged portion at the base, a, is the *ovary*. Two or more individual pistils may occur, fused together so as to make the whole structure appear to be a single one having rounded projections, which mark the true number of pistils present. This is the *compound pistil*, and

because the projections are mostly prominent at the ovary, such an ovary is commonly spoken of as *lobed*. Within the ovary at the base of each pistil are one or more small bodies, called *ovules*, attached to a mass of tissue which, no matter what its location in the ovary, is called the *placenta*. If this tissue is part of or an outgrowth from the wall of the ovary, the ovule attachment is said to be *parietal*. In the compound ovary the placenta of each unit pistil may appear to have been pressed so closely to its neighbor that fusion occurred, to produce a united column in the middle of the structure. This column or axis to which the ovules cling gives the name of *axial* attachment to the arrangement. Each unit pistil is then a *carpel* in the compound pistil, and its walls form partitions in the compound ovary. If we imagine that in some flowers these partitions disappear so that the several carpels coalesce into a single compartment, the placentas will be left as a column by itself in the center, and to this form is given the name *free central placenta*, which is the type common to the Pink family. At the upper end of the pistil is a portion, **c**, usually enlarged, which is called the *stigma*. This is usually somewhat sticky and it serves to receive the pollen. The *style*, **b**, merely connects stigma and ovary; in a few cases it is lacking and in others it may be branched as further indication that the pistil is compound.

STAMENS, PETALS AND SEPALS

Stamens.—Next outside the pistil or pistils is a set of organs called *stamens*, which vary greatly in number among species. A stamen, fig. 4 II, usually consists of a stalklike portion, **d**, called the *filament*, which bears the principal part of the stamen—the *anther*, **e**, or structure in which the pollen grains are formed. Occasionally the filament may be lacking. Anthers have various forms, the most common showing in cross-section four rounded masses of pollen-forming cells. At a later stage, **f**, two of the walls between these pollen cells break down to loose the pollen grains in two chambers or *pollen sacs*, one on either side of the anther. Stamens may have long filaments and extend beyond other parts of the flower, then they are spoken of as *exserted*; when they do not extend they are *included*.

Petals.—Outside the stamens is a leaflike whorl of organs which are rarely green and more often white or highly colored. These are the *petals*, which make up the *corolla*, fig. 4 III **h**.

They commonly attract insects that will pollinate the flower. They may rise separately or be joined together for part or all of their length. In any case, the variety of forms due to these possibilities alone is so great we ought to consider it a little more fully, and may by reading the descriptions of *regular* and *irregular* flowers, page 15.

The petals themselves have many shapes. A common one is that of an ovate upper portion and a comparatively wide base; less commonly the upper part is expanded and called the *limb*, which tapers into a stalklike base called the *claw*. Certain modifications in the structure of petals, or appendages on them, will be met in descriptions of Illinois wild flowers that follow. Some are: the *palate*, a swollen projection into the throat of the corolla on the lower half of such flowers as snapdragons; *spurs*, as in wild columbine, which are hollow, pointed and backward elongations of one or more petals; *plaits*, which are wrinkles or slight lengthwise folds on the petals; and *crowns*, bractlike outgrowths or fringe on the inner side at the junction of claw and limb.

Sepals.—Finally, the outermost whorl consists also of leaflike structures called *sepals*, fig. 4 III g. They comprise the *calyx*, and like the petals may be separate or grown together. The calyx is usually green and protects the flower in bud. In certain cases where the corolla is lacking, and in some where it is present, the calyx is white or colored and increases the flower's attractiveness for insects. Calyx and corolla together compose the *perianth*.

Other structures.—Several additional structures may occur on the lower parts of flowers, usually the sepals. *Awns* are stiff bristles which terminate some flower part. The *hood* is one or more sepals or petals rolled up like a helmet or hood, covering stamens or pistils or both. Within the hoods may be a glutinous structure, called a *horn*, which curves over the stamens and pistils, and assists pollination by forcing insects to brush against anthers and stigmas.

Perfect and imperfect flowers.—As we have said, a flower that possesses all four sets of organs—pistils, stamens, petals and sepals—is called complete; lacking one or more sets it is *incomplete*. In addition, the flower may be *perfect* or *imperfect*. If a flower has stamens and pistil, the organs directly concerned with sexual reproduction, it is *perfect*, whether it has other parts or

not. If either the pistil or stamens are missing the flower is *imperfect*. The flower may be incomplete by absence of stamens or pistils and therefore be imperfect, or it may be incomplete by absence of calyx or corolla or both, and remain a perfect flower. A complete flower is necessarily perfect.

A flower without pistils (incomplete and imperfect), and having stamens, is called a *staminate* flower; likewise a flower without stamens and having pistils (also incomplete and imperfect), is called a *pistillate* flower. A plant which bears the two forms of flowers is *monoecious*; plants that bear only pistillate or only staminate flowers are *dicoecious*.

Regular and irregular flowers.—The majority of flowers are *star shaped*, having petals nearly alike in size and shape radiating from the center of the flower. Usually the remaining parts of star-shaped flowers are similarly arranged, and where the members of each set or whorl are alike, the flower is *regular* or *radial*. Unlike sepals or petals make the flower *irregular* or *bilateral*.

Five principal types of irregularity will be met among Illinois wild flowers. Perhaps the simplest is that form in which a petal or sepal is deformed, modified or enlarged out of likeness to the others. Orchids, for example, have the lowest petal inflated into a sac and sometimes prolonged backward into a spur. A second form is that of the violets, wherein the two upper petals are alike, the two side petals resemble each other, and the lowest is unequal, swollen or spurred. A third and very pronounced type is illustrated by the pea and bean, whose flowers are butterfly shaped. In them one petal is broad and conspicuous, and in the bud is folded about the others; this is the *standard*. Two narrower petals, one on either side, are called *wings*; the two lower and usually smallest petals are loosely united to form the *keel*, enclosing stamens and pistil. Five-parted flowers in which the two upper petals unite nearly or entirely their length, the three lower uniting similarly and the two groups thus formed joining below or partly up the sides are called *two-lipped*, *labiate* or *bilabiate* flowers. The snapdragon is a good example. The fifth type of irregularity is that of the *strap-shaped* ray flowers of the Composites. Here the petals are united into a tube upward a slight distance from the base, and the rest of the way the tube is as though split open, and the corolla lies flat like a strap.

Petals, and to some extent sepals, by being joined for part or all of their length, present a variety of forms, regular and irregular. Certain types of joined corollas are *tubular*, others are *bell shaped*. A narrow tube that flares into a wide-spreading border, called the *limb*, is *salverform*. If the tube graduates into the border instead of diverging suddenly, the corolla is *funnelform*. The junction of tube and limb is the *throat*. Flowers whose petals spread out at once, with no tube or a very short one, and radiate like the spokes of a wheel, are *wheel shaped*.

Arrangement of the flower organs.—We have seen that the organs are in sets or whorls around the center of the flower, but we will also need to consider the relative heights at which they are attached.

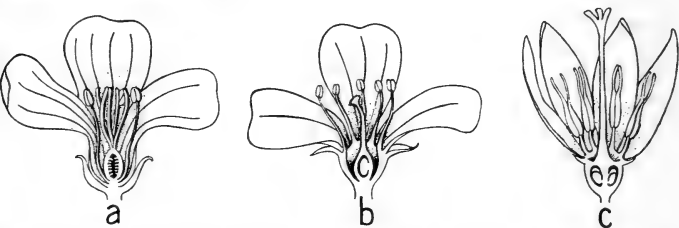


Fig. 5.—ATTACHMENT OF THE FLOWER PARTS. a.—Hypogyny. b.—Perigyny. c.—Epigyny.

The stem or flower stalk that supports a solitary flower or a flower cluster is called the *peduncle*. The stalk of an individual flower within a cluster is the *pedicel*. The upper end of the flower stalk, to which the flower parts are attached, is the *receptacle*. Alteration in the shape of the receptacle produces the three forms of flowers shown in fig. 5. A convex or conical receptacle has the sets of organs placed upon it one above the other, the lowest being sepals, next petals, then stamens and finally pistils. Such a flower is *hypogynous*, and the ovary is *superior*, a. In other flowers the receptacle is cup shaped and the calyx and corolla are attached to its edge, around the pistil but entirely free from it. Such a flower is *perigynous*, b. Finally the receptacle may be concave, enclosing the ovary and grown fast to it. Here the other parts are attached to the receptacle above an *inferior* ovary, and the flower is *epigynous*, c.

Flower clusters—A plant may bear only one flower or it may have several or many in clusters. Each cluster is an *inflorescence*, of which there may be one or many on the plant.

TYPES OF FLOWER CLUSTERS

Flowers are most frequently clustered according to a definite pattern. Five patterns of clusters are shown in fig. 6. The *spike*, **a**, has sessile flowers attached to an unbranched stem, and it may be *solid* or *interrupted*. If the little flowers, or *florets*, are closely arranged, then sparse, then packed again, the spike is interrupted; with the florets in one mass the spike is solid. The *raceme*, **b**, is a cluster in which the singly pediceled flowers are arranged along the sides of a common stalk. The *panicle*, **c**, is a compound cluster whose branches resemble racemes. In the foregoing types of clusters the order of blossoming is from bottom to top of the stem, which never has a terminal flower.

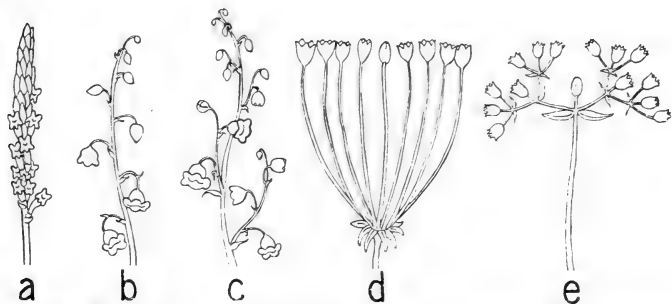


Fig. 6.—TYPES OF INFLORESCENCE. a.—Spike. b.—Raceme. c.—Panicle. d.—Umbel. e.—Cyme.

In the flat-topped cluster called the *umbel*, **d**, the pedicels come from the same point, the top of the peduncle, and the subtending bracts become an involucre. The *cyme*, **e**, is a flat-topped cluster caused by the production of flowers in terminal buds. Hence axillary buds take up the work of growth, which widens the inflorescence in a compound fashion.

SESSILE-FLORET CLUSTERS

Three more clusters, whose florets are sessile or nearly so, are the *catkin*, which is a nodding, drooping or rigid spike; the *head* or receptacle bearing many flowers; and the *spadix*, a fleshy spike or elongated head bearing small and often imperfect flowers, the whole often enclosed by a large bract or modified leaf known as the *spathe*. Typical examples are—*catkin*, pussy-willow; *head*, dandelion; *spathe and spadix*, Jack in the pulpit.

POLLINATION

Pollination is the transfer of pollen grains from anther to stigma. It must take place before fertilization and the production of seeds can proceed. In most flowers it seems to be advantageous to have the pollen come from some other plant of the same species, rather than from the anthers of the same flower. This *cross-pollination* is necessarily brought about by some external agency. The principal agents of pollination are wind, water and animals.

Agents of pollination.—Although the simplest form of pollination is by wind, the structural adaptation of some flowers to it is as perfect as that of others to pollination by animals. Wind-pollinated flowers are in many cases imperfect—some flowers of a species having only stamens and the others only pistils. The staminate flowers are often in catkins, which hang downward and yield pollen, when it is ready, to the slightest breeze. When not in catkins they often have exerted stamens, with anthers freely exposed to the wind. Sometimes the pistillate flowers are also in catkins, but more frequently they are not.

Most wind-pollinated flowers produce an abundance of pollen, which is necessary because the wind is a very wasteful agent. It scatters pollen indiscriminately, so that only a small percentage of it falls upon stigmas of the same kind of flowers. Upon flowers of different kinds of plants, the pollen ordinarily does not germinate, or start to grow. Also, wind-pollinated flowers usually have neither odor nor nectar, and as a rule are not showy. Where they are perfect, stamens and pistils mature at separate times, preventing *self-pollination*.

Water is a considerably less important agent, and probably none of the flowers in this book depend on it, except bur sedge and the water purslane.

The great majority of flowers described in this book are pollinated by insects. Insects visit the flower to obtain food, either nectar or pollen, and while getting it incidentally bring about pollination. All the many beautiful types of flowers are thought to have originated because of this relationship to insects, a phenomenon which if it were not so common would certainly be considered among the most amazing in the whole realm of nature. Many flowers are not pollinated at all unless they are visited by insects, and some only if visited by a particular kind of insect.

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Flowers pollinated by insects contrast sharply with those that are pollinated by wind. A majority of them are perfect flowers, and many have developed adaptations of form that practically insure cross-fertilization.

DIMORPHIC AND TRIMORPHIC FLOWERS

Flowers of the same species which have in one form short stamens and long pistils, and in another form long stamens and short pistils, are said to be *dimorphic*, meaning of two forms. Introduction of an intermediate stage between these two forms, making another combination of stamens and pistils possible, produces *trimorphic* flowers, meaning of three forms. The intermediate stage is the result of adding a second set of stamens that alternate with and are never equal in length to the first set. Thus in trimorphic flowers we have: *form 1*—a short pistil or pistils, one set of stamens of medium length and the second set long; *form 2*—the pistil of medium length, one set of stamens shorter and the other longer than the pistil; *form 3*—the pistil long and the stamens in two sets below it, one short and the other medium. It is a general principle among flowers that the lower the position of the anthers the smaller the pollen grains; and, in trimorphic forms especially, the pollen will not germinate well unless it is transferred to a stigma of the same relative position as the anther from which the pollen came.

There are other notable characteristics of insect-pollinated flowers. Usually they are showy due to color, size, shape or arrangement, and frequently they have an odor. They commonly produce *nectar*, a sweetish secretion of glands at the base of the ovary or corolla. The pollen grains, instead of being dry and smooth, are often rough and sticky. Flowers that are wide open and can be pollinated by nearly any kind of visiting insect often have numerous stamens and abundant pollen, but those which partly or wholly conceal the pollen in tubular or closed corollas usually have few stamens and little pollen.

INSECTS WHICH POLLINATE FLOWERS

Honeybees and bumblebees are the most efficient among pollinating insects. First, they have a twofold interest in the flower, gathering pollen as well as nectar for food. Then they are hardy and live longer than other insect visitors; also they are stout fliers and visit a greater number of flowers over a wider area than do, let us say, butterflies and carrion flies.

They work continuously from beginning to end of the flowering season and they are good botanists, often confining their visits on any one collecting trip to one species of flower, and so do not mix different kinds of pollen. Their hairy legs and bodies are well fitted for carrying pollen and their elongated mouthparts enable them to obtain nectar from almost any sort of flower.

Butterflies are frequent visitors of showy and fragrant flowers, especially those with long corolla tubes. These insects feed on nectar only and are apt to visit several species within a short time. Thus they may cross-pollinate flowers of different species, and that pollen may or may not germinate on the foreign stigma, depending on certain other factors.

Moths are closely related to butterflies, but are night flyers instead of day-flying insects, and are thus important as pollinators of some fragrant light-colored flowers which open in the evening.

In the southern hemisphere birds are nearly as common pollinating agents as are insects, but in Illinois the single species of hummingbird which occurs is the only one of importance.

FERTILIZATION

Pollination is followed after a suitable interval by *fertilization*, an event which takes place within each ovule in the ovary. A pollen grain must germinate on the stigma and send out a pollen tube, a fine microscopic thread which grows from a pollen grain down through the pistil until it reaches one of the ovules within the ovary. Each ovule must receive the contents of the end of the pollen tube before it can develop into a *seed*, and unless fertilization occurs, no seeds will develop. Many flowers fail to develop into fruits because of failure of fertilization, and the number of seeds in the fruit may be few or many depending not only upon the number of ovules in the flower, but also upon the number of these which were successfully fertilized.

THE FRUIT

To the botanist, the fruit does not necessarily refer to an edible part accompanying or bearing the seeds. The *fruit* is usually that part of the flower which matures along with the seeds, and often the fruit appears as nothing more than an extra layer or two surrounding the seed coat. A *seed* is the unit

which comes from an ovule within the ovary, but a fruit may contain many seeds or only a single seed; it may split open to shed the seeds or it may remain closed and invest the true seed permanently with an extra protective layer. Thus, sunflower seeds, acorns and hickory nuts, forms which range in size from the small dandelion seed to the walnut, are dry fruits not easily separated from the single seed which they enclose.

Fruits classified.—Fruits may be classified into the *fleshy* fruits and *dry* fruits. Thus the apple, plum and persimmon are fleshy fruits, whereas the maple seed, milkweed pod and cotton boll represent dry fruits. The fleshy fruits are further classified into several categories, depending upon whether they have hard stony centers, separate compartments for the seeds, or bear few or many seeds. The fruit of the apple, quince and pear is called a *pome*, the fruit of the gooseberry, persimmon and grape is called a *berry* and the fruit of the plum and cherry, with a stony covering for the single seed, is called a *drupe*.

In the blackberry and raspberry (which are not true berries in the botanical sense) we find a cluster of many tiny *druplets*, each one of them a cherry or plum in miniature. We call this an *aggregated* fruit. Here there are many small pistils in the flower, each one of which may develop into a drupelet; on the other hand, in plum and peach only one pistil is found, which develops in a similar manner into a single large drupe. Likewise, the strawberry has many simple pistils in the flower, each of which develops into a dry *akene*, but the receptacle of the flower to which they are attached becomes the conspicuous fleshy part. The fleshy fruit of a garden rose is called by another name, the *hip*, that of a hawthorn is called a *haw*, and there are many other names which are used in describing certain special kinds of fruits. For example, the fruit of a melon is called a *pepo*.

DEHISCENT AND INDEHISCENT FRUITS

The dry fruits may be subdivided into the *indehiscent* fruits that do not split open, and the *dehiscent* fruits that split open when ripe. The smallest of the indehiscent fruits are the akenes, illustrated by the fruits of dandelions. These are frequently provided with parachutes consisting of a crown of tiny bristles (the *pappus*), which carry them over great distances on air currents. Others, such as Spanish needles, have a pappus of little hooks or spines by which the akenes become attached to clothing and are carried about by man and animals, thus effecting

their dissemination. Many akenes have no special appendages, others may have tufts of hairs which are formed differently and have other names, such as the feathery *crown* of hairs on the akenes of clematis, or the *coma*, or tuft of hairs that rise separately from the seed coat of the milkweed. The seed of grass is often spoken of as an akene but is more properly called a *grain* or a *caryopsis*; and that of mints, in which only a part of the ovary comes off with each seed, is called a *nutlet*.

Winged fruits such as those of ash and maple are called *samaras*. The larger fruits of oaks, hazel and walnuts, which do not split open to shed the seeds, are called *nuts*, and their dissemination is dependent upon animals; they are commonly planted in the ground by squirrels hoarding their winter's supply of food. The seed coats of many of these indehiscent fruits are so hard that they must be split open by frost before the seeds can germinate.

There are still other, more complex indehiscent fruits, such as the fruit of the cocklebur and burdock. These are aggregates of a flower cluster and are included in the category of *multiple fruits*. There are also fleshy multiple fruits such as the mulberry, for here we have the product of a cluster of small flowers.

Dehiscence.—The dehiscent fruits that split open to shed their seeds are of many different kinds. They split open along definite lines or seams called *sutures*. The *capsule* is illustrated by the fruit of the poppy, the Jimson weed and the lily. Some of them split open lengthwise into two or more pieces called *valves*, they may split open crosswise as in the purslane, or they may open by little pores near the top of the seed capsule as in the common poppy. All these fruits are derived from the flower with a compound pistil, one which has several parts, cavities or compartments.

Follicles and *Pods* are names given to certain fruits coming from simple pistils, such as the fruit of a columbine and pea; the first kind splits down the inner side only, the second splits down the outer side as well. The fruits of certain mustards, called *siliques*, appear similar to the pods and follicles but are in fact compound or double, often having a definite partition between two halves.

Thus the more complex terminology employed by botanists implies certain important distinctions which tell us something of the kind of flower and pistil which gave rise to the particular

fruit in question: though these differences seem trivial at times, they are very important in referring the plant in question to its appropriate family in its classification. They tell us whether the fruit is the product of a flower cluster or a single flower, whether it came from the ovary of a flower which was free from the calyx or one which was united with the calyx, etc.

DISSEMINATION

Some fruits are disseminated while still containing their seeds, which are shed from them later; other fruits shed their seeds while still attached to the plant.

Seed dispersal structures and agents of dissemination.—The fruit of the elm and ash illustrate the samara, or "key fruit," which has wings that readily provide dispersal by wind. Fruits of the maple and box-elder are often double.

Many seeds of the dehiscent fruits are provided with special parts which facilitate their dissemination. The seeds of milk-weeds and cottonwood have tufts of long hairs, outgrowths of the seed coats. Seeds of the catalpa tree are flat and fringed on the margins so they are easily borne by the wind. Such naked seeds outwardly resemble but are not true samaras, in that true samaras are fruits containing seeds. When the fruits of the touch-me-not, violets, the lupine and wild geranium split open, the seeds are thrown out with such violence that they are propelled through a considerable distance. Thus the variety of methods by which fruits and seeds are disseminated is so great that close observers may still hope to discover some special method which has not been fully described in a textbook, and many nature lovers derive great pleasure and satisfaction from the pursuit of their observations on seed dissemination. Some naturalists make extensive collections illustrating the great variety of methods of seed dispersal.

Water is less common than wind as an agent of dissemination, but is important in that it may carry fruits or seeds for long distances. Many seeds and fruits are lighter than water and will float almost indefinitely, as, for example, seeds of the larger blue flag; they are protected by a corky outer layer that waterproofs them for a considerable time. Such seeds, however, at length absorb water and sink, or continue to float but lose their ability to germinate. Consequently, there is a limit to the distance and time they may be transported by water and still

grow, with a few exceptions such as arrowleaf, seeds of which have been found with germinating powers unimpaired after soaking at the bottom of a pond for seven years. Again, drift-wood and other floating objects may harbor fruits and seeds, and carry them great distances.

It is superfluous to point out that animals play an important part in the dissemination of edible fleshy fruits. They also aid in the dispersal of seeds and fruits which are inedible. Some of the seeds contained in fleshy fruits are disseminated very effectively because they are not digested as they pass through the alimentary tract of birds and animals. The prickly fruits of burdock may be carried over great distances on the fur of various animals or the wool of sheep. The seeds of certain rushes at the water's edge are so tiny that they may be carried from one pond or lake to another, mixed with mud clinging to the feet of wading birds. Ants disseminate such seeds as those of bloodroot, wild ginger and false mermaid, which have oily or albuminous appendages. The ants feed on these appendages and often carry the seeds considerable distances.

Man is an important agent of dissemination, as he scatter seeds and fruits much as other animals do. He is still more important, however, for his means of travel and transportation. Many kinds of seeds are carried on trains and some of them are scattered along the right of way. For this reason a railroad track is an excellent place to go flower hunting. One is almost sure to find there a flora rich in number and variety of species.

THE NAMES OF PLANTS

In studying large numbers of objects it is always necessary to classify them in some way. This is true whether the objects are plants, insects, rocks, bank notes or birds. In classifying plants, all those that are the same kind, as determined by their having like characteristics of leaves, flowers, stems, etc., as we have already discussed, are said to constitute a *species*. This is the simplest group of individuals which have descended from the same stock. All species that resemble one another in certain fundamental respects are grouped into *genera*. Similar genera are grouped into *families*, families into *orders* and the orders into *classes*. The plants discussed in the following pages need be grouped for our purpose no higher than families. The families appear in this book in order from simple to complex structured,

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and contain a selection of the lesser groups—genera, species and a few *varieties* or subdivisions of species.

All these division-units, or groups, have individual names, and no two family, order or genus names are alike. The technical name is in Latin or Greek, and most groups have a common name in English as well. Thus we have the *Rosaceae* or Rose family, containing the genus *Crataegus* or Hawthorns, of which one species, *Crataegus mollis*, will be found on page 149 as the red haw. Genus and species together comprise the *scientific name* of a plant, and this is followed by initials or abbreviations to indicate the person who is the *authority* responsible for the name. Latin and Greek are used because they are more generally understood and have been adopted for this use in many countries.

In this book the technical names are, with a few exceptions in the nature of corrections, from Gray's *Manual of Botany*, seventh edition, and the plants are listed by families in the order of that text. Common names have been chosen from a variety of sources, and in each case are those which seem to enjoy the greatest favor. But the important thing for us is to get acquainted with the wild flowers, make friends of them, and learn to call them by some accepted name. Whether we use Latin or English matters little so long as we understand which plants are meant.

THE USE OF KEYS

If our only means of identifying a wild flower were to hunt through descriptions of several hundred species, such as are in this book, the task would be difficult and tedious. If, however, we had a quick way of recognizing the family to which the plant belonged and then were told where in the book the family might be found, locating the plant would not be much trouble.

To take the short-cut we consult a key. Step by step through a number of plant characteristics, such as "petals 5," "petals 4," we will pick our way, selecting those bits of description that fit the plant we have found and rejecting those which do not, until we complete the series and arrive eventually at the family and page on which our specimen is discussed.

Suppose that about June 1 we start on a hike and in passing through a rather open, gravelly woods we find a little plant with a cluster of basal leaves that remind us of clover, and a

naked stem, bearing several pretty violet flowers. We examine the flowers and find 5 green sepals, 5 violet petals, 10 stamens, an unlobed ovary and 5 styles. We will not pick any of the flowers but will sit down among them with our book and turn to the Key to Families, page 30.

TRACING THROUGH KEY TO FAMILIES

Starting with number 1 in the key, we have a choice of three groups of characteristics: "Trees or shrubs, erect," "Shrubs (vines) that climb," and "Herbs." We choose "Herbs" and go to the number given, which is 19. At 19 we find a choice of four alternatives, and since the leaves of the plant we have are not abnormal in that they are not curiously shaped and are not scales or spines, we go on as indicated to the number 20. Our plant does not have milky sap, and so we proceed to 22; from there, since its leaves are netted veined, we go to 23. As there is a corolla we go to 24, furthermore the petals are separate, and so we go to 32. At 32 we have "Corolla borne on the receptacle" and "Corolla borne on the calyx." Choosing the first, we move on to 33, and from there, since the leaves are not fleshy, we go to 35. Our plant is growing on land, so that we go on to the next choice at 36, from which we jump to 41, since the flower has, as we have said, 10 stamens. Here the fact that the flower is perfect sends us to 42, and thence, since the corolla is regular, to 43. Here the 5 violet petals of our flower make us choose "Petals 5" and we go as directed to 45. Here we examine the ovary again, find it not 5-lobed, and go on to 46. Now we must be careful in picking out the line which really describes the leaves of our plant—are they opposite, alternate or basal? The key makes it as easy as possible here, limiting the choice to two, and since we saw in the beginning that our plant had basal leaves, we conclude that we have found some member of the Wood Sorrel family. Turning to page 175 we find this family begun with a description of the violet wood sorrel, which, as we read, proves to be the plant we have been tracing.

USE OF KEY TO GENERA

On some occasions we may have quite a few descriptions within the family to run through before we can be sure of our plant, and a little more help would be welcome. Let us take such an example, leading through a new set of signposts in the key. Suppose that on a little later trip, just outside the woods

on a waste area of sandy soil, we find a little plant with a slender stem, ordinary net-veined leaves, smooth ovary and blue corolla. Each flower has 5 narrow sepals, but the petals are grown together into a labiate and spurred corolla. There are 4 stamens and 1 pistil. Perhaps if we look about a bit we will notice one or more plants like ours having fruits, for we may need these in the process of identification.

We begin again with number 1 in the key, go to 19, 20, 22, 23 and 24 as we did before, since as yet the same characteristics belong to this plant as to the other. At 24 we diverge, however, since our second plant has united petals. At 53, to which we have been directed, we choose "Calyx free from the ovary" and go to 54, which, because the corolla is conspicuously irregular, sends us to 65. Here the smooth ovary determines that we must go to 66, and now we must turn to the fruits. These are not reflexed on the stem, consequently we pass to 67, and because we have already seen that our flower is neither heart shaped nor 2-spurred, we go to 68. Here the many seeds in the capsule settle the question: our plant is in the Figwort family.

Now when we turn to page 299 as provided, we find that this large family contains several genera for which a key had to be provided also. In this Key to Genera will be found the Latin or Greek names only. Using this key exactly like the first, the genus to which our plant belongs will soon be discovered, and after that there will be only one or two full-length descriptions to choose from to establish the species.*

Under 1 in the Key to Genera, we choose between "Herbs" and "Trees," and then going to 2, between "Perfect stamens 2," "Perfect stamens 4," and "Perfect stamens 5." The stamens have anthers and filaments and so are perfect, and since there are 4 of them we proceed to number 3. Here we find "Corolla spurred at the base," and "Corolla not spurred," and since the corolla is spurred it must belong to the genus *Linaria*. This genus is represented by two species, beginning on page 301, of which the second, or blue toadflax, *Linaria canadensis*, page 302, is the one that fits this plant.

*It should be remembered that all the keys have been constructed for the particular purpose of running down the plants which this book describes, instead of the families and genera at large.

TO THE FRINGED GENTIAN

Thou blossom, bright with autumn dew,
And colored with the heaven's own blue,
That openest when the quiet light
Succeeds the keen and frosty light;

Thou comest not when the violets lean
O'er wandering brooks and springs unseen,
Or columbines, in purple dressed,
Nod o'er the ground bird's hidden nest.

Thou waitest late, and com'st alone,
When woods are bare and birds are flown,
And frosts and shortening days portend
The aged Year is near his end.

Then doth thy sweet and quiet eye
Look through its fringes to the sky,
Blue—blue—as if the sky let fall
A flower from its cerulean wall.

I would that thus, when I shall see
The hour of death draw near to me,
Hope, blossoming within my heart,
May look to heaven as I depart.

WILLIAM CULLEN BRYANT

WILD FLOWERS OF ILLINOIS

Your voiceless lips, O flowers! are living preachers,
Each cup a pulpit, every leaf a book
Supplying to my fancy numerous teachers
From loneliest nook.

Hymn to the Flowers—HORACE SMITH

KEY TO FAMILIES

1. Trees or shrubs, erect.....2
 Shrubs (vines) that climb.....17
 Herbs.....19
2. Bark and leaves spicy, aromatic... **LAUREL FAMILY** p. 118
 Bark and leaves not thus.....3
3. Flowers chocolate brown, 3-parted; fruits bananalike.....
 **CUSTARD APPLE FAMILY** p. 113
 Not thus.....4
4. Leaves palmately 5-9-foliolate... **SOAPBERRY FAMILY** p. 190
 Leaves pinnately divided; sap milky.....
 **CASHEW FAMILY** p. 184
 Not thus.....5
5. Flowers yellow, blooming in fall.....
 **WITCH-HAZEL FAMILY** p. 144
 Not thus.....6
6. Flowers 4-parted.....7
 Flowers 5 or 6-parted.....10
 Flowers in catkins, pendant or erect... **BIRCH FAMILY** p. 73
7. Leaves alternate, simple... **DOGWOOD FAMILY** in part p. 225
 Leaves alternate, compound, dotted with clear spots.....
 **RUE FAMILY** p. 178
 Leaves opposite.....8
8. Leaves 3-foliolate..... **BLADDER NUT FAMILY** p. 189
 Leaves simple.....9
9. Flowers dull purple... **STAFF TREE FAMILY** in part p. 187
 Flowers greenish, white or yellow, many in cluster.....
 **DOGWOOD FAMILY** in part p. 225
10. Leaves opposite..... 11
 Leaves alternate..... 12
11. Flowers greenish yellow, solitary or few in cluster.....
 **STAFF TREE FAMILY** in part p. 187
 Flowers white in dense clusters.....
 **HONEYSUCKLE FAMILY** in part p. 321
12. Flowers very small or small in lateral clusters..... 13
 Not thus..... 14
13. Petals separate..... **HOLLY FAMILY** p. 186
 Petals more or less united... **HEATH FAMILY** in part p. 227
14. Flowers irregular, butterfly shaped.....
 **PULSE FAMILY** in part p. 157
 Flowers regular..... 15
15. Stamens very many; flowers conspicuous.....
 **ROSE FAMILY** p. 145
 Stamens not more than 12..... 16
16. Petals incurved..... **BUCKTHORN FAMILY** p. 192
 Petals not incurved; flowers white.....
 **SAXIFRAGE FAMILY** in part p. 139

FIELDBOOK OF ILLINOIS WILD FLOWERS

KEY TO FAMILIES—CONT'D

17. Leaves compound; flowers large... **BIGNONIA FAMILY** p. 314
 Leaves simple..... 18
18. Leaves palmately veined.... **MOONSEED FAMILY** p. 114
 Leaves pinnately veined.. **STAFF TREE FAMILY** in part p. 187
19. Leaves curiously shaped to hold liquids.....
 **PITCHER PLANT FAMILY** p. 137
 Leaves reduced to prickles; stems fleshy and jointed.....
 **CACTUS FAMILY** p. 204
 Leaves scalelike; plants without green color.....
 **HEATH FAMILY** in part p. 227
 Leaves of normal appearance..... 20
20. Plants with milky sap..... 21
 Not thus..... 22
21. Corolla lobes completely reflexed.. **MILKWEED FAMILY** p. 242
 Not thus..... **DOGBANE FAMILY** p. 238
22. Leaves usually entire, elongate and parallel veined..... 76
 Leaves netted veined..... 23
23. Corolla present..... 24
 Corolla lacking..... 25
24. Petals separate..... 32
 Petals more or less united..... 53
25. Stipules forming a sheath at each node.....
 **BUCKWHEAT FAMILY** p. 78
 Not thus..... 26
26. Flowers perfect, borne in spikes.... **PEPPER FAMILY** p. 72
 Flowers not in spikes, or flowers imperfect..... 27
27. Pistils more than 1, separate.....
 **CROWFOOT FAMILY** in part p. 95
 Pistil 1; if more than 1, not separate..... 28
28. Ovary inferior..... 29
 Ovary superior..... 30
29. Flowers small, clustered in 5-lobed involucre.....
 **FOUR-O'CLOCK FAMILY** p. 81
 Flowers without involucre..... 31
30. Calyx small, whitish..... **SANDALWOOD FAMILY** p. 75
 Calyx large, conspicuously colored.....
 **BIRTHWORT FAMILY** p. 76
31. Style 1..... **NETTLE FAMILY** p. 74
 Styles 3; sap milky..... **SPURGE FAMILY** in part p. 181
 Styles 5..... **ORPINE FAMILY** in part p. 138
 Styles 10..... **POKEWEED FAMILY** p. 80
32. Corolla borne on the receptacle..... 33
 Corolla borne on the calyx..... 50
33. Leaves fleshy..... 34
 Not thus..... 35

KEY TO FAMILIES—CONT'D

34. Sepals 2 **PURSLANE FAMILY** p. 89
 Sepals 4 or 5 **ORPINE FAMILY** in part p. 138
35. Plants growing in water **WATER LILY FAMILY** p. 91
 Plants growing on land 36
36. Stamens more than 12 37
 Stamens not more than 12 41
37. Sap milky or highly colored **POPPY FAMILY** p. 119
 Not thus 38
38. Stamens united into a column around the pistil
 **MALLOW FAMILY** p. 193
 Not thus 39
39. Pistils more than 1 **CROWFOOT FAMILY** in part p. 95
 Pistil 1 40
40. Petals 5 **ST. JOHN'S-WORT FAMILY** p. 199
 Petals more than 5 **BARBERRY FAMILY** in part p. 115
41. Flowers imperfect **SPURGE FAMILY** in part p. 181
 Flowers perfect 42
42. Corolla regular 43
 Corolla irregular 47
43. Petals 3 **FALSE MERMAID FAMILY** p. 183
 Petals 4 44
 Petals 5 45
 Petals more than 5 **BARBERRY FAMILY** in part p. 115
44. Stamens 6, 2 shorter than other 4 **MUSTARD FAMILY** p. 124
 Stamens more than 6 **CAPER FAMILY** p. 136
45. Ovary 5-lobed **GERANIUM FAMILY** p. 177
 Not thus 46
46. Leaves opposite; nodes swollen **PINK FAMILY** p. 82
 Leaves alternate or basal **WOOD SORREL FAMILY** p. 175
47. Leaves with stipules or stipular lines 48
 Not thus 49
48. Leaves simple **VIOLET FAMILY** p. 200
 Leaves compound **PULSE FAMILY** in part p. 157
49. Calyx spurred; flowers large
 **TOUCH-ME-NOT FAMILY** p. 191
 Calyx not spurred; flowers small
 **MILKWORT FAMILY** p. 180
50. Style 1 51
 Styles 2 52
51. Calyx tube enclosing ovary and wholly free from it
 **LOOSESTRIFE FAMILY** p. 205
 Calyx tube attached to whole length of ovary
 **EVENING PRIMROSE FAMILY** p. 208
52. Flowers small in umbels **PARSLEY FAMILY** p. 214
 Flowers various, not in umbels
 **SAXIFRAGE FAMILY** in part p. 139

FIELDBOOK OF ILLINOIS WILD FLOWERS

KEY TO FAMILIES—CONT'D

53. Calyx free from the ovary.....54
 Calyx attached to the ovary.....70
54. Corolla regular or nearly so.....55
 Corolla conspicuously irregular.....65
55. Ovaries 4-lobed.....**BORAGE FAMILY** in part p. 259
 Not thus.....56
56. Style 3-cleft or lobed.....**POLEMONIUM FAMILY** p. 252
 Not thus.....57
57. Stamens attached to corolla opposite the lobes.....
**PRIMROSE FAMILY** p. 230
 Stamens attached to corolla alternate with lobes.....58
58. Leaves opposite.....59
 Leaves alternate.....60
59. Leaves with stipules or stipular lines.....
**LOGANIA FAMILY** p. 234
 Not thus.....**GENTIAN FAMILY** p. 235
60. Style 2-lobed or divided.....**WATERLEAF FAMILY** p. 255
 Not thus.....61
61. Stamens 5.....62
 Stamens 4.....64
62. Ovules and seeds many.....**NIGHTSHADE FAMILY** p. 293
 Ovules few, usually 4.....63
63. Plants climbing or trailing...**CONVOLVULUS FAMILY** p. 248
 Not thus.....**BORAGE FAMILY** in part p. 259
64. Flowers small in spikes...**VERVAIN FAMILY** in part p. 267
 Flowers large, not in spikes.....
**ACANTHUS FAMILY** in part p. 315
65. Ovary 4-lobed.....**MINT FAMILY** p. 272
 Not thus.....66
66. Fruits reflexed on the stem.....**LOPSEED FAMILY** p. 317
 Not thus.....67
67. Corolla heart shaped or 2-spurred.....
**FUMITORY FAMILY** p. 121
 Not thus.....68
68. Ovules or seeds numerous, small...**FIGWORT FAMILY** p. 299
 Ovules or seeds few, usually 4.....69
69. Stamens 2.....**ACANTHUS FAMILY** in part p. 315
 Stamens 4.....**VERVAIN FAMILY** in part p. 267
70. Flowers perfect.....71
 Flowers imperfect.....**GOURD FAMILY** p. 326
71. Flowers in dense heads.....72
 Not thus.....73
72. Stamens separate.....**TEASEL FAMILY** p. 325
 Stamens united by their anthers.....
**COMPOSITE FAMILY** p. 333

KEY TO FAMILIES—CONCL'D

73. Corolla tube split down one side. **LOBELIA FAMILY** p. 330
 Not thus. 74
74. Leaves alternate. **BLUEBELL FAMILY** p. 328
 Leaves opposite. 75
75. Corolla 4-lobed. **MADDER FAMILY** p. 318
 Corolla 5-lobed. **HONEYSUCKLE FAMILY** in part p. 321
76. Flowers with a colored perianth. 81
 Not thus. 77
77. Flowers on a spadix, usually within a spathe.
 **ARUM FAMILY**, p. 40
 Not thus. 78
78. Flowers enclosed by dry husks (scales). 79
 Flowers not so enclosed; crowded in a spike.
 **CATTAIL FAMILY** p. 35
79. Stems round or flattened, not 3-sided. 80
 Stems usually 3-sided. **SEDGE FAMILY** p. 39
80. Stems solid; each flower on a short stalk of its own, with
 6 scales. **RUSH FAMILY** p. 47
 Stems hollow except at nodes; flowers in chaffy clusters,
 number of scales not readily determinable.
 **GRASS FAMILY** p. 38
81. Pistil 1. 82
 Pistils numerous. **WATER PLANTAIN FAMILY** p. 36
82. Calyx attached below the ovary. 83
 Calyx attached above the ovary. 86
83. Sepals green. 84
 Sepals and petals colored alike. 85
84. Leaves of the stem in whorls of 3.
 **LILY FAMILY** in part p. 48
 Not thus. **SPIDERWORT FAMILY** p. 44
85. Flowers regular. **LILY FAMILY** in part p. 48
 Flowers irregular. **PICKERELWEED FAMILY** p. 46
86. Flowers regular. 87
 Flowers irregular. **ORCHIS FAMILY** p. 67
87. Stamens 3. **IRIS FAMILY** p. 65
 Stamens 6. **AMARYLLIS FAMILY** p. 64



The wind flower and the violet, they perished
 long ago,
 And the brier rose and the orchis died amid the
 summer glow;
 But on the hill the goldenrod, and the aster in
 the wood,
 And the yellow sunflower by the brook in autumn
 beauty stood.

The Death of the Flowers—WILLIAM CULLEN BRYANT

COMMON CATTAIL

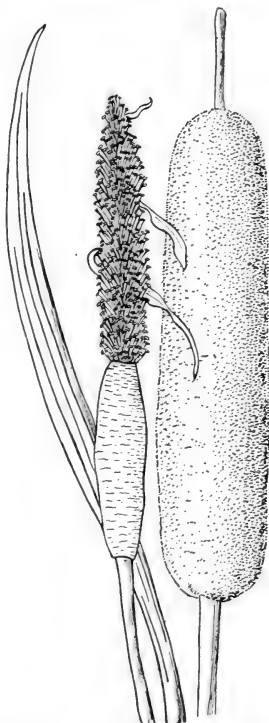
Typha latifolia L.

The Cattail family has a single genus, represented in Illinois by only two species. Of them the Common Cattail is abundant in swamps and slow-running streams throughout temperate North America; the other species, *T. angustifolia* L., with narrower leaves, is rare.

Leaves and flower stalks arise from a stout underground stem which creeps in the mud toward the water, branching as it grows and sending out a multitude of fibrous roots. The stiff, erect, grasslike leaves, 4-8 feet long and not more than 1 inch wide, are sharply pointed and keen edged. The flower stalk is sheathed at its base by the leaves and usually does not exceed them in height.

The dimorphous flowers are densely crowded in a terminal spike about 1 inch thick and perhaps 12 inches long. Staminate flowers are above the pistillate. Each staminate flower is attached directly to the axis of the spike and has 2-7 stamens whose filaments are grown together. Each pistillate flower is but a small ovary on a short stalk and is without bractlets. The pollen grains are in fours. The flowers are formed in June and July and the seeds mature during August and September. The fruit is furrowed, bursting in water, and the seeds have a separable outer coat.

Long hairs and bristles are interspersed with the flowers and later form the down that buoys up the tiny nutlike seeds when they are carried away by the wind. Sometimes the down is used as a filling for pillows.



ARROWHEAD

Sagittaria latifolia Willd.

The Water Plantain family includes a number of marsh herbs that are widely distributed in fresh-water swamps, about ponds and along streams. In tramping about such places in Illinois, we are almost certain to find some members of this family.



Arrowhead, which gets its name from the shape of its leaves, is common in shallow waters and on wet banks generally throughout the United States. In some localities, however, it has been exterminated by the drainage of ponds and lakes, and in others by introduction of certain

kinds of fishes that live largely upon young aquatic plants.

It grows perennially from a heavy, branching underground stem that bears very starchy tubers, which the Indians formerly used for food. Leaves are variable in size and shape, being 4-16 inches in length and sometimes wider than long. They arise from the base of the plant and usually maintain a nearly vertical position.

The flowering stem, commonly 1-3 feet tall, bears its blossoms from June to September in whorls of 3. Usually the lower whorls contain only pistillate flowers and the upper only staminate. The petals are white and soon fall off, but the green sepals persist while the fruit is maturing. The seeds have membranous wings which make easy their dissemination by wind and water.

Here I come creeping, creeping everywhere;
 By the dusty roadside,
 On the sunny hillside,
 Close by the noisy brook,
 In every shady nook,
 I come creeping, creeping everywhere.
The Voice of the Grass—SARAH ROBERTS

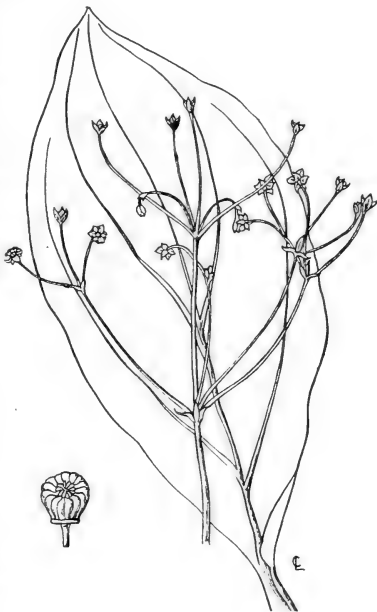
WATER PLANTAIN

Alisma Plantago-aquatica L.

The Water Plantain is a common perennial in shallow water and muddy places from Massachusetts westward to Minnesota and south to Florida and Texas.

Leaves and the flowering stalk grow from a stout, branching, tuberlike stem below the surface of the ground. The parallel-veined leaves vary greatly in size and shape, being narrow to broadly oval and 1-6 inches long. The flowering stalk, 4-36 inches high, has numerous branches arising from the axils of very small bracts and arranged in whorls of 3-10.

The blooming season is June to September. Each flower has 3 broadly ovate sepals, green with whitish margins, and 3 white or pinkish petals. The few to many pistils are in 1 whorl on a small flat receptacle, and are half as long as the 6 or 9 stamens. They ripen into flattened akenes with 2 or 3 ribs on the back and 1 or 2 on each side.



The Creeping Burhead, *Echinodorus radicans* (Nutt.) Engelm., is so called because its stems or scapes are prostrate or creeping, and they often root at the nodes. The coarse leaves are ovate to heart shaped and 5-9-nerved. The heads of white flowers with about 20 stamens are in whorls of 3-12. The numerous akenes are 6-10-ribbed, with 2 to several oval glands on each side, and a short incurved beak. This is a frequenter of swamps and ponds from Illinois to North Carolina, Florida and Texas.

BOTTLEBRUSH GRASS

Hystrix patula Moench

The Grass family is economically the most important among plants. It includes the important grains and food plants such as Wheat, Corn, Oats, Rye, Barley, Rice, Sugar Cane, *Sorghum* and Millet; and many useful plants such as Bamboo, Timothy and the various lawn grasses. Of the 1500 kinds of Grass that occur in the United States

60 are cultivated and about the same number are weeds. At least 200 species grow wild in Illinois.



The stems of most Grasses are hollow between the joints and solid at the joints. The leaves are parallel veined and in 2 rows on the stem. Each has 2 parts, sheath and blade. The sheath envelops the stem, its margins overlapping. Flowers are enclosed in scales and

have neither sepals nor petals. In most Grasses the flower has 1 pistil, 3 stamens and 2 very small scales at the base of the ovary. The fruit is a seedlike grain. Practically all Grasses are wind pollinated.

The Bottlebrush Grass, which is common in open woods from New Brunswick to Minnesota and southwestward, and which blooms during June and July, is given here merely as an example of the family. To know the differences between our many kinds of Grass one will need to refer to exhaustive catalogs of the family or of all plants.

All round, upon the river's slippery edge,
Witching to deeper calm the drowsy tide,
Whispers and leans the breeze entangling sedge;
An Indian Summer Reverie—JAMES RUSSELL LOWELL

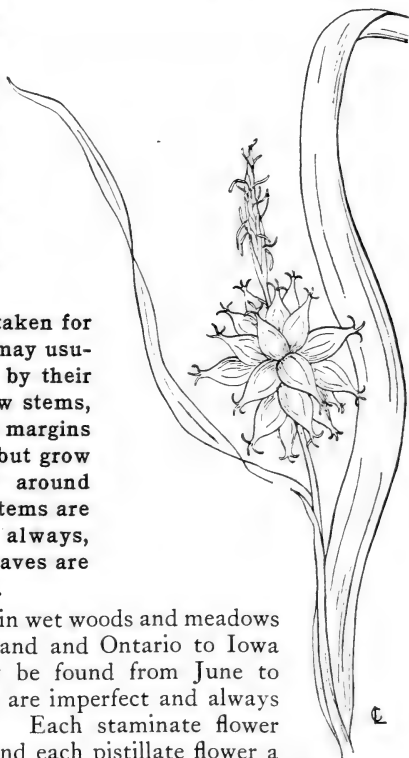
BUR SEDGE

Carex Grayii Carey

The Sedge family is a very large family of grass-like plants, but except for those members which are used ornamentally, it is of little economic importance. The family includes the Bulrushes, Cotton Grass, Umbrella Plant and a few others, but primarily the true Sedges, which, with about 100 species occurring in Illinois, far outstrip all other genera in number of representatives in the state.

Though often mistaken for Grasses, the Sedges may usually be distinguished by their solid instead of hollow stems, and the leaf sheath margins which do not overlap but grow together into a tube around the stem. Also, the stems are usually, though not always, triangular, and the leaves are in 3 rows instead of 2.

The Bur Sedge grows in wet woods and meadows from western New England and Ontario to Iowa and Missouri, and may be found from June to September. The flowers are imperfect and always in some form of spike. Each staminate flower usually has 3 stamens, and each pistillate flower a single pistil. The fruit is an akene, enclosed by a much inflated ovoid organ peculiar to the genus and called the perigynium. In this species it is smooth or downy, slightly more than one-quarter inch in diameter above the base, and tapers to a sharp 2-toothed beak. It is usually necessary to examine the mature fruit to determine *Carex* species with certainty.

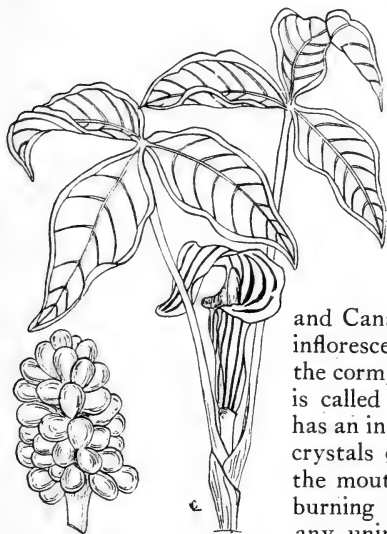


JACK IN THE PULPIT. INDIAN TURNIP

Arisaema triphyllum (L.) Schott

The Arum family has only a few representatives in Illinois, although it is rather large in the tropics, where some of its members have tuberous stems used for food

much as our potato. The Calla Lily and Elephant's Ear, two well-known plants cultivated for the beauty of their flowers, also belong to this family.



Jack in the Pulpit is common in rich woods throughout the eastern part of the United States and Canada. The 2 leaves and the inflorescence come up in May from the corm, which because of its shape is called Indian Turnip. This corm has an intensely acrid juice the sharp crystals of which dissolve slowly in the mouth and are the cause of the burning sensation on the tongue of any uninitiated person so unfortunate

as to taste it at the request of a practical joker.

The plants are dioecious and the pistillate flowers are produced later than the staminate. The inflorescence is a spathe, usually dull green, striped with purple, surrounding a long slender spadix with the flowers clustered along its lower end. At first the spathe is so smooth and slippery on the inner side that flies which have visited the flowers and collected pollen are unable to climb out; but as soon as the spathe begins to wither it becomes less smooth and the flies escape to a pistillate plant. Here again the insects are imprisoned until the spathe begins to wither, and pollination is generally accomplished though the flies may perish shortly afterward. The fruit matures in late summer and consists of a cluster of bright scarlet berries, each containing 1-4 seeds.

GREEN DRAGON

Arisaema Dracontium (L.) Schott

The Green Dragon is found mostly in wet woods and along streams, but occasionally in dry soil, from Maine to Minnesota and south to Florida and Texas. It grows from a cluster of corms, and its usually monoecious flowers bloom in May and June.

Usually there is only 1 leaf, 8-48 inches long, oddly compound in that its 5-17 leaflets are arranged more like the toes of the foot instead of fingers of the hand, as shown. Several membranous scales envelop the flowering stalk at the base.



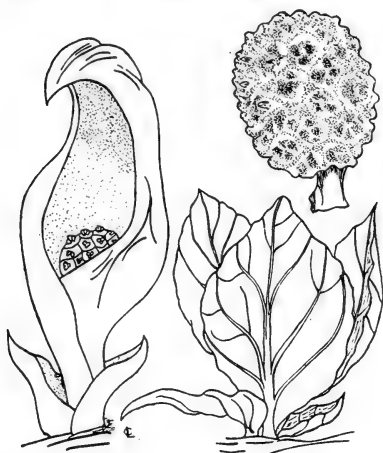
The outer part of the green or sometimes whitish inflorescence is the spathe and the long slender structure projecting 1-7 inches from it is the tip of the spadix. The lower part of the spadix bears the flowers except when both forms are on the same plant; then the staminate are grouped together above the pistillate. Each staminate flower consists merely of 4 almost sessile anthers which open by slits at the end. The pistillate flower consists of a top-shaped ovary, containing 6-8 bottle-shaped ovules, and a sessile stigma. The fruits are orange-red berries clustered in a large head.

The Green Arrow Arum, *Peltandra virginica* (L.) Kunth, is marked by its long, arrow to spear-shaped bright green leaves, which are firm and strongly veined. A long, green and wavy-margined spathe encloses the shorter spadix, which is covered about one fourth of its length by pistillate flowers and the rest by staminate, or remains sterile. The berry fruits are green when ripe. This is also a swamp dweller, from Maine and Ontario to Michigan, south to Florida, Louisiana and Missouri, and likewise blooms in May and June.

SKUNK CABBAGE

Symplocarpus foetidus (L.) Nutt.

Skunk Cabbage is found throughout the northern half of Illinois in swamps and other low places that are moist throughout the year. It occurs in similar situations from Nova Scotia south to North Carolina and westward to Ontario, Minnesota and Iowa.



This is our earliest flowering plant. It usually begins to bloom in late February or early March, but may be found in bloom any time during very mild winters. The first part of the plant to appear is the hoodlike spathe, variously spotted and streaked with purple and yellowish green. Within this spathe the flowers are clustered on a fleshy spadix. Each flower

has 4 fleshy sepals, 4 stamens and an angular pistil with a small stigma. The flowers at the top of the spadix open first, and the pistil of each matures several days before the stamens of the same flower begin to discharge their pollen. After the blooming season the plant develops a cluster of cabbagelike leaves around the enlarged spadix, and the seeds embedded in the spadix mature in late summer.

The odor of the Skunk Cabbage, though unpleasant to man, is attractive to many insects, especially bees and flies. During the early part of the season honeybees are the chief agents of pollination, but later numerous small flies carry on this work.

You have robbed the bee, South Wind, in your adventure,
Blustering with gentle flowers; but I forgave you
When you stole to me shyly with scent of hawthorn.

South Wind—SIEGFRIED SASSOON

SWEET FLAG

Acorus Calamus L.

The Sweet Flag is found in swamps and along streams throughout Illinois, and its range extends westward from Nova Scotia to Ontario and Minnesota, south to Louisiana and Kansas. It also occurs in Europe and Asia.

The thick underground stem is very aromatic and contains a drug, calamus, that is much used in medicine. From this stem arise the sword-shaped, vertical leaves, 2-6 feet tall and 1 inch or less wide, which are characteristically yellowish green.

The tall stem bearing the inflorescence is somewhat triangular and extends far beyond the flowers, which appear as an upright compact cluster on its side. The flowers are yellowish green and cover the whole surface of the spadix. Each has 6 very thin sepals, 6 stamens and 1 pistil. The blooming season is May to July.

The fruit, a few-seeded berry, gelatinous inside, is rarely formed in our region, and the plant spreads here into large compact colonies almost entirely by means of its underground stems.

The Water Arum, *Calla palustris L.*, is found to a limited degree only in the cold bogs of Lake and McHenry counties. The solitary scape arises 1 foot from a long creeping rootstock and bears the yellowish white flowers, which greatly resemble the Calla Lily but are much smaller. The long-petioled leaves are heart shaped and the fruits are bright red, few-seeded berries.



Magnolias edge the placid lily pool
 And flank the sagging seat, whence vista leads
 To blaze of rhododendrons banked in green.
 Azaleas by the scarlet quince flame up
 Against the lustrous grape vines trellised high
 To pigeon cote and old brick wall where hide
 First snowdrops and the bravest violets.

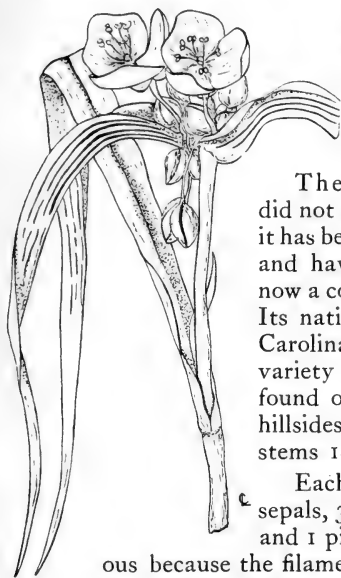
The Garden—GERTRUDE HUNTINGTON MCGIFFERT

SPIDERWORT

Tradescantia virginiana L.

The Spiderwort family is small and relatively unimportant, but it contains some well-known plants, among which the Wandering Jew, commonly used as a flower-box

and greenhouse plant, is universally recognized. The genus name *Tradescantia* was given the Spiderworts in memory of John Tradescant, gardener to King Charles I of England.



The species *virginiana* formerly did not occur as far west as Illinois but it has been extensively grown in gardens, and having escaped from cultivation is now a common wild flower in this state. Its native soil is Connecticut to South Carolina. It can grow well in a wide variety of soils and therefore may be found on wet meadows as well as dry hillsides. It produces a cluster of stems 1-2 feet tall.

Each flower consists of 3 green sepals, 3 purplish blue petals, 6 stamens and 1 pistil. The stamens are conspicuous because the filaments are purple and bearded with long purple hairs, whereas the anthers are bright yellow. The flowers bloom in late spring and summer, and each one remains open for only a few hours. After the petals have closed, the pedicel curves downward so that the fruit develops in a recurved position. This is a 2 or 3-celled capsule with 1 or 2 seeds in each cell.

The Short-stemmed Spiderwort, *Tradescantia brevicaulis* Raf., is often stemless or nearly so, and with mostly basal grasslike leaves 6-12 inches long. The 4-12-flowered umbel is sessile in bracts that are similar to the leaves but more elongated, and the slender pedicels are 1-2 inches long and hairy. Sepals are oblong and hairy, and the corolla, about 1 inch broad, is blue or more commonly rose-purple.

DAY FLOWER

Commelina communis L.

Although the Day Flower is a dooryard weed, its pretty though small flowers should be familiar to everyone. The plant is common in alluvial soil from southern New York to Florida, west to Kansas and Texas, and has been reported northeastward to Massachusetts.

Its stems are slender and creeping, sometimes rooting at the nodes. They are smooth or nearly so, and grow 1-3 feet long. The leaves are also smooth, and their bases, thin and white with green veins, form sheaths about the stem. The upper leaves are folded in such a way as to form a spathe enclosing the flowers.

Each of the deep blue flowers opens only one morning. The pedicel, curved downward so that the bud is nodding, straightens up while the flower is in bloom and curves down again afterwards. The 3 sepals are somewhat unequal in size and the 2 larger are often slightly united. The 3 petals are also unequal, 2 large and 1 small. Of the 3 perfect stamens 1 is curved forward and has a large anther. There are an additional 3 imperfect stamens which are smaller and have cross-shaped anthers but produce no pollen. There is 1 pistil with an undivided style and stigma. The fruit is a 2-celled capsule with 2 dark brown, compressed and roughened seeds in each cell.

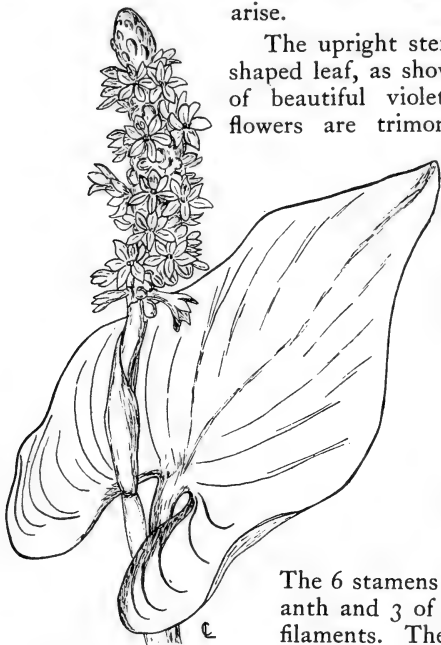


PICKERELWEED

Pontederia cordata L.

Pickerelweed is found at the borders of ponds and lakes throughout most of the eastern half of the United States and southeastern Canada. It is a perennial herb with a creeping rootstalk from which most of the leaves arise.

The upright stem bears only 1 heart-shaped leaf, as shown, and a dense spike of beautiful violet-blue flowers. The flowers are trimorphic and in Illinois bloom from July to September. The funnel-form perianth is 2-lipped. The 3 lobes of the upper lip are grown together but the middle one is usually distinguished by 2 yellow spots. The 3 lobes of the under lip are spreading, and their claws, forming the lower part of the curving tube, are nearly separate to the base.



The 6 stamens are borne on the perianth and 3 of them have very short filaments. The anthers are oval and blue. The style also is bright blue and the stigma is minutely 3-6-toothed. The oblong ovary is 3-celled, but 2 cells are empty and the third produces a single ovule, so that the fruit has only 1 seed. After flowering the upper part of the perianth withers but the base hardens and persists around the fruit.

The Narrow-leaved Pickerelweed, *Pontederia cordata* L. var. *angustifolia* Torr., is a form having lanceolate or long triangular leaves with rounded base, 2-10 inches long and up to slightly more than one-half inch wide. It is nearly as common, having been observed from Ontario to New Jersey and south to Florida and Texas.

COMMON RUSH. BASKET RUSH

Juncus effusus L.

The Rushes are a family of some 300 Grasslike perennial herbs, 21 species of which are found in Illinois. They prefer wet or moist localities where they commonly grow in tufts. The leaves are either flattened or cylindrical, and in the latter case a large section of the family has hollow leaves with crosswise partitions at frequent intervals, making the leaves seem nodular.

The inflorescence is commonly paniculate or cymose, and may be terminal or lateral. Each flower consists of a 6-parted, green or brownish perianth, 3 or 6 stamens, and 1 pistil which fruits as a many-seeded capsule. The seeds are usually ribbed or covered with a network of ridges.

The Common Rush is truly cosmopolitan as it lives wherever there is marshy ground, nearly throughout North America and in Europe and Asia. The soft stem, 1 ½-4 feet high, bears a diffusely branching, cymose inflorescence. The rootstock is stout and branching. This is the Rush that in olden time was extensively used for mats, brushes and brooms, thatch roofs and all kinds of fiber work.

The parts of the green perianth are lanceolate and acuminate. The anthers of the 3 stamens are a little shorter than the filaments. The style is short. Many small seeds with short pale points are contained in the 3-celled, narrow, pointless and greenish brown capsule that is regularly dehiscent. The seed is very small, less than one thirty-secondth of an inch long, but is interesting in that examination under a lens will disclose a network of ridges in about 16 longitudinal rows.



The Lily family contains more than 2000 species, a great many of which are cultivated for food or the beauty of their flowers. The most important vegetables of this family are Asparagus and Onion, the latter one of the earliest of cultivated plants and well known to the ancient Egyptians and Hebrews. Some major garden flowers are the Tulip, Lily, Day Lily, Hyacinth, Spanish Bayonet and Lily of the Valley.

In this and a few other families it is often difficult to separate calyx and corolla, as the perianth is composed of 6 similar parts.

KEY TO GENERA

1. Flowers light blue..... *Camassia* p. 56
Flowers not blue..... 2
2. Flowers in umbels..... 3
Flowers not in umbels..... 4
3. Leaves all basal; odor strong..... *Allium* p. 51
Leaves not all basal; odor not strong..... *Smilax* p. 63
4. Leaves mostly whorled..... 5
Leaves not whorled..... 6
5. Leaves 3, in 1 whorl..... *Trillium* p. 60
Leaves in more than 1 whorl..... *Lilium* p. 53
6. Leaf bases grown around the stem..... *Uvularia* p. 50
Leaf bases not grown around stem..... 7
7. Leaves 1 or usually 2 in flowering plants..... 8
Leaves more than 2..... 9
8. Leaves all basal..... *Erythronium* p. 55
Leaves on stem..... *Maianthemum* p. 57
9. Leaves all basal..... 10
Leaves on stem..... 11
10. Leaves rigid and sharp pointed..... *Yucca* p. 62
Leaves neither rigid nor sharp pointed.... *Hemerocallis* p. 53
11. Style 1..... 12
Styles 3..... *Tofieldia* p. 49
12. Flowers in the axils of leaves..... *Polygonatum* p. 59
Flowers in a terminal inflorescence..... 13
13. Perianth of 6 separate parts..... *Smilacina* p. 57
Perianth tubular and 6-lobed..... *Aletris* p. 62

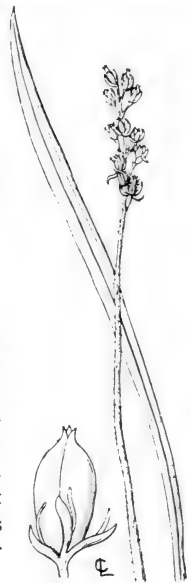
FALSE ASPHODEL

Tofieldia glutinosa (Michx.) Pers.

The False Asphodel is commonly found only in bogs throughout a comparatively narrow range, Newfoundland and Maine to Minnesota and Illinois, and in this state will be found probably only in the bogs and moorlands of Lake county. It is thus not a plant met ordinarily, but one for which a search must be made.

It is a perennial herb with a stem 6-20 inches tall, very hairy, and sticky because of its numerous black glands. There are usually 2-4 leaves near the base and the rest are strictly basal. Their blades are flat and narrow, one-quarter inch wide and 2-7 inches long.

The flowers, more or less clustered in threes, appear from June to August in a terminal raceme which is 1-2 inches long in flower and longer in fruit. The pedicels are covered with glands like those of the stem. The 6 very thin and greenish white segments of the perianth remain on the maturing fruit. There are 6 stamens with slender filaments. The 3-celled capsule is oblong and about twice as long as the perianth. It contains many seeds, each of which has a slender taillike appendage at either end.



And nearer to the river's trembling edge
 There grew broad flag flowers, purple
 pranked with white,

And starry river buds among the sedge,
 And floating water lilies, broad and
 bright,

Which lit the oak that overhung the hedge
 With moonlight beams of their own
 watery light;

And bulrushes, and reeds of such deep green
 As soothed the dazzled eye with sober sheen.

The Question—PERCY BYSSHE SHELLEY

BELLWORT

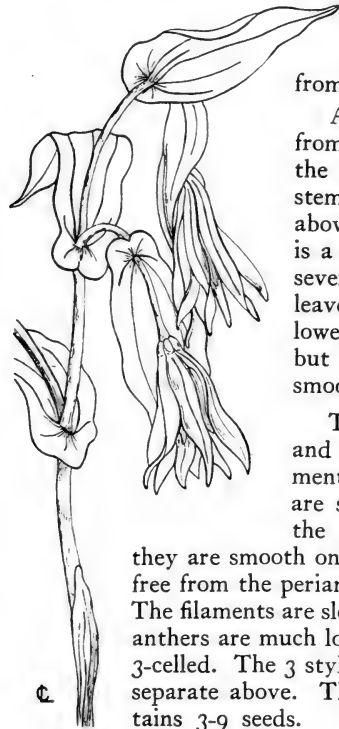
Uvularia grandiflora Sm.

The Bellwort is easily recognized by its foliage, for the base of each leaf is grown around the stem in such a way that it looks as though the stem had grown right through the leaf.

It grows in rich woods from Quebec to Ontario and Minnesota, south to Georgia, Tennessee and Kansas, and blooms from April to June.

A number of fleshy roots branch from the underground stem by which the plant is perennial. The aerial stem is 6-20 inches high and forked above the middle. Below the fork is a single leaf or none at all, whereas several are above the fork. The leaves are somewhat hairy on the lower surface, at least when young, but otherwise the whole plant is smooth.

The flowers are lemon yellow and always drooping. The 6 segments of the bell-shaped perianth are separate and they fall off after the flower has bloomed. Usually they are smooth on both sides. The 6 stamens are free from the perianth or attached to its very base. The filaments are slender and short and the narrow anthers are much longer. The ovary is 3-lobed and 3-celled. The 3 styles are united to the middle and separate above. The capsule is 3-angled and contains 3-9 seeds.



The other Bellwort of the region, *Uvularia perfoliata* L., has smaller flowers and is covered with a whitish bloom. There are 1-3 leaves below the fork and all the leaves are smooth. The plant grows 6-20 inches high in moist woods or thickets from eastern Massachusetts to Ontario, North Dakota and southwestward. It is a rarity in Illinois.

WILD ONION. NODDING ONION

Allium cernuum Roth

The Wild Onion grows on prairies, banks and hillsides from New York to British Columbia and south to West Virginia, Kentucky and New Mexico. It usually has a cluster of 1-2-inch bulbs on a short underground stem.

The flower stalk is 1-2 feet high and the leaves somewhat shorter. The many-flowered umbel is nodding, hence the name Nodding Onion. Below the umbel are 2 short bracts which soon drop off.

The bell-shaped, white or rose flowers of this species bloom in July or August. The stamens, longer than the perianth, mature and discharge their pollen one at a time. The stigmas do not open until all 6 anthers have discharged their pollen, and so assure cross-pollination. The capsule is 3-lobed and 6-seeded.



The Wild Leek, *Allium tricoccum* Ait., grows in rich woodland soil. It has a cluster of bulbs 1-2 inches high, seated on a short underground stem. The leaves appear very early in spring but wither before flowering time in June and July. The flower stalk is 4-5 inches tall and the umbel is not nodding. There are usually 2 fairly large bracts which at first enclose the flowers but later drop off. The pedicels become rigid and more than one-half inch long. The flowers are white and the stamens are not longer than the perianth. The deeply 3-lobed capsule is dehiscent but the round and shining black seeds remain on the plant for some time.

The Prairie Onion, *Allium stellatum* Ker, is a rare species in Illinois and more abundant westward to Missouri, Kansas and Minnesota. Here it occurs on sandy or gravelly prairies of the western border counties. The numerous leaves are long, very slender and flat, and rise from a small bulb covered with a firm, thick and smooth membrane. The erect umbel, which easily distinguishes this species from its nearest relative, the Nodding Onion, is at the top of a naked stem or scape and bears many small pink flowers. The Onion odor is very mild.

WILD GARLIC

Allium canadense L.

Of the several species of *Allium* that are cultivated, the most important are the English Garlic, the Chives and the common garden Onion, of which there are many varieties. All produce bulbs and all have the characteristic Onion odor. They are propagated by seeds or the small bulbs called sets. The bulb of Wild Garlic is covered by a netlike membrane.



Wild Garlic is common in moist meadows and open woods from New Brunswick to Minnesota and south to Florida, Texas and Colorado. It blooms in May and June and often is very showy. The solitary bulb is usually less than 1 inch high. The flowering stem grows 8-24 inches tall and the leaves, all basal, are ordinarily somewhat shorter. Just below the umbel are 2 or 3 white, broadly ovate bracts.

The flowers are pink or white. The persistent perianth is composed of 6 similar and nearly separate parts, with a stamen, the filament of which is widened below, attached to the base of each part. The pistil consists of a 3-celled ovary, a slender style and 3 small stigmas. The fruit is a capsule containing several black seeds.

Often some or all of the flowers are replaced by bulblets.

Another Wild Garlic, or Field Garlic, of southern and eastern counties is *Allium vineale* L., which has a very offensive odor and is thus an evil weed in pastures, for if eaten by cows it taints the milk and renders it worthless. From the very small and hard bulb, which is covered with a tough membrane, rise many soft, hollow leaves of dark green. The slender scape is very rigid and bears at the top a dense umbel of small greenish or purplish flowers. These are largely replaced by small, ovoid and hard bulblets of which each ends in a long threadlike appendage.

WILD ORANGE-RED LILY. WOOD LILY

Lilium philadelphicum L.

This Lily blooms in July and August and is common in fields where the soil is sandy, and at the edge of woods, from New England to the Rocky mountains.

The stem springs from a very scaly bulb and rises unbranched 2-3 feet, producing 1-3 flowers at the apex. The leaves are usually borne in whorls of 3 or more, though occasionally there is only 1 or 2 at a node.

The bud of the Wild Orange-red Lily is greenish, but when the always erect flower opens, the perianth is shown to consist of 6 reddish orange parts with purple spots inside toward the base. In western states a deep red variety is more frequently found. The 6 stamens are directly in front of the perianth segments and slightly attached to their bases, so that when pulled they come off together. The long style is somewhat thickened toward the upper end and the stigma is 3-lobed. The ovary contains 2 rows of closely packed ovules in each of its 3 cells, and the pod fruit is oblong and filled with flattened seeds.

The Day Lily, *Hemerocallis fulva* L., is a common but strikingly beautiful inhabitant of meadows and banks of streams throughout the state. Its 6-15 tawny orange flowers are borne on a single scape 3-6 feet high, and bloom through June and July. The Lilylike, bell-shaped perianth opens for a single day. Often great clumps of this plant are formed from its habit of spreading by means of its bright orange-red rhizomes, which are knotted like beads on a string.

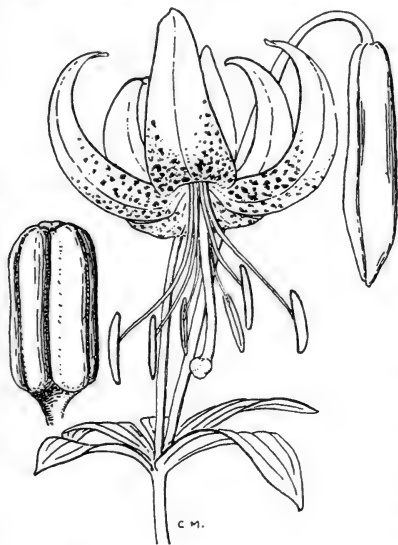


A pure, cool lily, bending
Near the rose all flushed and warm.
Guonare—E. L. SPROAT

TURK'S-CAP LILY

Lilium michiganense Farwell

The Turk's-cap Lily is the common species of the north central Mississippi valley, extending in two or three race forms from Minnesota to Tennessee and from the plains to the Alle-



gheny foothills. This is a newly erected species and according to its authority is the one for which *L. superbum* L. has traditionally been mistaken. Marking and formations in the root systems are the determining characteristics used to separate the species.

This perennial grows in moist fertile soil from a scaly bulb attached to a rhizome, which explains its objectionable migrating habit. The stems are rather stout, 2-9 feet high, and bear whorls of 6-12 lanceolate

leaves. The nodding flowers, sometimes 40 on a single stem but more commonly 2-6, are terminal and orange-red, thickly spotted with purplish brown. The 6 divisions of the perianth are strongly curved backward or even rolled upon themselves. The fruit is slightly 3-lobed and contains many black seeds.

The Turk's-cap Lily is often mistaken for the Canada or Wild Yellow Lily, *Lilium canadense* L. This flower, however, has a much yellower bloom and the divisions of its bell-shaped perianth are much less recurved. It is a species which authorities now agree is eastern and Alleghenian.

And the stately lilies stand
 Fair in the silvery light,
 Like saintly vestals, pale in prayer;
 Their pure breath sanctifies the air,
 As its fragrance fills the night.
 A Red Rose—J. C. R. DORR

YELLOW ADDER'S TONGUE

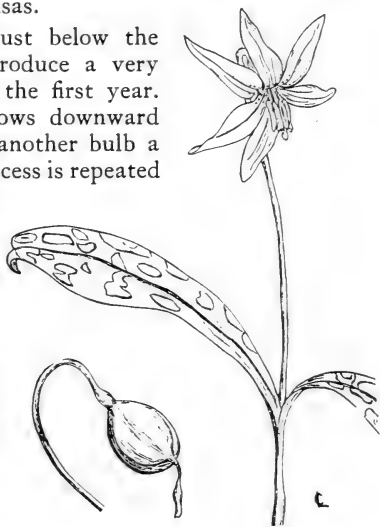
Erythronium americanum Ker

Not many of our early spring flowers are yellow, and of those that are, one, the Yellow Adder's Tongue, is very rare in Illinois. It grows in rich forest soil, particularly along the banks of streams, from New Brunswick to Ontario, south to Florida and Arkansas.

The seeds germinate just below the surface of the soil and produce a very small bulb bearing 1 leaf the first year. The next year a stem grows downward from this bulb and forms another bulb a few inches deeper. This process is repeated four or five years, the old bulb withering each time. When a bulb has been produced at a depth of 3-15 inches, depending on the character of the soil, it sends up a stem 5-10 inches high, bearing 2 pale green leaves mottled with purple, and 1 flower that blooms in April and May.

The 3 sepals are green and purple on the outside, and pale yellow inside, whereas the 3 petals are pale yellow on both sides. Both sepals and petals are dotted with reddish brown spots at the base. There are 6 stamens which have long brown anthers that open lengthwise. The pistil consists of a 3-celled ovary and a single style and stigma. The fruit is a capsule containing many seeds which are brown and curved when mature. Soon after the blooming season the leaves die and the capsule lies on the ground until ripe.

The White Dogtooth Violet, *Erythronium albidum* Nutt., is similar to the Yellow Adder's Tongue but has white flowers, and the style, which is more slender, bears 3 stigmas. In many places it is also more common.



WILD HYACINTH

Camassia esculenta (Ker) Robinson

The bulbs of this and related species are commonly called Quamash and are edible. The plant is easily cultivated and the Indians used it extensively as food.

Members of the Lewis and Clark expedition saved their lives by eating Quamash when their food supply ran out.

Wild Hyacinth is found in moist prairies and meadows and sometimes in open woods from Pennsylvania to Minnesota and south to Georgia and Texas, and should be carefully distinguished from the larger-flowered plant of the northwest. The bulb is 1-1½ inches high and its outer coat is nearly black. The flower stalk is 1-2 feet high and sometimes bears 1 or 2 short, narrow, nearly colorless leaves. The foliage leaves are all basal, grasslike and somewhat shorter than the stalk.

The pale blue flowers, blooming in April and May, are produced in a rather open raceme 3-8 inches long when in flower and longer in fruit. Each is borne in the axil of a bract. Bracts, pedicels and perianth segments are all about three-quarters of an inch long. The 6 stamens, attached by slender fila-

ments to the bases of the narrowly oblong, 3-5-nerved perianth segments, are somewhat shorter than the latter. The pistil consists of a sessile ovary, a slender style and a 3-lobed stigma. Numerous black, roundish and shining seeds are in each cell of the short, thick, 3-angled capsule the 3 valves of which are transversely veined.



FALSE SPIKENARD

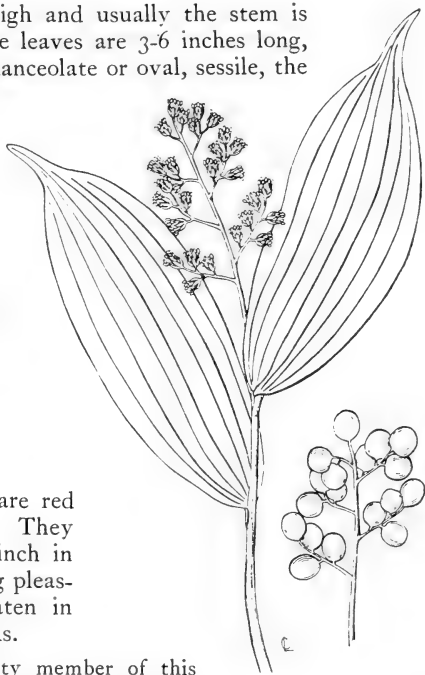
Smilacina racemosa (L.) Desf.

This species grows in rich woods from Nova Scotia to British Columbia and south to Georgia, Missouri and Arizona. In most parts of Illinois it is very common, and it blooms from May to July.

It grows 1-3 feet high and usually the stem is somewhat downy. The leaves are 3-6 inches long, acuminate and oblong-lanceolate or oval, sessile, the lower short petioled, finely hairy beneath and sometimes above, and with margins finely hairy.

Numerous small white flowers are borne in a dense panicle which is 1-4 inches long and peduncled. The 6 perianth segments are oblong, equal and separate, and at the base of each a stamen is attached by its slender filament. The berries are red speckled with purple. They are about one-quarter inch in diameter, have a strong pleasant odor, and are eaten in great numbers by birds.

Another very dainty member of this family, which grows in moist woods and blooms from May to July, is the Wild Lily of the Valley, *Maianthemum canadense* Desf. It is small, with a slender, often zigzag stem 2-7 inches high, usually bearing only 2 alternate leaves. The leaves are lanceolate-ovate, heart shaped at the base, with a very narrow sinus, and are sessile or short petioled. The small white flowers are produced in a terminal, rather dense and many flowered raceme. Unlike most Lilies, the perianth segments and the stamens are 4, and the ovary is 2-celled. The fruits are speckled pale-red berries about one-fifth of an inch in diameter.



FALSE SOLOMON'S SEAL

Smilacina stellata (L.) Desf.

There is really nothing false about this plant. It is called False merely because its leaves closely resemble those of the Solomon's Seal. In fact they are so similar that before the inflorescence appears it is very easy to mistake one species for the other.



False Solomon's Seal grows on moist wooded banks from Newfoundland to British Columbia and south to Virginia, Kentucky, Kansas and California. It also occurs in northern Europe. In our climate it blooms in May and June.

It has a stout, fleshy underground stem and an aerial stem, also rather stout, 8-20 inches high, smooth, either straight or somewhat zigzag, and quite leafy. All the leaves are sessile and somewhat clasping, smooth on the upper side but minutely hairy below.

The greenish white flowers are borne in a simple several-flowered raceme which is sessile or short peduncled and only 1-2 inches long. The pedicels are usually shorter than the flowers. The perianth is composed of 6 separate segments which are a little shorter than the 6 stamens. The pistil has a 3-celled ovary that is just a little longer than the style, and a very slightly 3-lobed stigma.

The fruit is a berry usually containing 6 seeds. It is sometimes green with 6 black stripes and in other cases entirely black.

Although the Three-leaved False Solomon's Seal, *Smilacina trifolia* (L.) Desf., extends across the continent in the cooler regions of Labrador and New Jersey to British Columbia, it is infrequent in the bogs of northern Illinois. It may readily be known by the 3 smooth leaves having sheathing bases on the smooth stem. This is a dwarf plant, up to 6 inches, crowned with a small raceme of few rather large, starlike, 6-pointed flowers on peduncles. The small berry fruits are greenish speckled with red-brown.

GREAT SOLOMON'S SEAL

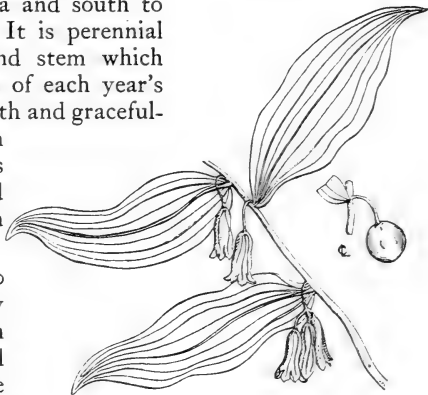
Polygonatum commutatum (R. & S.) Dietr.

The many joints of the rootstocks in this genus account for the name, from two Greek words meaning many, and knee.

The Great Solomon's Seal is found in rich woods and along the shaded banks of streams from New Hampshire to Manitoba and south to Georgia and Arizona. It is perennial by a thick underground stem which plainly shows the scars of each year's aerial shoots. The smooth and gracefully curved, upright stem is 1-8 feet high. Leaves are perfectly smooth and somewhat darker green above than below.

The flowers are 2-10 in an umbel, or rarely 1. The tubular perianth is greenish white and 6-lobed at the end. The 6 stamens, having anthers arrow shaped at the base, are attached at the base of the perianth and grown fast to it for half their length or more. The pistil consists of a 3-celled ovary, a slender style and a slightly 3-lobed stigma. The fruits are dark blue berries, very handsome in summer.

The Small Solomon's Seal, *Polygonatum biflorum* (Walt.) Ell., is more common than the Great. It grows 8-36 inches high and is zigzag near the top. The leaves are pale and somewhat hairy beneath but smooth above. The 1-3 flowers on each peduncle and the berries are a little smaller than in the Great Solomon's Seal, but are otherwise similar.



The Rose into the Tulip's ear
Murmured: "The Lily is a sight;
Don't you believe she *powders*, dear
To make herself so saintly white?
She takes some trouble, it is plain,
Her reputation to sustain."

Tell-tale—OLIVER HERFORD

PURPLE TRILLIUM. WAKE ROBIN

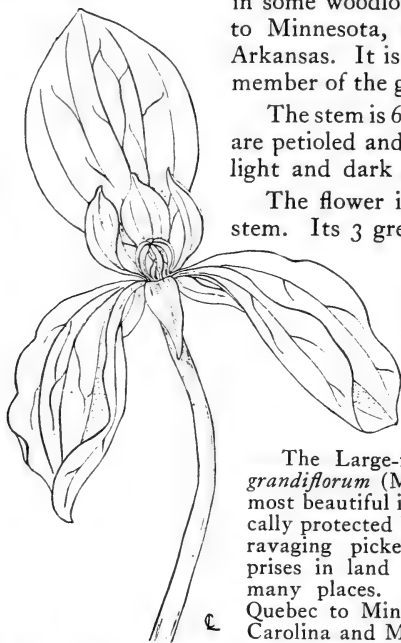
Trillium recurvatum Beck

Trilliums are easily recognized by the fact that the parts of the plant are grouped in threes.

This is our commonest Trillium, occurring by the thousands in some woodlots, and ranging from Ohio to Minnesota, south to Mississippi and Arkansas. It is also the least conspicuous member of the genus.

The stem is 6-18 inches high. The leaves are petioled and mottled characteristically light and dark green.

The flower is sessile at the tip of the stem. Its 3 green sepals are strongly reflexed, whereas the red-purple petals are nearly erect or spreading. The anthers of the stamens are much longer than the filaments. The fruit is 6-winged at the top.



The Large-flowered Trillium, *Trillium grandiflorum* (Michx.) Salisb., is one of the most beautiful in the genus, and is theoretically protected by law in Illinois. However, ravaging pickers and commercial enterprises in land have exterminated it from many places. It occurs in woods from Quebec to Minnesota and south to North Carolina and Missouri, and blooms in May and June. The stem is usually stout and 8-18 inches high. The leaves are broadly ovate, 2-6 inches long, rather long pointed and sessile or nearly so. The lanceolate sepals are 1-2 inches long and the white or pinkish, strongly veined petals are still longer. The anthers are about one-half inch long and the filaments are shorter. The berry is black, slightly 6-lobed and nearly 1 inch in diameter.

The Sessile-leaved Trillium, *Trillium sessile* L., is often called Sessile-flowered Wake Robin because in this plant both the leaves and flowers are sessile. The greenish purple petals are lanceolate, erect and spreading, sepals are spreading, and the globose fruit is 6-angled and slightly winged. This is a rare species of moist woods especially in the north and the Illinois valley.

SNOW TRILLIUM. DWARF WHITE TRILLIUM

Trillium nivale Riddell

The Snow Trillium is one of the very earliest of large spring flowers. It is distributed in woods from Pennsylvania and Ohio to Minnesota, south to Kentucky and west to Nebraska, but within this region it is of quite local occurrence, being entirely absent from some localities and in other places forming large and conspicuous patches in the woods.

The stem is 2-6 inches high and the 3 leaves are petioled. The peduncle is sometimes erect and sometimes bent or curved beneath the leaves. The 3 sepals are green and the 3 petals pure white. The anthers of the 6 stamens are about as long as the filaments. The fruit is a 3-lobed berry.

The Drooping Trillium, *Trillium declinatum* (Gray) Gleason, is another white Trillium which occurs in woods and blooms in May and June. It is larger than the Snow Trillium, the stem being about 1 foot high. Leaves are 3-5 inches long and about as broad. They have a short point and are narrowed at the base but are very nearly sessile. The peduncle is 1½-2½ inches long and either horizontal or bent downward. The unpleasantly scented flower has 3 white, oblong-ovate petals and 3 green sepals about one-half inch long, filaments of the 6 stamens half as long as the anthers, and a white or pinkish ovary.

A dainty inhabitant of rich woods but rare in Illinois is the Nodding Trillium, *Trillium cernuum* L., in which the horizontal or declined stem hides the white flowers beneath the broad leaves. Petals and the ovary may be pinkish, and the filaments are nearly or exactly equal to the anthers in length. The fruit is a red-purple ovoid berry. The range of this species is from Newfoundland to Manitoba and south to Georgia and Missouri. It should not be confused with the larger, strong-odored *T. declinatum*, above.



Nearby a scarlet creeper trails a fence,
Nearer a hawthorn tree

Drops its wee crimson apples into the lush green grass.

The Golden Bowl—MARY McMILLAN

COLICROOT. STAR GRASS

Aletris farinosa L.

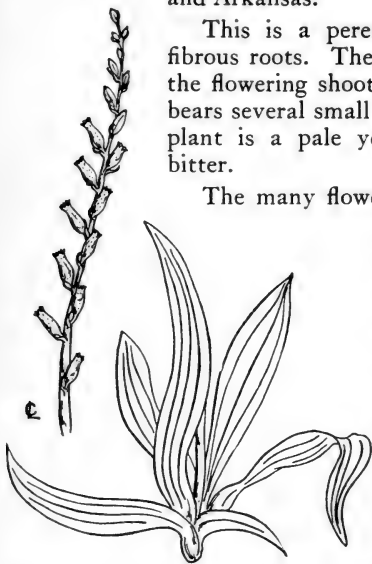
The Colicroot is a shy inhabitant of out of the way places, and is found in dry, more often in wet, but only in sandy soil. It occurs locally from Maine to Minnesota and south to Florida and Arkansas.

This is a perennial with numerous tough fibrous roots. The foliage leaves are basal but the flowering shoot, which grows 1-3 feet high, bears several small bractlike leaves. The whole plant is a pale yellowish green, and is very bitter.

The many flowers, borne in an erect spicate raceme 4-12 inches long, bloom in July and August. The white cylindrical perianth is 6-lobed at the top, with the 6 stamens attached to the tube just below the lobes. Thickly set points roughen and give a mealy appearance to the outside of the perianth, from which comes the generic name meaning a slave who grinds corn. The pistil consists of a 3-celled ovary, an awl-shaped style and 3 stigmas.

The fruit is a capsule containing numerous seeds.

The plant of which Colicroot appears almost as a smaller edition is the Spanish Bayonet, *Yucca filamentosa* L., a very striking plant of the southeastern United States which naturally or by artificial means has become well established in many parts of the Ozark uplift. The great basal cluster of swordlike leaves remains green throughout the winter, and in summer if the plant is old enough it sends up a stout scape 2-10 feet high and bearing a great panicle of white flowers. The flowers are $1\frac{1}{2}$ - $2\frac{1}{2}$ inches long, ovate and 6-divided, with 6 stamens shorter than the perianth. It requires the Pronuba moth to pollinate and fertilize it, and pays for the work by harboring in its 3-celled capsule along with the many seeds, the egg of the moth.



CARRION FLOWER

Smilax herbacea L.

It is a curious fact that some odors which are very unpleasant to the human sense of smell are most attractive to certain flies. Thus carrion flies, drawn to this species by its disagreeable odor, pollinate it and give to it their name.

This plant grows in woods and thickets from New Brunswick to Manitoba, south to Florida, Louisiana and Oklahoma. It is perennial by numerous short thick tubers. The smooth, usually branched stem is 3-15 feet high and climbing by means of tendrils. The smooth, 7-9-nerved leaves are ovate or rounded, mostly heart shaped at the base and terminating acutely to short-acuminately.

The peduncles are 4-9 inches long and the umbels are 15-80-flowered. There are 6 separate greenish white segments in the perianth, and the flowers are dioecious. The fruits are bluish black 2-4-seeded berries.

The Shining Green Brier or Horse Brier, *Smilax rotundifolia* L., has a hard, more or less angular stem often of great length, bearing numerous moderately stout prickles. The alternate 5-nerved leaves are 3-6 inches long and nearly round, varying to ovate or lanceolate on young shoots. The peduncle, 1 inch long or less, is slightly flattened and bears 6-25 green flowers the perianth segments of which are hairy tipped. The berries are black, one-quarter inch in diameter and 1-3-seeded. This species grows in moist thickets and is especially abundant in southern Illinois. It ranges from Nova Scotia to Minnesota and south to Georgia and Texas.



STAR GRASS

Hypoxis hirsuta (L.) Coville

The Amaryllis family contains a number of important decorative plants, of which the best known are Narcissus, Daffodil and Jonquil. The Century Plant is also a member of this family and likewise the Sisal Hemp from which twine and rope are made.

Star Grass grows in dry or moist grasslands from Maine to western Ontario, south to Florida and Texas. It is perennial by a corm, from which arises a tuft of linear grasslike leaves, all basal and more or less hairy.



The flowering stem, 2-6 inches high and also hairy, comes from the midst of the basal leaves. The flowers are 1-6 in an umbel. The perianth, attached above the ovary, is composed of 6 separate and similar parts which are bright yellow on the inner or upper surface and greenish and somewhat hairy on the outer. To the bases of the parts are attached the 6 stamens, somewhat unequal in length. The style is a little shorter than the stamens and has 3 angles down which the stigmas extend. The capsule is oblong and thin walled, and the seeds are slightly angled and black.

The Daffodil, *Narcissus Pseudo-Narcissus* L., of Illinois is commonly found along field edges and roadsides, especially in the south. A leafless angled scape 6-12 inches high springs from the whitish or brownish bulb and bears a terminal, usually solitary flower. The 6 yellowish perianth segments are separate and to their bases is fixed the cylindrical yellowish crown, enclosing the 6 stamens and the pistil with a deeply inferior ovary.

And sweet the brimming dew that overfills
 The golden chalices of all the trembling daffodils.
The Old-fashioned Garden—JOHN RUSSELL HAYES

LARGER BLUE FLAG. FLEUR DE LIS

Iris versicolor L.

To the Iris family belong the cultivated Crocuses which so delight us in early spring. Here also belongs the Blackberry Lily which is commonly cultivated and which has escaped in some places to roadsides and woods.

The Larger Blue Flag or Fleur de Lis is found in wet places throughout the eastern half of the United States and Canada, and blooms from May to July. It is a perennial with a stout, irregularly branched underground stem that gives rise to the flowering stalk and a compact cluster of blade-like leaves, nearly vertical and 1-2 feet long. The stems are leafy and 1-3 feet high.

The splendor of this flower aptly suggests its name, taken from the Greek meaning rainbow. The 3 recurved sepals and 3 upright petals are violet-blue with purple veins and are variegated toward the base with green, yellow and white. The style, colored like the rest of the flower, is divided into 3 branches which arch over the sepals and might easily be mistaken for petals. The end of each of these branches is turned back to form a crest. Underneath this crest is a thin lip or shelf the upper surface of which is covered with minute hairs and a sticky secretion. This is the stigma. Curved under these branches of the style are the 3 stamens, each with an anther as long as the filament that bears it. The ovary is below the other parts of the flower and develops into a 3-celled capsule with 2 rows of seeds in each cell.



I saw no planted things,
But white and purple butterflies
Tied down with silken strings.
Iris Flowers—MARY McNEIL FENOLLOSA

WHITE BLUE-EYED GRASS

Sisyrinchium albidum Raf.

The White Blue-eyed Grass, common in open grassy places from North Carolina to Ohio, Ontario and Wisconsin, south to Arkansas and Mississippi, blooms from April to June. It produces a large number of grasslike basal leaves and several flattened stems 3-24 inches high.

The white or pale blue flowers are produced in an umbel between 2 bracts that form a sort of spathe. The perianth is composed of 6 similar parts, and the 6 stamens have their filaments united more than halfway to the top. The ovary, which is inferior, is 3-lobed, and the style is also. The fruit is a capsule which is pale straw color when mature.

The Dark Blue-eyed Grass, *Sisyrinchium angustifolium* Mill., is quite similar to the white species but the flowers are deep violet-blue and the capsules are dull brown, sometimes tinged with purple. It usually blooms a little later, from May to July.

The Large Blue-eyed Grass, *Sisyrinchium gramineum* Curtis, grows 1-2 feet high in wet meadows and deep woods from New Hampshire to Minnesota and southwest. Its 2-4 large, deep blue flowers bloom in April and June. They are borne at the ends of 2 unequal branches which terminate the stem in the axil of the solitary grasslike stem leaf. Below are several basal leaves, with roughened edges, about one-quarter inch wide and nearly as long as the flower stalk.

A WHITE IRIS

Tall and clothed in samite,
Chaste and pure,
In smooth armor—
Your head held high
In its helmet
Of silver:
Jean D'Arc riding
Among the sword blades!

Has spring for you
Wrought visions,
As it did for her
In a garden?

PAULINE B. BARRINGTON



Aside from having some of the most beautiful and highly prized flowers known to man, the Orchis family is commercially important, since it is from the seed pods of two tropical climbing species that vanilla is obtained.

Forty kinds of Orchids are known to grow wild in Illinois, and several of them were at one time abundant. Now, however, not a single species is common.

The flower of the Orchid is always in threes. The 3 sepals are alike and the 2 lateral petals, always alike, commonly resemble them. The third petal forms the lip and is the most colorful and striking part of the flower. It is always dissimilar, often markedly so, usually larger and saclike, frequently bearded or fringed and fitted with a spur which contains nectar for the attraction of insects. All genera except *Cypripedium* have a single fertile stamen which unites with the style to form the column in the axis of the flower, at the base of the lip. The style often terminates in a beak at the base of one anther or between the sacs of two. The stigma is the sticky undersurface of the beak.

The pollen of most of these plants is peculiarly formed. It consists of 2-8 pear-shaped and usually stalked masses in the 2 cells of each anther. These masses, connected in pairs from cell to cell by elastic threads which at their point of intersection are attached to a sticky disk, are called pollinia.

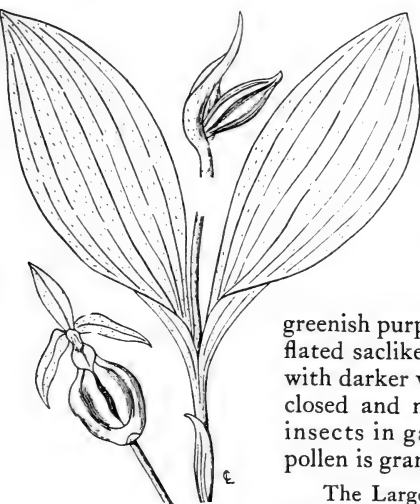
The seeds of Orchids are extremely small and have very little reserve food in them. In many species they will not germinate under natural conditions except in the presence of certain kinds of fungi. In other species the seeds will germinate but are unable to develop beyond the seedling stage unless the proper fungus, which is always found in the roots of mature Orchids, is present.

This dependence upon fungi has made the growing of Orchids from seed a very difficult undertaking. Recently it has been found that in some cases at least the stimulus for development that comes from the fungus can be supplied by the use of certain chemicals, such as sugars, and Orchid growers are now substituting this method quite extensively.

MOCCASIN FLOWER. STEMLESS LADY'S SLIPPER

Cypripedium acaule Ait.

This handsome and delightfully fragrant Orchid was formerly common but is now very rare. It grows in dry sandy or rocky woods from Newfoundland to Manitoba and south to North Carolina and Tennessee, and blooms in May and June.



It has fleshy fibrous roots, 2 basal leaves and a rather stout, 1-flowered stalk 6-15 inches high. Stem and leaves are glandular hairy.

The sepals and lateral petals are greenish purple, whereas the large inflated saclike lip is a beautiful pink with darker veins. The lip is nearly closed and must be forced open by insects in gathering nectar. The pollen is granular.

The Larger Yellow Lady's Slipper, *Cypripedium parviflorum* Salisb. var. *pubescens* (Willd.) Knight, grows in woods or in swampy or boggy places. It is a larger plant, 1-2 feet high, and the stem bears several oval leaves 2-6 inches long and 1-3 inches wide. The greenish sepals, striped with purple, are ovate or lanceolate and longer than the lip, whereas the lateral petals, similarly colored and always twisted, are narrower. The lip is a large inflated sac with a rounded opening on the upper side. It is pale or golden yellow and 1-2 inches long.

The Smaller Yellow Lady's Slipper, *Cypripedium parviflorum* Salisb., is similar but the petals are reddish brown and the lip, much smaller than in the larger variety, is very fragrant. The species is very rare in sandy swamps of the state.

The Small White Lady's Slipper, *Cypripedium candidum* Muhl., is a dainty orchid of cool boggy prairies and grows in clumps of 2-20 or more stems. The moccasin-shaped lip is less than 1 inch long and is white outside and purple striped within. The other petals and the sepals are narrow, elongated, more or less twisted, and spotted with purple.

PURPLE FRINGED ORCHIS

Habenaria psycodes (L.) Sw.

The Purple Fringed Orchis grows in wet woods, meadows and swamps from Newfoundland to Minnesota and south to North Carolina and westward. It has fleshy, somewhat tuberous roots and a slender leafy stem 1-3 feet high. Leaves vary from oval to lanceolate and are 2-10 inches long and 1-3 inches wide.

This increasingly rare Orchid blooms in July and August. The lilac or purplish and delicately fragrant flowers are borne in a dense raceme 2-6 inches long. The upper sepal is a little narrower than the lower ovate 2, and the 2 lateral petals are oblong and toothed along the upper margin. The lip is 3-parted, the segments fan shaped and beautifully fringed. At the base the lip is extended into a spur about three-quarters of an inch long. The pollen is in the form of pollinia.

The White Fringed Orchis, *Habenaria leucophaea* (Nutt.) Gray, is abundant locally across the northern third of the state. The stout, angled stem, 1½-2½ feet high, bears the lanceolate leaves 4-8 inches long, and is tipped with the 3-5-inch, loosely flowered spike. The large flowers are fragrant and white, sometimes tinged with green. The obovate petals are cut toothed and about one-quarter inch long, and the 3 wedge-shaped segments of the half-inch lip are copiously fringed. The spur is 1-1½ inches long.

In northern Illinois bogs and swamps the Tall Green Orchis, *Habenaria hyperborea* (L.) R. Br., may be found. The 2-3-foot stem bears many lanceolate leaves 2-12 inches long and is topped by a narrow 2-8-inch spike of greenish yellow flowers. Sepals and petals are oval, blunt and one-quarter inch long, and the somewhat larger lip is deflexed and bears at its base a blunt, narrow spur as long as itself.



GRASS PINK

Calopogon pulchellus (Sw.) R. Br.

This Orchid is the only member of its genus. The generic name, from two Greek words meaning beautiful beard, and the Latin specific name meaning beautiful, refer particularly to the lustrous fringe on the lip of the flower.

The Grass Pink grows in open bogs and meadows from Newfoundland to Florida, Minnesota and Missouri. It is very rare in Illinois but may be found occasionally in small colonies in the northern part of the state.

The scape arises 1-1½ feet high from a solid bulb and is sheathed below by the base of the solitary grasslike leaf. Below the leaf are several scales.

The raceme inflorescence has 4-12 purplish pink flowers, each in the angle of a small bract. The lateral sepals are flat, curved and tapering, and the upper is narrower. The petals are lanceolate, obtuse and constricted at the middle. The broadly triangular lip is as though hinged at the base and is bearded along the upper side with yellow and

purplish crimson hairs. The 2-celled anthers contain pollinia, and the column is about as long as the lip and 2-winged at the summit. The capsule is oblong and nearly erect.

The Ragged Green Orchis, *Habenaria lacera* (Michx.) R. Br., also called Fringed Green Orchis, is a frequenter of swampy grounds, wooded bogs or open swales from New England to Minnesota, south to Georgia and Missouri. The stem bears several firm lanceolate leaves, the upper gradually smaller and narrower. The 2-6-inch spike is loosely flowered. The yellowish green flowers are one-half to three-quarters of an inch long and the lip is one-half inch long, deeply 3-parted and narrowly fringed on each part. The spur of the lip and the ovary are also one-half inch long.



PUTTYROOT. ADAM AND EVE

Aplectrum hyemale (Muhl.) Torr.

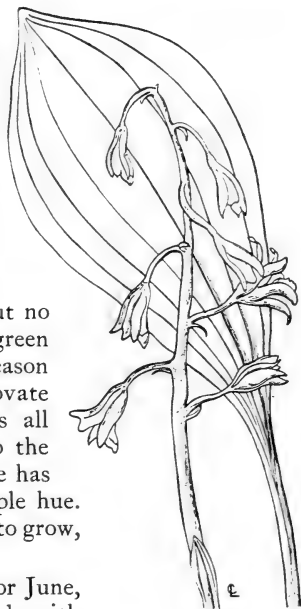
This plant arises from a corm, attached to a second one which will give rise to the next year's plant. This attachment accounts for the name Adam and Eve, and the name Puttyroot refers to the consistency of the corms.

This Orchid is found in rich woods from Vermont to Saskatchewan and Oregon, south to Georgia, Missouri and California. It is rare in Illinois, having so far been recorded less than a dozen times, and then as isolated plants from widely separated parts of the state.

The flowering stem is 1-2 feet high and usually bears 3 scales but no leaves. A single thick and dull green basal leaf is produced in late season and when fully grown is oblong-ovate and 3-5 inches in length. It lies all winter on the ground attached to the plant, and by spring the underside has assumed an exquisite reddish purple hue. Before the new flower stalk begins to grow, the leaf disappears.

The flowers, blooming in May or June, are dull yellowish brown mixed with purple. The 3 sepals and the lateral petals are quite similar, linear-lanceolate and about one-half inch long. The oblong lip is somewhat shorter than the other petals, blunt, barely 3-lobed and with its margin fringed. The column is shorter than the lip and slightly curved. The oblong-ovoid capsule is angled and a little less than 1 inch long.

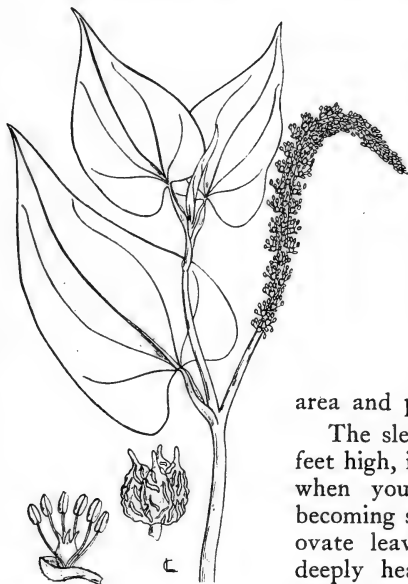
A pale, pure yellow form of this plant is sometimes found, and may be growing along with the spotted.



LIZARD'S TAIL

Saururus cernuus L.

The Lizard's Tail is related to the plant which gives us black pepper. It is the only species of the genus and the only member of the Pepper family native to Illinois; most of the others are tropical.



The Lizard's Tail grows in swamps and shallow water throughout most of eastern United States, and blooms from June to August. Its slender underground stems live over winter and propagate the plant by branching and sending up new shoots. A colony thus established may occupy a considerable area and persist for many years.

The slender and erect stem, 2-5 feet high, is sparingly branched and when young slightly hairy, later becoming smooth. The dark green, ovate leaves are 3-6 inches long, deeply heart shaped at the base, entire and palmately 5-9-ribbed.

There are several 4-6-inch and very dense spikes of fragrant flowers. The tips of the spikes, on whose account the plant name is derived, droop as the flowers mature. Neither calyx nor corolla is present but the stamens and pistil are white and fairly conspicuous. Stamens are 6-8 and the pistil is composed of 3 or 4 parts, each containing 1 seed. The fleshy fruit is one-eighth inch in diameter and becomes much wrinkled when dry.

Men call me Birch Tree, yet I know
 In other days it was not so.
 I am a Dryad slim and white
 Who danced too long one summer night,
 And the Dawn found and prisoned me!

The Spirit of the Birch—ARTHUR KETCHUM

HAZELNUT

Corylus americana Walt.

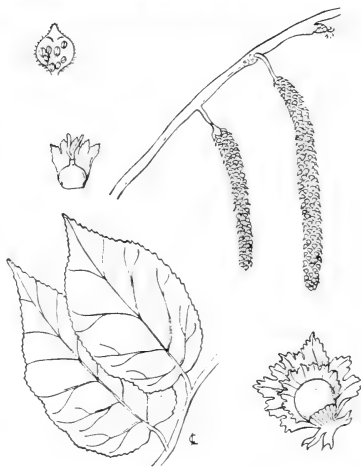
The Birch family is made up entirely of trees and shrubs, and includes also the Birch, Alder, Blue Beech and Ironwood. The Hazelnut is not a wild flower but a fine early spring-blooming shrub which might well be used more extensively as an ornamental plant. It is easily grown, adapts itself admirably to hedges, and the fruits are as tasty as imported Filberts, though smaller.

The Hazelnut grows 3-12 feet tall along fence rows, forest borders and similar places in moist and dry situations from Maine to Saskatchewan, south to Florida and Oklahoma. It blooms in March and April and the nuts are ripe in September and October.

The finely toothed leaves are oval or ovate, with tips acute or acuminate, smooth or nearly so above and finely hairy beneath, and 3-6 inches long. Stiff pinkish hairs cover the young shoots but the twigs become smooth.

The flowers are monoecious. In early spring the staminate flower is produced in a pendulous catkin which was formed late in the preceding fall. There are 4 stamens and 2 bractlets which are more or less attached to the scale of the catkin. Each stamen is split in such a way that there appear to be 8 stamens with 1-celled anthers.

The pistillate flowers are borne, several in a cluster, from scaly buds at the ends of short branches. Each consists of 1 pistil with a 5-lobed calyx grown fast to the ovary. The style is short and there are 2 red stigmas. Surrounding the flower are 2 bractlets, enlarged in fruit and forming the husklike covering of the nut.



WOOD NETTLE

Laportea canadensis (L.) Gaud.

The Nettle Family is represented in Illinois by many species, but because they bloom inconspicuously only two species are mentioned here—one noted not for attractive flowers but its stinging hairs.

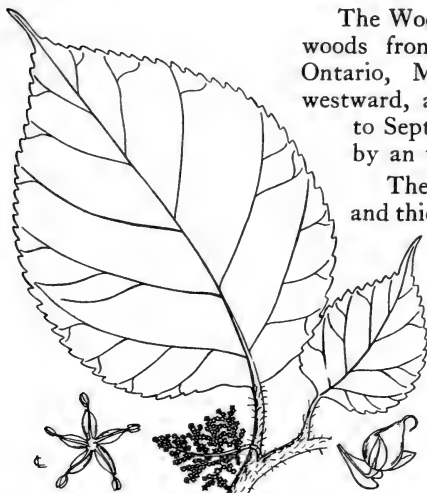
The Wood Nettle grows in rich woods from New Brunswick to Ontario, Minnesota and south-westward, and blooms from June to September. It is perennial by an underground stem.

The plant is 1-4 feet tall and thickly covered with stinging hairs. The hairs are sharp enough to penetrate clothing, and this accomplished, the slightly enlarged end easily breaks off, allowing the irritating acid that fills the hollow interior to strike the skin. Fortunately the

irritation does not last long. The leaves are thin and may be smooth or with some stinging hairs.

The flowers are imperfect and the forms are separated, those in the lower clusters being staminate and in the upper pistillate. Each staminate flower consists of 5 sepals, 5 stamens and a rudimentary ovary. The pistillate flower consists of 4 very unequal sepals and a simple pistil with a slender style that remains on the akene fruit.

Hemp, *Cannabis sativa* L., is a minutely downy plant abundant along some watercourses. It is grown in this country for its fibers which are used in cordage, and in the Orient it is the source of hashish. The stem is 3-10 feet tall and the branches are nearly erect. The petioled leaves, opposite or alternate, are palmately 5-11-divided to the base. The greenish, axillary flowers are dioecious, the staminate paniced and the pistillate spicate.



BASTARD TOADFLAX

Comandra umbellata (L.) Nutt.

The Sandalwood family is small, unimportant and chiefly tropical. The Bastard Toadflax is the only member dwelling in Illinois, and it is interesting principally because of its parasitic habit. Although it has green leaves and can manufacture food for itself as well as any green plant, it often attaches its roots to the roots of other plants, mostly trees and shrubs, and robs them of a portion of their food or food materials.

The Bastard Toadflax is found in dry, mostly sandy soil from Maine to Wisconsin and south to Georgia, Arkansas and Kansas. It is an herbaceous perennial with an underground stem and very leafy, usually branched, upright shoots 6-16 inches high. The leaves are pale beneath, with the pale midrib prominent.

Greenish white flowers bloom from late April to early July. They are perfect but lack a corolla. The calyx is grown fast to the ovary but is 5-lobed above. Each of the 5 stamens is attached to the base of a calyx lobe by a tuft of hairs. The style is slender. The fruit is 1-seeded, resembles a small drupe and is conspicuously crowned by the persistent calyx lobes.

Another Bastard Toadflax, *Comandra Richardsiana* Fernald, has leaves equally green on both sides, much firmer and inconspicuously veined. The rootstock is at the surface of the soil. This plant is also found on dry sandy soil, but from eastern Quebec to Saskatchewan, south to the Great Lakes region, Missouri and Kansas. It flowers from May to August.

Basil, Boneset, Toadflax, Tansy,
Weeds of every form and fancy;
Milkweed, Mullein, Loosestrife, Jewelweed,
Mustard, Thimbleweed, Tear-thumb (a cruel weed).
Clovers in all sort—Nonesuch, Melilot;
Staring Buttercups, a bold and yellow lot.
Daisies rioting about the place
With Black-eyed Susan and Queen Anne's Lace . . .

Joe-Pyeweed—LOUIS UNTERMAYER



WILD GINGER

Asarum canadense L.

Many people have tramped the woods for years without seeing the flower of the Wild Ginger, yet this plant is quite common throughout our state and its flower is relatively large and pretty. However, the flower is seldom seen because it is produced so close to the ground that it is hidden beneath leaves and forest debris.



This plant is easily transplanted and grows well in rich soil in shady places, spreading by means of a brown or greenish brown underground stem. It is found throughout the states bordering the Mississippi river, south to Missouri, and the eastern states, south to North Carolina.

In spring 2 long-petioled kidney-shaped leaves arise from the rootstock, become 5-7 inches broad and remain green through the summer. The stem has a strong odor of ginger when broken or bruised.

The flower blooms in April or May but has no corolla. The 3-lobed calyx is grown fast to the ovary and is purplish green on the outside and rich brownish purple or chocolate color within. The filaments of the 12 stamens are slender and extend beyond the short anthers, terminating in sharp points. They adhere above to the column, of 6 united styles, and their bases expand below into a case that encloses the ovary. The ovary is 6-celled and matures into a capsule containing many seeds.

The Short-lobed Wild Ginger, *Asarum canadense* L. var. *reflexum* (Bicknell) Robinson, is almost a duplicate of the species but the calyx segments are short, deltoid and almost from the opening of the flower are abruptly reflexed, strongly and permanently. It is found mostly in the southern portion of Illinois.

VIRGINIA SNAKEROOT

Aristolochia Serpentaria L.

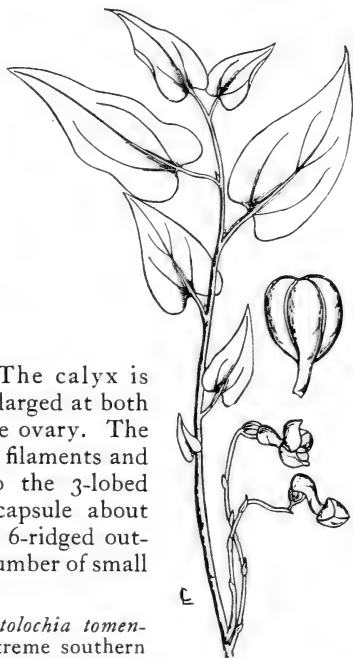
The Virginia Snakeroot is one of the more curious flowers in this small family. It occurs in rich or dry woods from Connecticut to Michigan and south to Florida, Louisiana and Missouri. In Illinois it will likely be found only in the south.

It is a perennial herb with a short underground stem and fibrous aromatic roots that contain a stimulant used in medicine. The upright leafy shoot grows 10-36 inches high but the flowers are all produced at the base of the plant on short scaly branches, or rarely underground.

There is no corolla. The calyx is shaped like an S somewhat enlarged at both ends and is grown fast to the ovary. The 6 stamens, in 3 pairs, have no filaments and the anthers are attached to the 3-lobed style. The fruit is a dry capsule about one-half inch in diameter and 6-ridged outside, containing a very large number of small flattened seeds.

The Woolly Pipevine, *Aristolochia tomentosa* Sims, is also found in the extreme southern part of the state. It is a woody twining vine which is very hairy. The flowers are shaped very much like an old-fashioned Dutch pipe. The calyx tube, $1\frac{1}{2}$ inches long and sharply curved, is yellowish green except at the 3-lobed, dark purple limb. The 6 anthers are united in pairs beneath the 3 spreading lobes of the stigma. The flowers have a rather unpleasant odor and are pollinated by flies.

Lilacs have bloomed and faded, and the rose
Has dropped its petals, but the clover blows,
And fills its slender tubes with honeyed sweets;
To James Russell Lowell—OLIVER WENDELL HOLMES



WOOD KNOTWEED

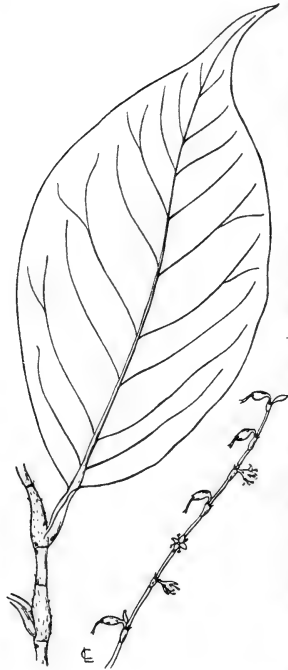
Polygonum virginianum L.

The Buckwheat family is quite large and contains the cultivated Buckwheat and all of the Docks and Smartweeds as well as the plants included here.

There are many kinds of Knotweeds, a number of which grow in dry places and others in wet. The Wood Knotweed, however, grows as a rule only in woods and thickets. It is found from Nova Scotia to Minnesota and south to Florida and Texas, and blooms from July to November.

The stem is 1-4 feet tall and mostly smooth. It may be unbranched or with a few branches above the middle. It is swollen at the joints, and the leaf stipules form cylindrical sheaths about the joints. These sheaths are hairy and fringed at the top with short bristles.

The flowers are borne on a long slender spike. There is no corolla but the greenish white calyx, which is unequally 4-parted, is somewhat corollalike. There are 5 stamens and 1 pistil with 2 long styles. The fruit is an akene which is dark brown or creamy, smooth and shining.



The plant has an interesting method of scattering its fruits. When mature these are reflexed on the spike, the persistent styles becoming curved and rigid. If the ends of the styles are touched with the finger, or by an animal or any object, the fruit suddenly hops off from the spike like a bug from a stick and may fall several feet away.

There flames the first gay daffodil
Where winter-long the snows have lain.

Daffodils—RUTH GUTHRIE HARDING

CLIMBING FALSE BUCKWHEAT

Polygonum scandens L.

The Climbing False Buckwheat is a common vine in woods and thickets throughout most of the eastern half of the United States and Canada. It blooms from July to September and is usually loaded with fruit in autumn.

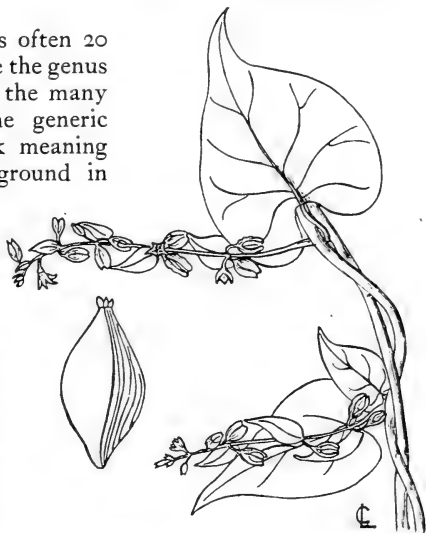
The smooth stem is often 20 feet long, and much like the genus *Polygonatum*, page 59, the many joints account for the generic name, from the Greek meaning knee. It dies to the ground in winter but the underground parts are perennial. Leaves are heart shaped and acuminate.

The yellowish green flowers are in leafy racemes. There is no corolla but there is a 5-parted calyx the 3 outer segments of which are strongly winged and extend down the flower stalk.

There are 8 stamens and 1 pistil with 3 stigmas and almost no style. The fruit is a 3-angled akene which is black or very dark, smooth and shining.

The Black Bindweed, *Polygonum Convolvulus* L., is a closely related but annual plant which is common on cultivated and waste ground—a troublesome weed. Its stems are usually not more than 3 feet long.

The Water Smartweed, *Polygonum Muhlenbergii* (Meisn.) Wats., bears several to many spikes of rose flowers on leafy stems 2-3 feet high. They grow in colonies in muddy or dry places and their underground stems form such dense mats that a patch once started is most difficult to eradicate.



POKEWEED. COMMON POKE

Phytolacca americana L.

The Pokeweed family is represented in Illinois by only this species, which is variously called Pokeweed, Pokeberry, Common Poke, Pigeon Berry and Inkberry. It is found in waste places,

fields, open woods and thickets throughout most of the eastern and southeastern parts of the United States, and is one of the few American plants that have become widely established as weeds in Europe. The young shoots are sometimes eaten like Asparagus and the leaves are often used as greens. A tincture from the roots is much used in medicine, and extract from the berries is used in antifat drugs.



It is a smooth, narcotic-odored, somewhat fleshy herbaceous plant with a branching stem that grows 3-10 feet tall and a large perennial root that is poisonous. The alternate leaves are 8-12 inches long, oblong-lanceolate or ovate-lanceolate, pinnately veined, acute or acuminate at both ends and on petioles one-half inch to 4 inches long.

The plant branches profusely and usually bears many clusters of flowers. There is no corolla but the white sepals are petallike. There are 10 short stamens and a green ovary with 10 recurved styles. The inedible fruits are dark purple, very juicy berries, in long racemes. The Pokeweed blooms from June to September and ripe berries are found from August to October.

WILD FOUR-O'CLOCK. HEART-LEAVED UMBRELLAWORT

Oxybaphus nyctagineus (Michx.) Sweet

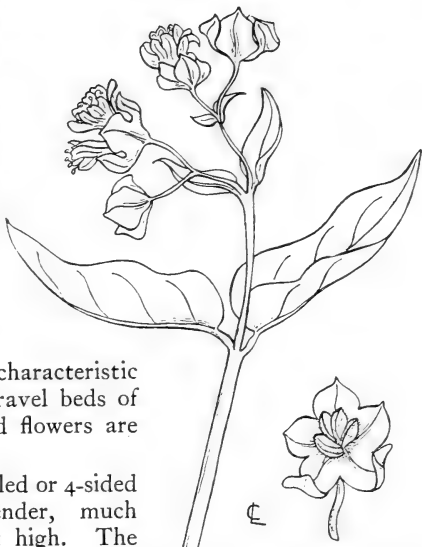
The Four-o'clock family is a relatively unimportant group, represented in our gardens by the Marvel of Peru. In it the colored calyx is commonly mistaken for the corolla because below each flower is a green involucre that looks like a calyx.

Several species of Wild Four-o'clock are occasionally found in Illinois but only this one is common. It occurs in dry soil throughout the Mississippi basin from Canada to Louisiana and west as far as Colorado. In this state it is a characteristic weed of the sand or gravel beds of railroads, where its red flowers are very conspicuous.

The stem, often angled or 4-sided below, is rather slender, much branched and 1-3 feet high. The opposite leaves are smooth or nearly so and all are petioled except the upper bractlike ones. The root is large and perennial.

This plant blooms from May or June to August, the numerous flowers being produced in small clusters in 5-lobed involucre. The red corollalike calyx is tubular and constricted or narrowed above the ovary. There are 3-5 stamens and 1 long style. The fruits are 1-seeded and covered with short hairs.

The Narrow-leaved Umbrellawort, *Oxybaphus linearis* (Pursh) Robinson, is a tall species, smooth except for the slightly hairy peduncles and involucre. The leaves are thick and linear, and covered with a whitish bloom. They are usually sessile or nearly so.



COMMON CHICKWEED. WINTERWEED

Stellaria media (L.) Cyrill

The large Pink family has representatives in nearly every part of the world. Some of them are valuable ornamental plants and others are troublesome weeds.

The true Pinks have various types of outgrowths or crowns on the petals at the junction of claw and limb.



The Common Chickweed is found almost everywhere throughout the northern hemisphere, not only in woods and meadows and waste places but in cultivated fields, gardens and lawns as well. It is sometimes called Winterweed because it blooms nearly the whole year round. Sprigs of it are fed to pet canaries and young chickens but the plant is usually a nuisance in dooryard and garden.

This is a steady-growing and much-branched plant. Its stems, 3-15 inches long, are hardly strong enough to stand erect and so they sprawl over the ground or lean upon other plants. They are smooth except for a line of short soft hairs along 1 side, and sometimes the petioles of the lower leaves are hairy.

The flowers are small, not much more than one-quarter inch across. They open fully only on sunny days. The calyx is 5-lobed and its green velvety sepals are somewhat longer than the white petals. There appear to be 10 petals but the true number is 5, for each is so deeply notched that it looks like a pair. The pistil has 3 styles and it matures into a small many-sided capsule full of seeds.

And here be four-o'clocks, just opening wide
 Their many colored petals to the sun,
 As glad to live as if the evening dun
 Were far away, and morning had not died!

Four-o'clocks—JULIA C. R. DORR

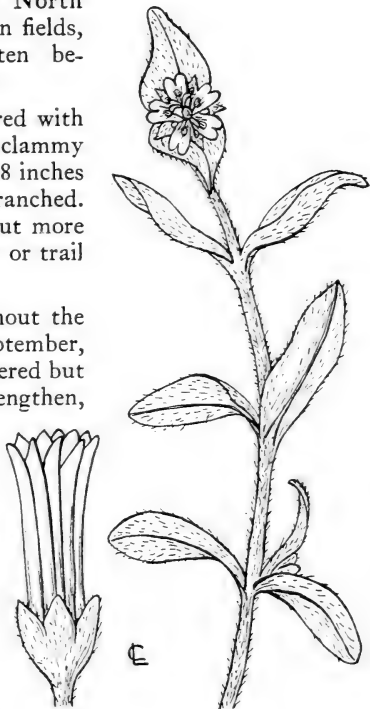
COMMON MOUSE-EAR CHICKWEED

Cerastium vulgatum L.

The Common Mouse-ear Chickweed is a native of Europe and northern Asia and is one of the many plants that have been accidentally introduced into this country from Europe. It is a perennial which has spread over nearly all of temperate North America, where it is found in fields, woods and dooryards, often becoming a troublesome weed.

The whole plant is covered with hairs and is usually somewhat clammy or sticky. The stems are 6-18 inches long and often repeatedly branched. They are sometimes erect but more often lean upon other plants or trail on the ground.

Blooming occurs throughout the summer, from May to September, at first with the flowers clustered but as the stems and flower stalks lengthen, the inflorescence becomes very open. At length the pedicels are much longer than the calyx. The flower is composed of 5 obtuse or acute green sepals, about equaling the 5 white 2-lobed petals, 10 stamens and 1 pistil with 5 styles. The fruit is an elongated and somewhat curved, many-seeded capsule which opens by 10 teeth at the top.



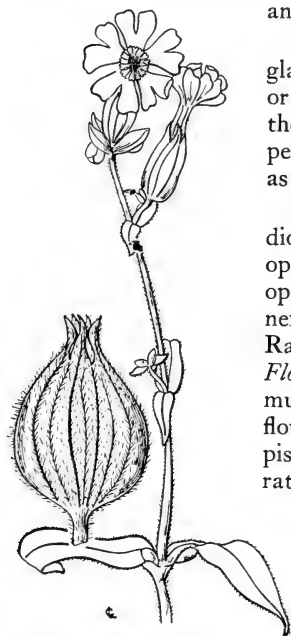
WHITE CAMPION

Lychnis alba Mill.

This casual immigrant from the Old world is a biennial which grows 1-2 feet tall and is usually much branched. It is found in waste places from Nova Scotia to Ontario, Pennsylvania, Minnesota and southwestward, and blooms during summer months.

The whole plant is covered with glandular hairs so that it is very viscid or sticky. The leaves are opposite and the lower ones taper into margined petioles, whereas the upper are sessile as shown.

The white or pinkish, and often dioecious flowers are somewhat fragrant, opening in the evening and remaining open during the morning hours of the next day. They greatly resemble the Ragged Robin of our gardens, *Lychnis Flos-cuculi* L., save that the latter are much more deeply cleft. The staminate flowers contain 10 stamens, and the pistil of a pistillate flower consists of a rather large ovary and 5 styles. The white, 2-lobed petals are conspicuously crowned at the place of bending. The 5-toothed calyx is tubular and becomes much enlarged as the fruit matures. The capsule contains many seeds and



opens by 5 2-lobed teeth.

The Mullein Pink, *Lychnis coronaria* (L.) Desr., is a showy plant 16-36 inches high and white woolly. It is often cultivated. The large crimson petals and twisted calyx teeth distinguish it from the White Campion. Though this plant is abundant in southwestern Michigan, official records of its having been found in Illinois are meager. It is a perennial herb that has been introduced from Europe and is now distributed from Maine to Michigan, and has also been reported from the Pacific coast.

SLEEPY CATCHFLY

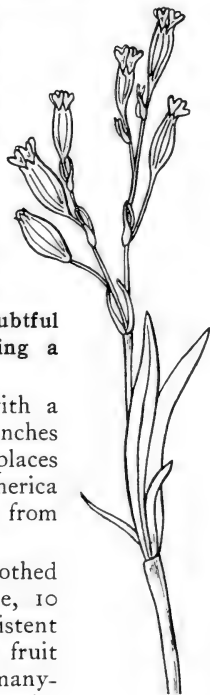
Silene antirrhina L.

This plant gets its name from two interesting characteristics. It is called Sleepy because the flowers open for only a short time while the sun is shining and if they are picked and taken into the shade they quickly close. It is called Catchfly because a portion of the stem below each pair of leaves is sticky and insects which attempt to crawl up the stem are caught in this material and often perish there. It used to be said that this phenomenon served to protect the flowers from insects that might eat the nectar and pollen without aiding pollination, but since many relatives of this species seem to get along perfectly well without any such protection it is doubtful that there is any advantage in having a glutinous stem.

The Sleepy Catchfly is an annual with a slender, somewhat branched stem 8-36 inches high. It occurs on rather dry soil in waste places and open woods nearly throughout North America except in the extreme north, and blooms from June to September.

The small flowers have a tubular 5-toothed calyx, 5 pink petals or occasionally none, 10 stamens and 1 pistil with 3 styles. The persistent calyx becomes somewhat expanded as the fruit enlarges and ripens. The latter is a many-seeded pod that opens by 6 teeth at the summit.

The Bladder Campion, *Silene latifolia* (Mill.) Britten & Rendle, has been naturalized from Europe and although found from Quebec and Ontario, south to New Jersey, Illinois and Iowa, is rare in this state. The large white flowers in panicles have an inflated bladder-like calyx and 2-cleft petals that are nearly crownless. The calyx is also strikingly veined. The plant is covered with a whitish bloom and bears the characteristically paired leaves from swollen nodes.



FIRE PINK

Silene virginica L.

The Fire Pink is found in dry open woods and forest borders from Minnesota to Missouri and eastward to Georgia and New York. It blooms from May to September but is usually most abundant in June and July.



It is a perennial with a slender stem, 1-2 feet high, that branches near the upper end and is covered with very short glandular hairs that make it somewhat sticky. The opposite leaves are rather thin; the lower are somewhat spoon shaped and have winged petioles, whereas the upper leaves are oblong-lanceolate and sessile.

Because of its brilliant crimson flowers, 1-1½ inches broad and borne erect on slender pedicels in terminal cymes, and despite the fact that usually only a few of these are open at one time, the Fire Pink is a beautiful and conspicuous plant. Each of the 5 long and 2-toothed petals has a scalelike crown. As in all *Silenes* there are 10 stamens and 1 pistil with 5 styles. The

hairy calyx is tubular and 5-lobed, three-quarters of an inch to 1 inch long and enlarged as it persists on the fruit.

The fruit is a many-seeded pod which opens by 6 teeth at the summit. The various species of *Silene* have no efficient means of scattering these spiny or tuberculed seeds, but produce them in large numbers and rely on the chance that a few out of several hundred will find suitable places in which to grow.

STARRY CAMPION

Silene stellata (L.) Ait. f.

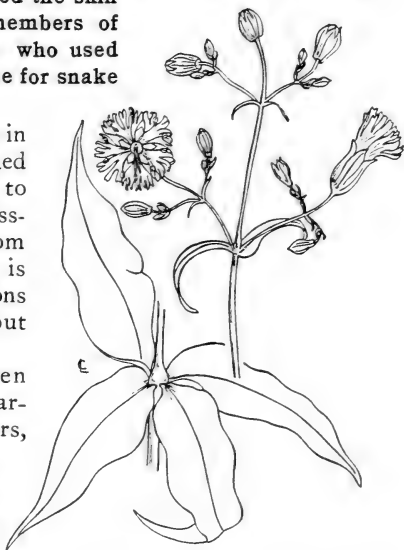
The Starry Campion is another Catchfly but in this case it is the calyx rather than a portion of the stem that is glutinous. Peculiar markings under the bark of the root evidently suggested the skin of a snake to the members of certain Indian tribes, who used the plant as an antidote for snake bite.

This perennial dwells in woods and especially wooded slopes from Minnesota to Arkansas and east to Massachusetts, and blooms from June to August. It is common in such locations practically throughout Illinois.

The yellowish green leaves, fringed at the margins with very fine hairs, are arranged in whorls of 4 except near the top and sometimes at the base, where they are in pairs. The 2-4-foot stem

is densely covered with very short hairs and is enlarged conspicuously at each whorl of leaves.

The common name comes from the beautiful white flowers, the 5 petals of which are deeply fringed at the base and are crownless. They open in the evening and close when the sun becomes bright the next day. The bell-shaped, 5-toothed calyx is inflated like a bladder and often stained reddish. The 10 stamens extend well beyond the petals; the pistil consists of an ovary and 3 styles. The fruit is a many-seeded pod about the length of the calyx, opening by 6 teeth at the end.



"Small herbs have grace, great weeds do grow apace:"

And since, methinks, I would not grow so fast,

Because sweet flowers are slow and weeds make haste.

King Richard III—SHAKESPEARE

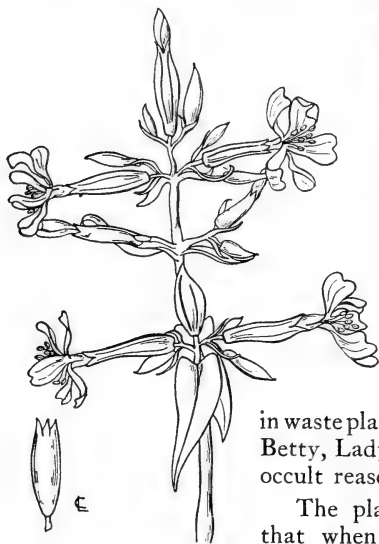
BOUNCING BET. SOAPWORT

Saponaria officinalis L.

The Soapwort is so named because its juice when placed in water forms a lather and has cleansing properties. The juice is easily extracted by pounding the root

on a board, and has been so derived and used by generations of farmers' wives who happened to run out of soap on washday.

The Bouncing Bet is a native of Europe which was brought into this country as a garden flower, but apparently, as perhaps its name implies, was too vivacious to remain domesticated and so has escaped from cultivation and now is common throughout the country along roadsides and in waste places. Other names are Sweet Betty, Lady by the Gate, and for some occult reason, Old-maid's Pink.



The plant has a perennial root so that when once started it may form a patch and remain for years. It spreads vegetatively by stolons. The smooth stem is 1-2 feet high, green, sometimes stained with red, and not much branched. The opposite leaves are thickish and smooth.

The fragrant, quite showy and often double flowers bloom from July to September. Those that are fully exposed to light are pink but those in the shade may be nearly white. The long tubular calyx is 5-toothed at the summit and the 5 petals are generally notched. The crown consists of 2 threadlike outgrowths from each petal. There are 10 stamens, of which the 5 longer mature first. The pistil has a long ovary and 2 styles, and the fruit is a many-seeded pod which opens by 4 teeth at the end.

SPRING BEAUTY

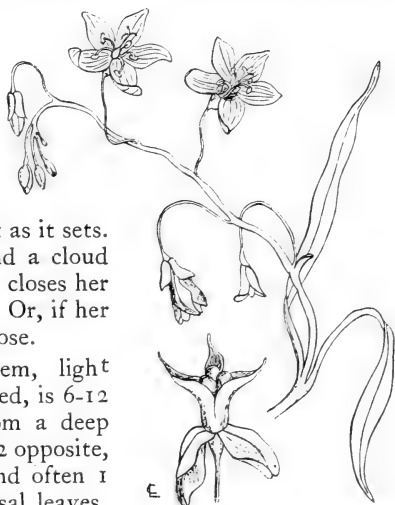
Claytonia virginica L.

The Spring Beauty is a dainty maiden commonly and usually abundantly found in moist woods from Nova Scotia to Saskatchewan and south to Georgia and Texas. Blooming in March, April and May, she appears indifferent to cold winds and frosty nights, but nevertheless she loves the sun and refuses to open her flowers if it is not shining. She faces the sun as it rises and gradually turns her flowers so as still to face it as it sets. Should it disappear behind a cloud she immediately sulks and closes her flowers until it reappears. Or, if her flowers are picked, they close.

The rather weak stem, light green often stained with red, is 6-12 inches long. It rises from a deep perennial tuber and bears 2 opposite, somewhat fleshy leaves and often 1 or more slightly longer basal leaves.

The flowers are borne in a somewhat one-sided loose terminal raceme that becomes 3-5 inches long. They have 2 green sepals and 5 petals, white or pink with darker pink veins. The stamens are white with pink anthers and are attached to the bases of the petals. They mature before the pistil and after they have discharged their pollen bend outward toward the petals; then the 3 stigmas become ready to receive pollen from some other flower. The fruit is a dry capsule containing 3-6 seeds.

The Broad-leaved Spring Beauty, *Claytonia caroliniana* Michx., is much like the first species in appearance, growth habits and range, except that the flowers are smaller and fewer and the leaves are spatulate-oblong or oval-lanceolate and about half as long. Sometimes the plant is more nearly erect. It is a rarity in Illinois.

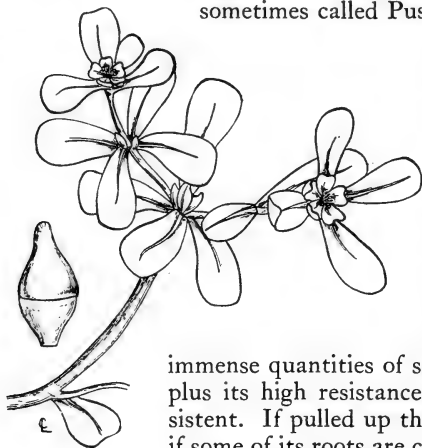


COMMON PURSLANE

Portulaca oleracea L.

This naturalized European plant is found in fields and waste places nearly throughout the continent except in the far north. It is a useful salad plant and is relished also by sheep and pigs, rabbits, squirrels and woodchucks. It is sometimes called Pussley and in some localities

where it is a weed the expression has arisen, "Meaner than Pussley."



The Purslane does not grow upright but spreads over the soil, freely branching from a deep central root. As an annual it is easily destroyed by cultivation, but it produces

immense quantities of seed and on this account, plus its high resistance to drouth, is very persistent. If pulled up the plant wilts slowly; and if some of its roots are covered with soil before it is completely wilted, it will start growing again.

The yellow flowers, produced all summer, are small but quite pretty, and they open in sunshine for only a few hours in the morning. There are only 2 sepals, grown together at the base and partly attached to the ovary. The 5 yellow petals and 7 or more stamens are attached to the calyx and usually fall off shortly. The style is deeply 4-6-cleft. The fruit is a capsule containing a very large number of small seeds.

The Prairie Talinum, *Talinum teretifolium* Pursh, and the Small-flowered Talinum, *T. rugospermum* Holzinger, the 2 species of this genus found in Illinois, grow together in sandy, gravelly or rocky barrens and are so much alike as to require close inspection for identification. They are small, fleshy and smooth perennials with many short, linear, cylindric leaves clustered at the base of the stem. The rosy or pinkish flowers, in cymes on scapes, are about one-half inch in diameter, with 5 petals and 2 sepals that soon drop off. The pedicels are bracted. *T. teretifolium* is distinguished by its oblong anthers and smooth seeds; *T. rugospermum* has spherical anthers and roughened seeds.

YELLOW POND LILY. SPATTERDOCK

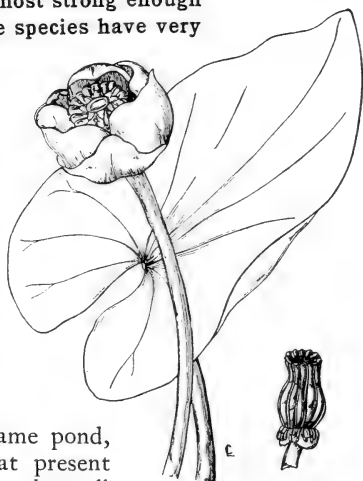
Nuphar advena Ait. f.

The Water Lily family is composed of water plants, most of which have floating leaves. The famous *Victoria regia*, which is a native of the Amazon river valley, has gigantic floating leaves almost strong enough to be used as rafts. Some species have very large and beautiful flowers and are frequently used as ornamental plants in artificial ponds.

Probably no water plant is better known than the Yellow Pond Lily, for it is very common in ponds and slow-running streams from Labrador and Nova Scotia to the Rocky mountains, south to Florida, Texas and Utah. It is extremely variable, usually three or more forms being found in the same pond, and it is difficult to say at present whether or not we should place them all in one species. In some localities this plant is called Spatterdock, Cow Lily or Frog Lily.

The stout cylindrical stem creeps upon the bottom of the pond or stream and the leaves grow from it. The floating leaves and those above water are 5-12 inches in greatest diameter, thick and with a deep sinus at the base, whereas those that are submerged, when present, are thin and nearly round. The lower surfaces of the leaves, as well as the petioles and flower stalks, are often hairy.

The flowers are produced all summer and are yellow or purple tinged. The conspicuous floral parts are the sepals, usually 6. The petals are numerous but they are small, fleshy and stamenlike. The stamens, with anthers about as long as the filaments, are also numerous and are arranged in 5-7 rows. The pistils are many but united into a compound structure, and so form 1 fruit which is a sort of capsule.



SWEET-SCENTED WATER LILY

Nymphaea odorata Ait.

The Sweet-scented Water Lily has been called the queen of our waters and well merits the name, for few flowers are held in higher esteem. According to a

legend of the Lanape Indians this flower originated from a falling star, which upon striking the water changed into a Water Lily. It is closely related to the Lotus of the Old world, a flower which has always been a symbol of the Buddhist religion. In many places the great beauty of the Sweet-scented Water Lily has threatened to be the cause of its destruction, for its flowers have been shamefully



collected by hundreds and peddled on our city streets.

This plant is found in ponds and slow streams from Newfoundland to Manitoba and south to Louisiana and Florida, blooming from June to September. In Illinois its common situation is the eastern and lake area of the state.

The white flowers are 3-6 inches broad and wonderfully fragrant. They float upon the surface of the water in a field of waxy green leaves which have a tendency to assume reddish tints on the under surface. The 4 sepals are dark green outside and white or pinkish within. The many firm petals, pure white or tinged with pink, are in several rows, and the outer petals are larger. At the center are many pure yellow stamens, the inner slender and with long anthers, and the outer broader and almost petallike. The many pistils are united into 1 large compound ovary with the stigmas radiating from the top. After the flowers have faded, they are drawn beneath the surface of the water, where the fruits ripen.

LOTUS

Nelumbo lutea (Willd.) Pers.

There are three species of Lotus, our American, one in the West Indies and one Asiatic and Australian.

This is by far the most striking member of the Water Lily family in Illinois, and is noted wherever found. Its occurrence is markedly local from Labrador to the Rocky mountains and from Florida to Texas. In this state the Lotus is abundant in some river shallows and lake margins.

It is perennial from a large rootstock buried in the mud. From this arise several great leaves which are centrally peltate and have diameters up to 30 inches. The leaves do not float but are lifted 1-2 feet above the water.

In midsummer the great flower buds arise from the same rootstock and open into very large flowers, 6-10 inches across. Sepals and petals are numerous and cream yellow. Stamens are many and their anthers have hooked tips. The pistils are several or many and each is ovuled. They coalesce to form a conical fruit with the hard seeds imbedded in the upper part; thus each ovary opens by a pore on the flat upper surface of the fruit. The very starchy seeds are about two-fifths of an inch in diameter. The fruit breaks off and floats indefinitely, at length by decay dropping the seeds.



THE WATER LILY

Whence, O fragrant form of light,
Hast thou drifted through the
 night,
Swanlike, to a leafy nest,
On the restless waves, at rest?

Art thou from the snowy zone
Of a mountain summit blown,

Or the blossom of a dream,
Fashioned in the foamy stream?

Nay—methinks the maiden moon,
When the daylight came too soon,
Fleeting from her bath to hide,
Left her garment in the tide.

JOHN BANISTER TABB

CAROLINA WATER SHIELD

Cabomba caroliniana Gray

The Carolina Water Shield is a southern plant which is found in ponds from southern Illinois and Missouri to North Carolina, south to Florida and Texas. The slender stem is often several feet long, much branched and covered with a jellylike substance. The leaves are of two types. Those below the surface of the water are opposite and repeatedly divided into narrow segments, whereas the floating leaves are alternate and shieldlike.



The plants bloom from May to September and the flowers are white with yellow spots at the base. The 3 sepals and 3 petals are similar in size and color. There are usually 6 stamens and 3 pistils, the latter in fruit containing 3 seeds each.

There is another Water Shield, *Brasenia Schreberi* Gmel., which is likely to be found in ponds in any part of the state. The flowers are smaller than those of the Carolina Water Shield and dull purple; the leaves are alternate, shield shaped and floating. Stamens are more numerous (12-18) and pistils also (4-18).

The Water Nymph or Water Lily, *Nymphaea tuberosa* Paine, is the commonest white Water Lily in Illinois. It has no fragrance. The leaves are mostly larger than the sweet-scented species, more prominently ribbed and very rarely crimson beneath. The rootstock bears numerous tubers, often compound, which detach themselves from the parent plant. Seeds are fewer and much larger.

This large family is confined mostly to the northern hemisphere. It is not of very great economic importance except that some of its members, such as Peonies and Larkspurs, are much prized as garden flowers and ornamental plants.

The Buttercups, or genus *Ranunculus*, contain an acrid juice which makes them unpalatable to horses and cattle. For this reason they often form tufts of green untouched herbage in an otherwise closely grazed pasture. Their genus name is derived from the Latin *rana* meaning frog, and was used because some of the Buttercups grow in places where frogs are abundant.

In using the key to the genera it must be remembered that the calyx is often colored like a corolla, especially when the corolla is lacking, and when only one set of organs is present in addition to stamens and pistils it is ordinarily a calyx rather than a corolla. The genus *Hepatica* is likely to be troublesome because its sepals look like petals and there is a 3-leaved involucre close under the flower that looks like a calyx.

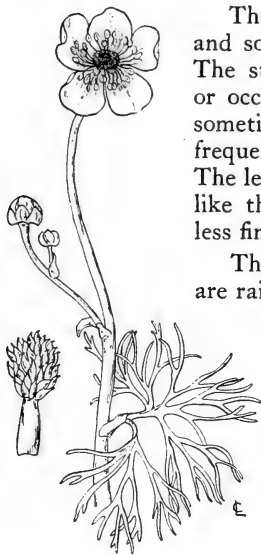
KEY TO GENERA

1. Climbing plants.....*Clematis* p. 106
Plants not climbing.....2
2. Petals present.....3
Petals lacking.....5
3. Petals produced backward into spurs.....*Aquilegia* p. 110
Petals flat.....4
4. Pistils numerous.....*Ranunculus* p. 96
Pistils 1 or 2; fruit a berry.....*Actaea* p. 111
5. Flowers imperfect.....*Thalictrum* p. 100
Flowers perfect.....6
6. Flowers yellow.....*Caltha* p. 109
Flowers not yellow.....7
7. Leaves or leaflets about 3-lobed but without small teeth....8
Leaves or leaflets toothed.....10
8. Plants hairy.....*Hepatica* p. 102
Plants smooth.....9
9. Ovaries 1-seeded; fruit an akene.....*Anemonella* p. 101
Ovaries 2-several-seeded; fruit a pod.....*Isopyrum* p. 108
10. Sepals 3, falling off as flowers open.....*Hydrastis* p. 112
Sepals more than 3.....*Anemone* p. 103

YELLOW WATER CROWFOOT

Ranunculus delphinifolius Torr.

Water plants are as a rule rather widely distributed, due in part to the fact that birds which frequent ponds fly from one to another carrying mud, containing seeds or fruits, on their feet.



This plant is found from Maine to Oregon and south to North Carolina and Arkansas. The stems are either floating or immersed, or occasionally creeping in the mud. They sometimes grow several feet long, branching frequently and often rooting at the joints. The leaves below the surface of the water are like the one shown; those above water are less finely divided.

The greenish sepals of the flowers, which are raised above the water, are much smaller than the 5-8 deep yellow petals. Stamens and pistils are numerous and the fruits are akenes.

The Common White Water Crowfoot, *Ranunculus aquatilis* L. var. *capillaceus* DC., frequents ponds and slow-running streams. Its white flowers are produced at the surface of the water, and its leaves, all under water, are divided and subdivided into long soft threadlike parts which collapse

more or less when withdrawn from the water.

The Stiff Water Crowfoot, *Ranunculus circinatus* Sibth., completes the trio of water plants in this family found in Illinois. The leaves are under water, sessile and with broad stipules. The divisions of this leaf are short and spreading into a circle, and they do not collapse when withdrawn from the water.

The Oblong-leaved Spearwort, *Ranunculus oblongifolius* Ell., is a peculiar plant of stagnant ponds, ditches and small sluggish streams of southern Illinois below Saline county. The erect stem is 2 feet high and much branched above. Leaves are slightly toothed to entire, the lower very long stalked, and vary from linear above to ovate-oblong below. The bright yellow 5-petalled flowers are less than one-half inch broad. Stamens are less than 20 and the globular fruits are about one-eighth inch in diameter. This is a coast plant from Delaware to Florida and Texas, ascending the Mississippi basin to Missouri and Illinois.

SMALL-FLOWERED CROWFOOT

Ranunculus abortivus L.

Of all the many common Buttercups the Small-flowered Crowfoot is the most weedlike because its small flowers make it much less conspicuous and less handsome than most of the others. It is widely distributed, being found in woods and other moist places from Labrador and Nova Scotia to Manitoba, southward to Florida, Arkansas and Colorado. It is a biennial and blooms in April, May and June.

The stem is slightly fleshy and grows 6-24 inches high. It usually has numerous branches and may be entirely smooth or covered with short scattered hairs. The basal leaves have long petioles and are round-heart shaped or kidney form. Those on the stem and branches are sessile or nearly so and often divided nearly to the base into 3-5 parts.

The green sepals, mostly 5, are reflexed downward and the 5 yellow petals are shorter than the calyx. Stamens and pistils are numerous. The styles are extremely short. The fruits are akenes, each with a short curved beak. There is a minute nectar pit and a scale at the base of each petal, and on this account the flowers are visited and pollinated by several kinds of insects.

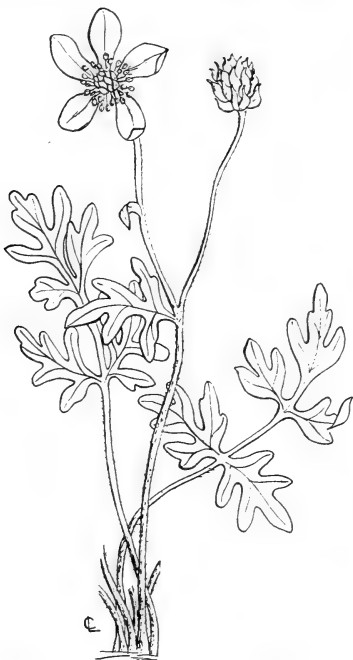
The Hooked Crowfoot, *Ranunculus recurvatus* Poir., is another small-flowered species common in woods. The stems are hairy and the leaves are all 3-lobed and toothed. The beaks of the fruits are long and curved into hooks. The root leaves of this species are rarely divided. The plant occurs from Nova Scotia to Manitoba and south to Florida and Kansas. It flowers in May and June.



EARLY CROWFOOT

Ranunculus fascicularis Muhl.

This is one of the earliest Buttercups, blooming in April and May. It is found on hills and in open woods from Ontario and New England south to North Carolina and west to Manitoba and Texas. In Illinois it is very common on sunny open banks, especially in the north.



The plant is usually 4-6 inches high. It produces a cluster of thickened fleshy roots, several pinnate basal leaves with hairy petioles, and 1 or more flowering stems which are also hairy.

The petals are yellow, 5-7, and about twice as long as the divisions of the calyx. Stamens and pistils are numerous. The fruits form a head of flattened and slightly margined akenes. The persistent style forms a slender, straight or somewhat curved beak which is about as long as the akene.

The common Buttercup is the Tall Crowfoot, *Ranunculus acris* L., which has

been naturalized from Europe. It is common in fields and blooms from June to August. From a cluster of much-divided basal leaves springs the hollow flowering stem bearing few leaves and large bright yellow flowers. The stems are hairy and 8-24 inches high, and contain most of the intensely acrid juice for which the plant is named. The flowers are followed by heads of flattened, slightly hooked akenes.

The buttercups, bright eyed and bold,
Held up their chalices of gold
To catch the sunshine and the dew,
Centennial Poem—J. C. R. DORR

SWAMP BUTTERCUP

Ranunculus septentrionalis Poir.

This species grows 1-3 feet high in swamps and other moist or shady places. It is found from New Brunswick to Manitoba and south to Georgia and Texas.

The roots are fibrous and not fleshy. The stem, smooth or hairy, produces from the lower part numbers of radiating stolons 1-3 feet long that root at the joints. The leaves are compound and each of the 3 leaflets has 3 lobes variously toothed and notched. The lower leaves are extremely long petioled.

The flowers are produced from April to August. The petals are bright yellow and much larger than the green spreading sepals. Stamens and pistils are numerous as in all Buttercups. The mature akene has winglike margins and is tipped by a stout, slightly curved beak, as long as the fruit itself, which falls off at or near maturity.

The Bristly Crowfoot, *Ranunculus hispidus* Michx., resembles the Swamp Buttercup but is more compact. There are no stolons and the stem is covered with long bristly hairs, although a smoothish form is known. The leaves are 3-divided or the basal 3-lobed, the divisions or the lobes are variously cut. The bright yellow petals are oblong and greatly exceed the spreading sepals. The plant is common in the southern part of Illinois. Its general range is from Vermont to North Dakota and south to Georgia and Arkansas.



EARLY MEADOW RUE

Thalictrum dioicum L.

The Early Meadow Rue is a perennial which frequents rocky woods from central Maine west and southwestward. Its smooth stems are 1-2 feet high and its 2 or 3 leaves are several times ternate. The light green leaflets are thin and 3-7-lobed.



The dioecious flowers bloom during April and May and are pollinated by the wind. Stamens are numerous and as they become a little more mature than those shown they droop so that the pollen is easily shaken out. There are no petals but the sepals, usually 4, are purplish or greenish white and somewhat petallike.

They often drop off as the flowers mature. Pistils are 4-15 and they develop into strongly ribbed akenes.

The Tall Meadow Rue, *Thalictrum polygamum* Muhl., which grows in sunny wet places, blooms later in the season, from July to September. It is a larger, stouter plant, 3-10 feet high, and its flowers are more conspicuous. The staminate flowers are usually white and the pistillate purplish. Rich bottomlands throughout the state are favorite habitations.

The Waxy Meadow Rue, *Thalictrum revolutum* DC., has a stout purplish stem 3-7 feet high. The leaves are 3 or 4 times ternate, and the upper are sessile or short petioled. The leaflets are 1-3-lobed above the middle, dark green above and paler and waxy or glandular hairy beneath. The plant emits a strong heavy odor. The flowers are sometimes dioecious. Two distinguishing marks are the hairlike filaments which may be slightly thickened above, and the rolled margins of the leaves or leaflets.

RUE ANEMONE

Anemonella thalictroides (L.) Spach

Rue Anemone gets its name by having flowers like an Anemone and leaves like the Meadow Rue. It is a common perennial in woods throughout eastern United States as far west as Kansas and Minnesota, blooming from March to June. The roots of this plant are clustered and resemble minute Sweet Potatoes.

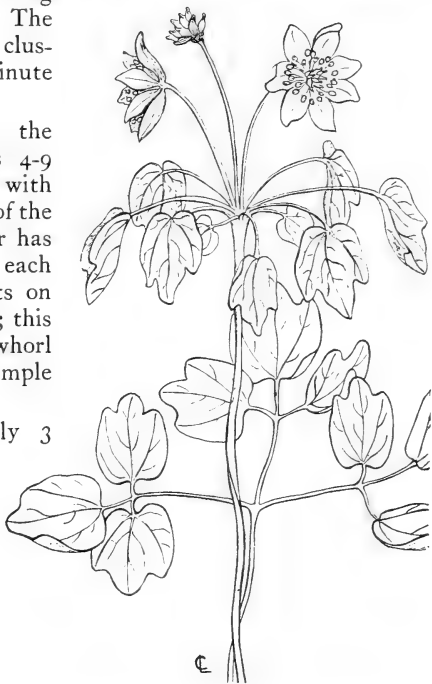
In early spring the flowering stem arises 4-9 inches high, usually with no leaves except those of the involucre. The latter has 2 or 3 sessile leaves, each with 3 trilobed leaflets on long slender petiolules; this gives the effect of a whorl of 6, or as shown, 9 simple leaves.

There are generally 3 flowers, of which the middle one blooms first. There is no corolla but the calyx consists of 5-10 sepals, white or sometimes pinkish and quite conspicuous. Stamens are numerous and there are 4-15 pistils

whose ovaries develop into deeply grooved, pointed akenes up to one-half inch long and sessile. In rare instances the sepals, stamens or involucre are variously modified.

The basal leaves are long petioled and twice compound as shown, and appear after the flowers.

The False Rue Anemone, page 108, closely resembles this plant, and differences between them should be carefully noted.



SHARP-LOBED HEPATICA. LIVERLEAF

Hepatica acutiloba DC.

[This *Hepatica*, frequently called Liverleaf, is one of our earliest spring flowers. In woods throughout Illinois and neighboring states it is found blossoming soon after the Soft Maple and the Skunk Cabbage, usually in March. It becomes more abundant in the western part of its range, which is from western Quebec to Minnesota, south through western New Hampshire to Georgia and Missouri.



The old leaves live over winter and the new ones do not develop until after the flowers have come out in spring. They are normally 3-5-lobed but a fungus usually seems associated with later leaves that have more lobes, giving

rise to the belief that extra lobations are deformities.

The flowers have no petals but their sepals appear like petals because they are either white or gaily colored various shades of blue and purple. The 3 small leaves just below each flower form an involucre that looks like a calyx. The stamens are numerous and all of them bear anthers. Pistils also are numerous and each develops into an akene. The odor of the flowers is slightly unpleasant and not attractive to insects except a few flies which probably aid in pollination.

Another species, the Round-lobed Hepatica, *Hepatica triloba* Chaix, also occurs in Illinois but not as commonly as in eastern states. It is abundant in woods from Nova Scotia to Florida, westward to Minnesota and Missouri. The lobes of the leaves are ovate, obtuse or roundish whereas those of the Liverleaf are pointed. The 6-12 sepals are blue to purplish or may be nearly white. There are several ovate-oblong, hairy and pointed akenes in a small loose head.

PASQUE FLOWER

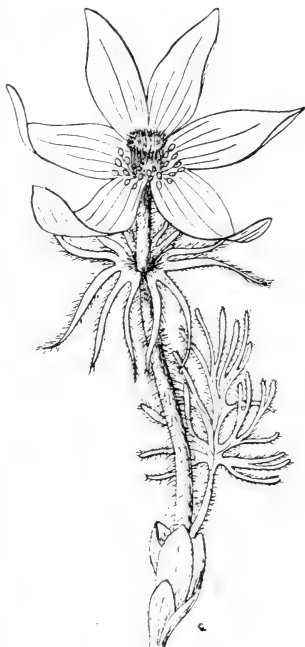
Anemone patens L. var. *Wolfgangiana* (Bess.) Koch

The Pasque Flower is found blooming in March and April only in dry soil in the prairie portions of Illinois and Wisconsin, northwest to British Columbia and southward into Texas. It is locally very abundant on dry barren rolling knolls along the northern line of Jo Daviess, Carroll, Stephenson, Winnebago, Boone and McHenry counties, and the northwest corner of Cook county.

The plant is a perennial herb covered with silky hairs and having a thick underground stem. It produces a cluster of basal leaves which are long petioled and palmately divided into narrow segments. The upright stem, 6-16 inches high, bears a solitary purple or white flower and some distance below it an involucre of 3 sessile leaves.

The 5-7 sepals are petallike and form the conspicuous part of the flower. There are no petals but usually there are some very small glandular stamens that do not produce pollen and have the position of petals. The inner stamens have anthers and produce pollen. The pistils are numerous and have long silky styles.

The akene fruits are in a head and have long feathery styles like those of some species of *Clematis*, page 106. After flowering, the peduncle usually elongates, sometimes to 1 foot or more, so that the fruits are well exposed to the wind. They are often blown considerable distances.



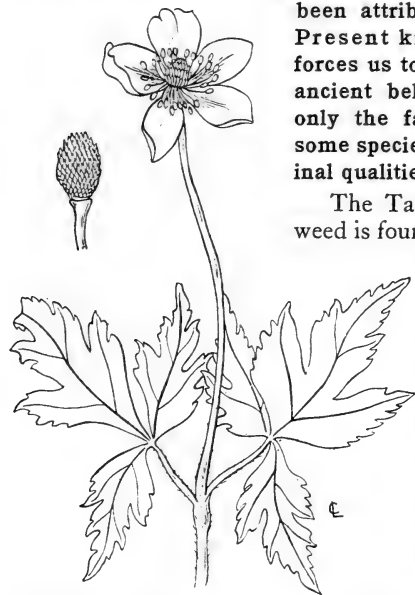
The dews drip roses on the meadows
Where the meek daisies dot the sward.
Spring—FRANCIS LEDWIDGE

TALL ANEMONE. THIMBLEWEED

Anemone virginiana L.

According to the Greek poets the Anemone originated in the tears dropped by Venus while she was grieving in the forest over the death of her sweetheart, Adonis, and all sorts of mystic qualities have been attributed to these plants. Present knowledge, however, forces us to abandon most of the ancient beliefs and we are left only the fact that the roots of some species have certain medicinal qualities.

The Tall Anemone or Thimbleweed is found in woods and meadows from Maine to Minnesota and southward, and blooms from June to August. It has a stout hairy stem 2-3 feet tall and usually branching at the involucre. Leaves forming the involucre are 2-5 but usually 3. The basal leaves are long petioled but otherwise similar to those of the involucre.



The flowers are borne on long peduncles, of which the earliest one is naked and the rest with a pair of bracts near the middle. The 5 petallike sepals are white or greenish white, and the stamens and pistils are numerous. The fruits are akenes clustered to form an oblong or somewhat cylindrical head sometimes 1 inch high or more, and from which the plant gets the name Thimbleweed.

The Silky Thimbleweed, *Anemone cylindrica* Gray, is a smaller plant with a grayish pubescence and a longer head of fruit. It grows on barren rocky knolls and other open places from eastern New Brunswick and northern New Jersey to Manitoba and Kansas, and is found also in the Rocky mountains. Its smaller flowers are 2-6 on very long upright peduncles, all of which are naked.

PRAIRIE ANEMONE

Anemone canadensis L.

The Prairie Anemone occurs on moist banks and prairies from Labrador to Pennsylvania, Kansas and Colorado. In Illinois it is not likely to be found in the extreme southern portion but is fairly common elsewhere. It is a perennial, 1-2 feet tall, which often forms large colonies. Often cultivated, it makes a beautiful garden flower.

The leaves that come directly from the underground stem are 5-7-parted or cleft, and long petioled, but those on the flowering shoot are sessile. The latter leaves are in a whorl of 3, forming a primary involucre which bears a naked peduncle with 1 flower. Later 2 peduncles arise from the same



point and on either side of the stem of the first flower. Each has a 2-leaved involucre at the middle, where it may branch in turn.

The flowers are produced from May to August. There are no petals but the 5 or more sepals are white and petallike. Stamens and pistils are numerous. The fruits are akenes clustered on a circular head.

Another common species is the Wood Anemone or Wind Flower, *Anemone quinquefolia* L. This is a delicate little plant 4-9 inches high, which grows in open woods or along their margins, and blooms in April or May. Each stem bears a single flower and an involucre of 3 long-petioled compound leaves, each with 3 wedge-shaped or oblong, toothed leaflets. The 4-7 petallike sepals are pure white or sometimes tinted with pink or blue, and the numerous cream-tipped stamens are clustered about the 15-20 green pistils at the center of the flower. The fruits are akenes. Compare this with the False Rue Anemone, page 108.

VIRGIN'S BOWER

Clematis virginiana L.

The various species of *Clematis* differ from most other members of the Crowfoot family in having opposite instead of alternate leaves, and in being climbing plants. The



climbing habit gives a plant the advantage of being able to get its leaves up into the air without expending energy and material in constructing supporting tissue for holding its own stem erect, but it has the disadvantage of making the plant dependent upon finding something to climb. This and other members of the

genus are greatly prized as ornamental vines.

The Virgin's Bower may be seen trailing gracefully over fences or clinging to the branches of shrubs or trees, especially in lowlands along streams or in moist lanes, from Georgia and Tennessee to Manitoba and Nova Scotia. It climbs by twisting its leaf stalk about supports, often to form delightful shaded arches which amply justify its common name.

The green or purple-stained stems are often 12 feet or more in length and usually much branched. The vine is sometimes woody at the base but usually is not and dies to the ground each year. The root is perennial. The coarsely toothed leaflets of the opposite leaves are dark green, silky on the lower surface when young and smooth when mature.

The dioecious flowers are produced from July to September. There are no petals but the 4 or 5 white or greenish white sepals are petallike, and the light green stamens and pistils are numerous. The long feathery styles remain on the akene fruits and aid in their dissemination.

LEATHER FLOWER

Clematis Pitcheri T. & G.

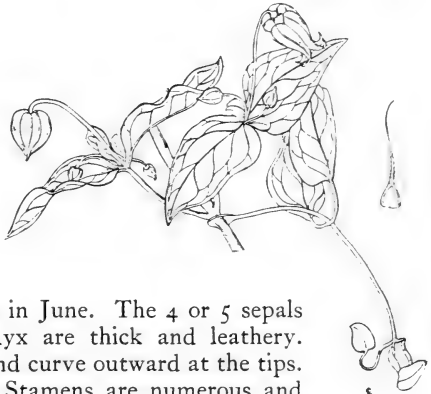
The Leather Flower is found only occasionally in the northern part of the state but is common throughout central Illinois and westward to Nebraska and Texas. By twisting its leaf stalks about a support it may climb 10 feet or more, though more often it is lower.

The branches are more or less covered with very short hairs. The leaves are pinnately compound and the 3-9 leaflets may be entire or 3-lobed.

The flowers appear in June. The 4 or 5 sepals of the bell-shaped calyx are thick and leathery. They are dull purple and curve outward at the tips. There are no petals. Stamens are numerous and have narrow anthers; the pistils are also numerous and have long silky styles which persist on the akene fruits.

The Marsh Clematis, *Clematis crispa* L., resembles the Leather Flower but its blue-purple flowers are much more conspicuous and the broadened tips of the sepals are crisply waved. The 3-9 lanceolate leaflets are firm and much narrower. Instead of climbing, this species prefers to sprawl over low objects. In Illinois it is found in the Cairo sector only.

Frequently mistaken for *Clematis Pitcheri* is another Leather Flower, *Clematis Viorna* L., which is, however, not found as far north in the state. The sepals of this flower are much thicker than those of the first species, and the tails of its fruits are feathery, not silky or smooth.



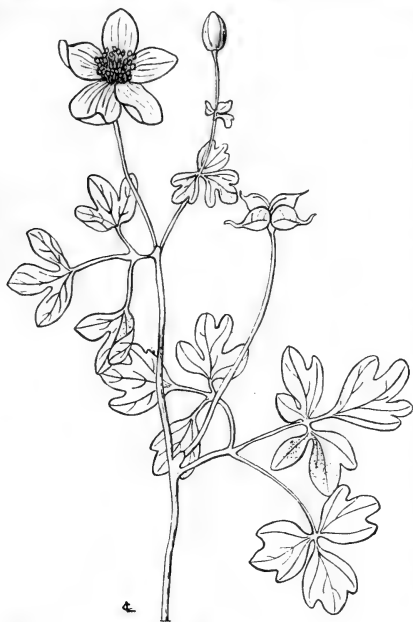
There a bed of rue was set
 With an edge of mignonette,
 And the spicy bergamot
 Meshed the frail forget-me-not.
 Honeysuckles, hollyhocks,
 Bachelor's button, four-o'clocks,
 Marigolds and blue-eyed grass
 Curtsied when the maid did pass.

A Colonial Garden—JAMES B. KENYON

FALSE RUE ANEMONE

Isopyrum biternatum (Raf.) T. & G.

The False Rue Anemone, which blooms in April and May, is found in moist shady places from Ontario to Minnesota and south to Florida and Texas. It is common in Illinois and is often mistaken for the Wood Anemone, page 105.



It will be well to understand the differences between the two species. In both, the corolla is lacking and the sepals are white and petallike. In the Wood Anemone the sepals are 4-7, the stamens are numerous and the pistils 15-20. In the False Rue Anemone there are practically always 5 sepals, 10-40 stamens and usually only 4 pistils, though there may be 3-6. The Wood Anemone bears only 1 flower and a whorl of 3 leaves in an involucre on each upright stem,

whereas the False Rue Anemone bears several flowers in the axils of alternate leaves, as well as a terminal flower. The fruits of the Wood Anemone are akenes and those of the False Rue Anemone are capsules containing 2 or more seeds.

The fibrous roots of the False Rue Anemone are thickened at intervals into little tubers, but such tubers are not found on the roots of the Wood Anemone. On the other hand, the Wood Anemone has an underground stem, which the False Rue Anemone has not.

The False Rue Anemone is also frequently mistaken for the Rue Anemone, page 101, which it closely resembles.

MARSH MARIGOLD

Caltha palustris L.

The Marsh Marigold is a northern plant. It occurs from Newfoundland west to the Rocky mountains and south as far as Iowa and South Carolina. In this latitude it extends round the earth and in England is the "gowans" of song and story. In Illinois it is found in the north and central parts but not in the extreme south.

This perennial grows in swamps and wet meadows and blooms from April to June. Where abundant, its showy yellow flowers make large areas brilliant. Its tender fleshy stems and leaves are often gathered in spring just as the plant is coming into flower, and cooked like Spinach. In some places where it is used for food in this manner, it is often erroneously called Cowslip.

The stout hollow stems are smooth and become 1-2 feet long. Usually they are clustered, and each branches and bears several flowers. The basal leaves have long broad petioles, whereas the upper leaves are short petioled or sessile.

The flowers have no petals but the 5-9 sepals are yellow and petal-like. Stamens are numerous and pistils 5-10. The fruits are many-seeded follicles.

Two varieties of this species, reported elsewhere in the United States as differing by having slenderer forms and smaller flowers, have not been distinguished in Illinois.

There I go to meet the Springtime,
When the meadow is aglow,
Marigolds amid the marshes—
And the stream is still and slow.

The Path That Leads to Nowhere—CORINNE ROOSEVELT ROBINSON



WILD COLUMBINE

Aquilegia canadensis L.

The varying shades of color in these flowers should not confuse the observer. Two factors largely cause the change in colors within the species from deep yellow to

crimson. One is the ease with which the flowers are pollinated and the other is the amount of limestone in the soil. The latter has led some botanists to call the limestone forms of Jo Daviess county *Aquilegia formosa* (=fair or handsome.)



This is the only species of Wild Columbine native in Illinois, though there are species other than this in southern and western states. All Columbines are fond of rocky slopes and ledges where the soil is scanty but they are also found in open woods, along railroads and in other undisturbed places. This plant occurs throughout the eastern half of the United States,

Maine to Minnesota, Florida and Texas.

The flowers, produced from April to July, are scarlet outside and yellow within, the 5 sepals and 5 petals being colored alike. The petals are prolonged backward into hollow spurs which contain the nectar. Stamens are numerous and usually some are without anthers. There are 5 pistils crowded together, each crowned by a slender style.

The fruits are cylindrical pods which open along the inner side, exposing the smooth and shining seeds arranged in 2 rows. Buds and flowers hang inverted but after pollination they slowly straighten up so that the fruit is erect as shown.

WHITE BANEERRY. WHITE COHOSH

Actea alba (L.) Mill.

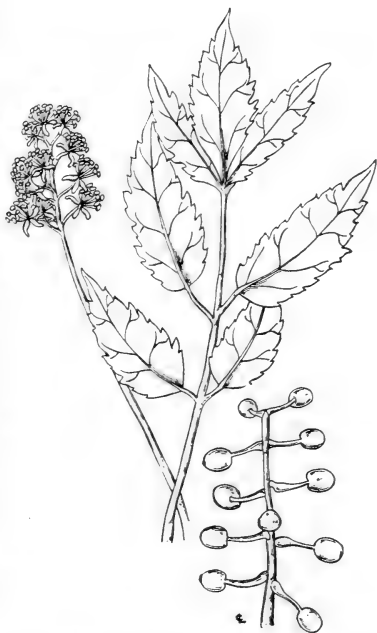
The White Baneberry or White Cohosh has a more striking appearance in fruit in September than in bloom from late April to early June, but it is to be considered among our common spring flowers. It is found in woods from Nova Scotia to Georgia and west to Minnesota and Missouri.

The underground stem is perennial. The upper part of the plant is bushy and 1-3 feet high. The upper leaves may be sessile and the lower are large, petioled and 2 or 3 times ternate. The leaflets are sharply cleft and toothed.

The white flowers are produced in a short and thick terminal raceme. The 4 or 5 sepals fall off as the flower opens, exposing the 4-10 small narrow petals. The numerous stamens have slender filaments. There is 1 pistil consisting of an ovary and a broad sessile stigma. The fruit is a white poisonous berry on a stout red pedicel.

It is these red pedicels and white berries that make the plant so conspicuous in autumn.

The Red Baneberry, *Actea rubra* (Ait.) Willd., is also found in Illinois woods but is less common. The leaves of this species are somewhat less sharply toothed, and it is easily recognized in fruit because the berries are red and the pedicels are slender. These fruits are very poisonous.



Continuous as the stars that shine
 And twinkle on the Milky Way,
 They stretched in never ending line
 Along the margins of the bay:
 Ten thousand saw I, at a glance,
 Tossing their heads in sprightly dance.

Daffodils—WILLIAM WORDSWORTH

GOLDEN SEAL. ORANGEROOT

Hydrastis canadensis L.

The Golden Seal, also called Orangeroot, is becoming rarer every year. Forests, which harbor a rich deep leaf mold and create dense shade, are being thinned out, destroying the

conditions needed by the Golden Seal, so that it appears doomed. However, it is still found locally throughout its range, from western New England to Minnesota and southward. This is the only species known in America and there is one other in Japan.



The common name comes from the thick yellow underground stem, which was formerly much used in medicine. In early spring it sends up a single basal leaf and a simple hairy stem bearing 2 leaves near the top and terminated by a single whitish flower, which blooms in April. The long-petioled basal leaf is 5-8 inches broad, with 5-9 palmately arranged lobes sharply and unequally toothed. The 2 stem leaves are much smaller but otherwise similar.

There are no petals; the 3 sepals are petallike and fall off as the flower opens. The numerous stamens are the most conspicuous part of the flower. There are usually 12 or more pistils, each containing 2 ovules and having a flat 2-lipped stigma. In fruit the ovaries form a head of crimson, 1 or 2-seeded berries, the whole somewhat resembling a raspberry.

This is a plant that is frequently overlooked, not because of its low habit but because the flower is short lived and inconspicuous between the terminating leaves.

COMMON PAWPAW

Asimina triloba Dunal

The Custard Apple family is mostly tropical and its only member in this climate is the Common Pawpaw. Apparently there are two varieties of Pawpaw, one with white pulp and one with yellow. The yellow pulp is regarded as the more palatable and possibly this form may be so improved under cultivation that the fruits will be of economic importance.

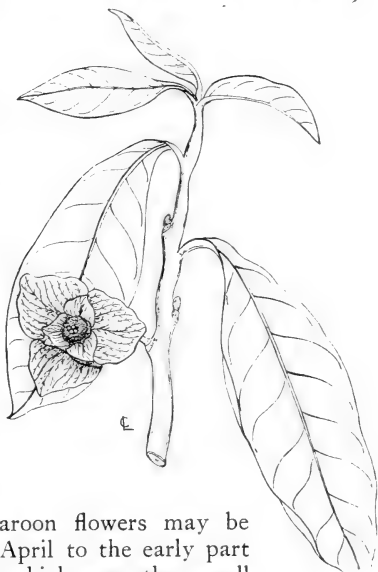
The Common Pawpaw does not extend much north of Illinois but does grow in southern Michigan, east to New Jersey and south to Florida and Texas. It is a tall shrub or small tree 10-40 feet high, frequenting rich soil on the banks of streams.

The dark purple or maroon flowers may be looked for from the last of April to the early part of June. There are 3 sepals which are rather small and densely hairy. The 6 floral parts shown are petals, the 3 outer much larger than the inner. Stamens are numerous and packed into a globular mass. There are usually not more than 4 pistils.

The fruits, which mature in September and October, are classed as fleshy berries but they are 3-6 inches long and 1-2 inches in diameter, yellowish green or brownish when ripe and containing numerous large flat seeds arranged in 2 rows.

The pools are clear as glass
 Between the white cups of the lily flowers;
 The currants are like jewelled fairy bowers;
 A dazzling insect worries the heart of a rose,
 Where a delicate fern a filmy shadow throws,
 And airy as bubbles the thousands of bees
 Over the young grape clusters swarm as they please.

Midsummer Blooms Within Our Quiet Garden Ways—
 EMILE VERHAEREN



MOONSEED

Menispermum canadense L.

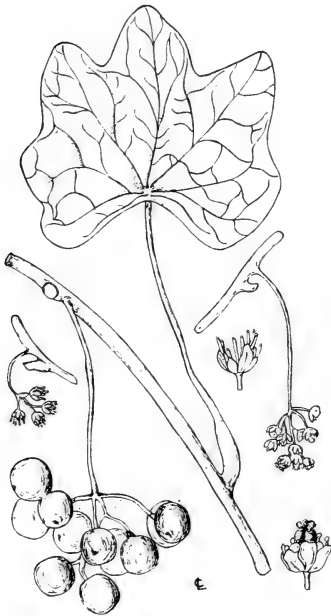
This Moonseed is a woody plant that climbs by twining around any support it can find. It grows along streams and forest borders or in rather open woods throughout the eastern half of the United States and southern Canada, abundant in some localities and rare in others.

The leaves are quite variable but usually peltate and 3-7-lobed. They are slender petioled and broadly ovate, being 4-8 inches wide.

The flowers are dioecious and bloom in June and July. Both forms are borne in loose clusters in the axils of leaves and are greenish white or yellowish white and quite small. Each flower has 4-8 sepals and 6-8 short petals. The staminate form has 12-24 stamens, and the pistillate 2-4 pistils and usually a few sterile filaments.

The fruits ripen in September as purplish blue or black drupes which are covered with a waxy bloom and resemble small grapes, but they are not edible. The stone of the fruit becomes curved in maturity so that it is more or less half-moon shaped and the cause of the plant's common name.

The Scarlet Moonseed, *Cocculus carolinus* (L.) DC., is a low straggling climber found only in the southern part of the state. Several minutely hairy stems rise 4-8 feet from the root crown, bearing alternate heart-shaped leaves, downy beneath. The small greenish flowers are in panicles and give way to brilliant coral red drupes supposedly poisonous.



MAY APPLE. MANDRAKE

Podophyllum peltatum L.

The Barberry family is chiefly important for the common Barberry Bush which harbors the fungus that causes black stem rust of Wheat, and for the eradication of which the United States spends large sums each year.

The May Apple is a common perennial in rich woods throughout Illinois and over most of the eastern half of the United States. Its stout stem creeps underground not far below the surface, and from it branch thick fibrous roots. The peltate leaves are often 1 foot in diameter.

Each flower is borne on a short slender stem, sometimes from the petiole of a single leaf but usually, as shown, from the crotch of a branching petiole that bears a pair of leaves. There are 6 pale green sepals which soon fall off, 6 or 9 white petals, twice as many stamens as petals and 1 fat pistil. Forms with pink flowers are occasionally found.

The edible fruit, though commonly called an apple, is really a berry. Ripe in July, it is sweet and slightly acid, 1-2 inches long but possibly reaching the size of a small Lemon, though darker yellow, more fleshy, much less juicy and containing many seeds. Wild Lemon and Hog Apple are other names from these characteristics. Roots, stems and leaves contain a poisonous substance called podophyllin, much used in medicine.



O, the bank where wild flowers blossom, ferns nod and mosses creep
In a tangled maze of beauty over all the wooded steep!

Homesick—JULIA C. R. DORR

TWINLEAF. RHEUMATISM ROOT

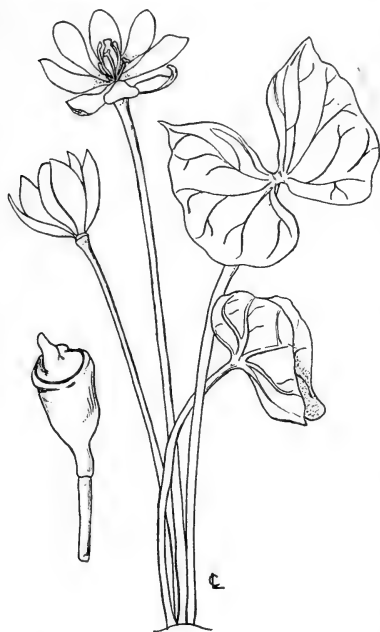
Jeffersonia diphylla (L.) Pers.

In rich woods of the central and northern parts of the state, as well as throughout the Great Lakes region and south to Tennessee, grows a plant that in many respects resembles the

Bloodroot, page 119, but is more closely related to the Common Barberry. This is the Twinleaf or Rheumatism Root. It received its generic name in honor of Thomas Jefferson.

Each blade of the long-petioled basal leaves is divided into 2 leaflets which appear exactly alike and so account for the name Twinleaf. At flowering time the leaves are small but later their stalks may become 1 foot in length and the blades 4 inches long or longer. The flower stalk also elongates and may be 1 foot or more in length by the time the fruit is mature.

The stalk, slender and leafless, arises in April or May and bears a solitary white flower. The sepals



fall off as the flower opens but there remain about 8 petals, as many stamens and a solitary pistil with a 2-lobed stigma. The pear-shaped pod fruit opens by a half-lid at the top. Numerous seeds are arranged in several rows. Each seed has upon 1 side a fleshy outgrowth called an aril. Ants feed on this aril and frequently carry the seeds from place to place, thus aiding their dissemination.

A moonlit path hemmed in by beds of bloom,
Where phlox and marigolds dispute for room
With tall, red dahlias and the briar rose.

The Fruit Garden Path—AMY LOWELL

BLUE COHOSH. PAPOOSE ROOT

Caulophyllum thalictroides (L.) Michx.

The Blue Cohosh is one of the few interesting wild flowers of this family. It is found in rich woods from New Brunswick to South Carolina and west to Manitoba and Missouri. In Illinois it occurs commonly throughout.

This is a smooth perennial herb with matted and knotty underground stems. In early spring it sends up a nearly naked stem 1-3 feet high, which when young is covered with a whitish waxy bloom. The base is sheathed in large bracts and at the top is borne 1 large, nearly sessile, ternately compound leaf. The leaflets look much like those of the Tall Meadow Rue, page 100. Usually there is also a smaller, twice compound leaf near the base of the inflorescence.

The flowers are produced in April and May before the leaf has reached full size. There are 6 green sepals with 3 or 4 little bracts at the base, 6 small glandlike petals and 6 stamens. The single pistil has a short style and the stigmatic surface is on 1 side only. The 2 seeds develop so rapidly that soon after flowering they burst the ovary and remain exposed. They are borne on stalks about one-quarter inch long and become as large as peas, turn blue and resemble berries or drupes.



May is building her house of petal and blade;
Of the roots of the oak is the flooring made,

With a carpet of mosses and lichen and clover,
Each small miracle over and over,

And tender, travelling green things strayed.

May is Building Her House—RICHARD LE GALLIENNE

WILD ALLSPICE. SPICE BUSH. FEVER BUSH

Benzoin aestivale (L.) Nees

The Laurel family is represented in Illinois by the Spice Bushes and Sassafras. The Cinnamon Tree, from the bark of which commercial cinnamon is made, and

the plant from which camphor is obtained are tropical members of this family.

The Spice Bush is a shrub with smooth bark and slender twigs, which grows 5-15 feet high. It is found from Maine to Ontario, Michigan and Kansas, south to North Carolina and Tennessee. Its bright yellow flowers, which appear early in spring, and its brilliant red fruits, which ripen in autumn, are very conspicuous and make



it a desirable shrub for ornamental planting. Twigs and leaves when broken or bruised have a spicy odor by which the plant may easily be identified.

The flowers are imperfect and generally dioecious; they appear in March and April before the leaves. There is no corolla but the 6 sepals are yellow. The pistillate flower has 15-18 rudimentary stamens of two forms, neither of which produces pollen, and a single pistil. The staminate flower has 9 stamens in 3 sets of 3, and a rudimentary and functionless pistil at the center. Filaments of the 3 inner stamens are lobed and gland bearing near the base; the anthers open by lids. The fruits are bright red drupes.

The Downy Fever Bush, *Benzoin melissaefolium* (Walt.) Nees, is found from Missouri and southern Illinois to North Carolina, Florida and Alabama. It is similar to the Spice Bush, but twigs, buds and lower surfaces of the leaves are densely covered with short hairs.

BLOODROOT

Sanguinaria canadensis L.

The Bloodroot gets its name from the orange-red juice that flows out when any part of the stem or petiole is cut or broken. This juice is called latex and in most plants in which it is found is milky white. Latex is different from the sap of the plant and occurs in special receptacles. It usually contains a mixture of nearly everything that is produced in the plant, including foods and waste materials, but no definite function is known for it. Rubber is made from the latex of rubber plants and probably all latex contains rubber in small amounts.

The Bloodroot is a common perennial in rich woods from Nova Scotia, Manitoba and Nebraska to Florida, Alabama and Arkansas. It blooms in April or early May. From the terminal bud of the thickened underground stem arise a leaf and a stem with a single flower. At first the leaf partly envelops the flowering shoot but later it unfolds, enlarges, and, persisting well into the summer, manufactures food to be stored in the underground stem and then to be used the following spring.

The 2 sepals fall off as the flower opens but 8 or more conspicuous white petals remain. Like most members of the Poppy family, the flowers do not last long and if picked the petals soon drop off. The fruit is a many-seeded 1-celled pod.



CELANDINE POPPY

Stylophorum diphyllum (Michx.) Nutt.

In contrast with the Bloodroot, which possesses a red juice or latex, the Celandine Poppy has a bright yellow juice. The name *Stylophorum* means style bearing and

was given to this plant because most other members of the Poppy family do not have a distinct style.

This Poppy is limited to a few of the central states. It is found from extreme western Pennsylvania to Wisconsin and Missouri, and south as far as Tennessee. In Illinois it occurs in the damp woods of the south but is not common.

This perennial has a stout underground stem from which rise the basal leaves and flowering stem 1-2 feet high. The lower surfaces of the leaves are pale and the upper are bright green. Leaves of



the flowering stem are 1-3 and commonly 2 opposite.

The flowers are produced from April to May either singly or in clusters of 2 or more. Each has 2 hairy sepals which soon drop off, and 4 striking deep yellow petals. The stamens are numerous and there is 1 pistil with a distinct style and a 2 or 4-lobed stigma. The capsule fruit contains many seeds which are conspicuously crested.

Bright are the blossoms of the scarlet sage,
And bright the velvet vest
On the nasturtium's breast;
Bright are the tulips when they reddest rage,
And bright the coreopsis' eye;

But none of all can with your brilliant beauty vie.

Poppies—JOHN RUSSELL HAYES

DUTCHMAN'S BREECHES

Dicentra Cucullaria (L.) Bernh.

The Fumitory family is relatively small and economically unimportant save for a few garden flowers such as **Bleeding Heart**.

The Dutchman's Breeches occurs from Nova Scotia to Lake Huron and Minnesota, southward to North Carolina and Missouri. It is quite common throughout most of its territory and along with its relative the Squirrel Corn, page 122, frequently takes possession of considerable areas.

The delicate smooth stems arise 5-10 inches high from a cluster of small perennial tubers packed so closely together as to have the appearance of a scaly bulb. The feathery ternately compound, basal leaves are slender petioled and a shade lighter green beneath.



The plant receives its common name from the white or occasionally pink-tinted, dainty and yellow-tipped flowers, which remind one of a pair of inverted pantaloons. The 2 leglike spurs are petals modified into this peculiar shape. Two other, narrow and smaller petals are at right angles to the larger, with their tips extended to form an arch over the 6 yellow stamens. There are only 2 sepals, very small and scalelike. The pistil has a very slender style and a 2-lobed stigma. These delicate flowers, 1-10 on a single stalk, appear in April and May and should be looked for in rich woods.

The daisy's bloom on the meadow's breast,
The wandering bee

And his ceaseless quest

Of the tempting sweets in the clover's crest,
Are the joys of a summer morning.

The Joys of a Summer Morning—HENERY A. WISE WOOD

SQUIRREL CORN

Dicentra canadensis (Goldie) Walp.

The Squirrel Corn is found in rich woods from Nova Scotia to Ontario and Minnesota, southward to Missouri, and along the mountains to Kentucky and Virginia, but it is rare in Illinois.

Since it greatly resembles the Dutchman's Breeches, page 121, perhaps it will be sufficient to note the differences.

Leaves and stem arise 6-12 inches high in this species, and also from tubers, but these, instead of being clustered into a bulbous structure as in the Dutchman's Breeches are scattered on underground stems and are produced so near the surface of the soil that they frequently become uncovered and lie on top of the ground. These yellowish tubers look something like grains of Corn and are said to be relished by squirrels, hence the common name. Leaves are the same except that in this



species they are decidedly paler beneath with a fine whitish bloom.

The Squirrel Corn blooms a week or so later than the Dutchman's Breeches, during April and May. The nodding, short-pediceled flowers, 4-8 in a raceme topping the slender scape, are greenish white frequently tinged with rose and are slightly fragrant with the odor of Hyacinth. They are shaped very much like our garden Bleeding Heart, a native of Japan but very closely related. The crests or tips of the inner petals of Squirrel Corn are much larger and more conspicuous than those of the Dutchman's Breeches. Fruits of the two species are similar.

GOLDEN CORYDALIS

Corydalis aurea Willd.

This very pretty inhabitant of rocky woodlands is scattered in far-separated localities throughout the state. It has traveled far and irregularly and grows from Nova Scotia and Pennsylvania to Minnesota and Alaska, south to Missouri and in the Rocky mountains to Arizona. This is our commonest species and yet because of its secluded habitat is unknown to most people and commonly unobserved by the professional botanist.

The plant grows 1 foot high from a fibrous root cluster, branches diffusely and bears numerous smooth, much-divided leaves suggestive of its cousin the Dutchman's Breeches, page 121.



The bright golden yellow flowers, one-half to three-quarters of an inch long, are borne in terminal and lateral racemes. They are very irregular with 2 sepals and 4 closely attached petals, with 1 of the outer petals long spurred at the base. Stamens are 6 in 2 sets of 3 opposite the outer petals. The single pistil becomes a long, curved, very slender pod contracted regularly at intervals. The black seeds are conically thickened discs, shiny and with minute concentric ridges. The flowers bloom from the latter part of May to August and the seeds are ripe in September.

The Pale Corydalis, *Corydalis sempervirens* (L.) Pers., has purplish or rose flowers which are yellow tipped, in paniced racemes on a stalk 4-24 inches high. Rocky bluffs are the best places to look for this plant. The spur of the corolla is short and rounded, and the elongated pods are slender and erect.

The flowers of nearly all species of the Mustard family are characterized by 4 sepals, 4 petals arranged in the form of a cross, 6 stamens 2 of which are shorter than the other 4, and 1 pistil which in fruit becomes a pod. They are so much alike that it is frequently impossible to identify the plants by flowers alone; and the fruits, which often differ enough for purposes of identification, must then be used.

The family is very important economically, as it contains, besides a number of weeds, many beautiful garden flowers and such vegetables as Cabbage, Cauliflower, Kale, Brussels Sprouts, Kohl-rabi, Mustard, Turnip and Radish. No plant in the family is poisonous, but leaves or roots, stems, and in some cases seeds, have a pungent odor or peppery taste.

KEY TO GENERA

1. Flowers yellow. 2
Flowers white or purple. I
2. Petals more than one-half inch long. 3
Petals shorter. 4
3. Flowers orange-yellow; leaves narrow. *Erysimum* p. 129
Flowers yellow; leaves broader. *Brassica* p. 127
4. Flowers bright yellow. *Barbarea* p. 131
Flowers pale yellow. *Sisymbrium* p. 128
5. Plants growing in brooks or streams. *Radicula* p. 130
Plants not in brooks or streams. 6
6. Fruits flat and short. 7
Fruits elongated. 8
7. Fruits nearly circular, up to one-half inch in diameter;
seeds 2 or more in each cell. *Thlaspi* p. 125
Fruits nearly circular, not more than one-eighth inch in
diameter; seeds 1 in each cell. *Lepidium* p. 125
Fruits triangular. *Capsella* p. 126
8. Leaves palmately divided. *Dentaria* p. 133
Leaves not palmately divided. 9
9. Two of the sepals with a hump just below the tip.
. *Iodanthus* p. 132
Sepals without a hump near the tip. 10
10. Lower leaves nearly as broad as long, on long petioles.
. *Cardamine* p. 134
Lower leaves much longer than broad, on short petioles.
. *Arabis* p. 135

FIELD PENNYCRESS. MITHRADATE MUSTARD

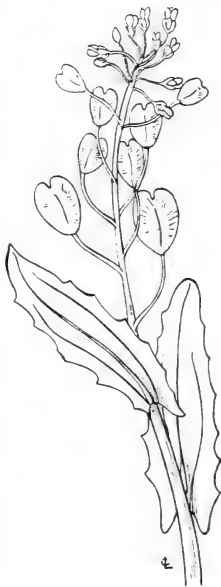
Thlaspi arvense L.

The Field Pennycreess is a smooth annual which is not common in the southern part of the state but becomes more frequent farther north and in Canada is often a pernicious weed. It is a native of Asia and Europe and from the latter was introduced into this country. It blooms from June to September.

This plant grows in fields, roadsides and waste places, is 6-18 inches high and usually somewhat branched above, though frequently simple in colonies. The basal leaves are petioled but they soon disappear and then all the leaves are like those shown, oblong or lanceolate, slightly dentate and sessile by arrow-shaped bases. They are alternate as in all Mustards.

The numerous small flowers are white, each of the 4 petals being about one-eighth of an inch long. There are 6 very short stamens and a single pistil with a flattened ovary, which in fruit becomes enlarged to a diameter of one-half inch and is distinctly winged. This pod is longitudinally divided, with 2-8 seeds in each half.

Wild Peppergrass or Birdseed, *Lepidium virginicum* L., is a very common smooth annual of yards and waste places alike. It grows up to 1 foot high and becomes much branched as the season advances. The leaves are variable, the obovate or spatulate basals having large terminal lobes and small lateral ones, and the small, very numerous and linear or lanceolate stem leaves are more or less toothed and sessile. The small white flowers are born at the summit of elongating racemes. Stamens are 2. The flat round fruits are notched at the apex, about one-eighth inch across, and have 2 cells each containing 1 seed. Seed-eating birds like the fruits. Illinois is well within the range of this plant, which is from Quebec to Minnesota, south to Florida, Texas and Mexico. The blooming season is June to September.



SHEPHERD'S PURSE

Capsella Bursa-pastoris (L.) Medic.

The Shepherd's Purse is one of our commonest flowering plants, probably second in this respect only to the Dandelion. It is a native of Europe but is now widely distributed over nearly all parts of the earth inhabited by man. In Illinois it is common everywhere along roads and streets and about dwellings, as well as in fields and waste places.



This annual starts early and blooms throughout the season from April to late autumn. The branching stem grows 6-20 inches high from a long deep root. It is usually hairy near the base but smooth above. The basal leaves, 2-5 inches long, are more or less lobed and form a large rosette. The stem leaves are relatively few and often nearly entire, but usually with earlike appendages at the base.

Flowers are white and have the usual structure for the family: 4 sepals, 4 petals, 6 stamens with 2 shorter, and 1 pistil. The triangular or purse-shaped pods have 2 cells containing 10-12 seeds each. The seeds have no special means

of dissemination but since 50,000 of them are not uncommonly produced by a single plant there is great probability that some will be widely scattered.

Because these plants are extremely variable in size, foliage, inflorescence and shape of the pod, many species have been proposed in place of this single name. Sixty-three subdivisions have been suggested by one investigator alone.

WILD MUSTARD. CHARLOCK

Brassica arvensis (L.) Ktze.

The Wild Mustard or Charlock was introduced into this country from Europe, has flourished and has become a very common weed. It occurs in grain fields and waste places throughout the United States.

It is an annual, 1-2 feet high and branching above the middle, sometimes covered with stiff scattered hairs but sometimes entirely smooth. The leaves are rough to the touch, coarsely and prominently ribbed and veined, and with edges irregularly notched or wavy.

The yellow flowers, blooming from May to November, have the usual structure for members of this family and the pods are commonly smooth but rather knotty.

The Black Mustard, *Brassica nigra* (L.) Koch, is another European plant that has become a weed here. It is larger, growing 2-7 feet tall and branching freely. Its flowers are smaller and its pods are shorter and usually closely appressed to the stem. It blooms from June to November and is found in fields, along roadsides and in waste places throughout the country. Table mustard and mustard oil are made from the seeds of this plant and in Europe it is extensively cultivated for the purpose. It may also be cultivated for fodder, in which case it is harvested before the seeds mature.

The White Mustard, *Brassica alba* (L.) Boiss., also from Europe and cultivated, may be distinguished from the similar Charlock, Black Mustard and Rutabaga by the fact that all its leaves are pale, deeply divided and do not clasp the stem. The pods are bristly and have large 1-seeded angular beaks that are sword shaped and one-half the length of the whole pod.

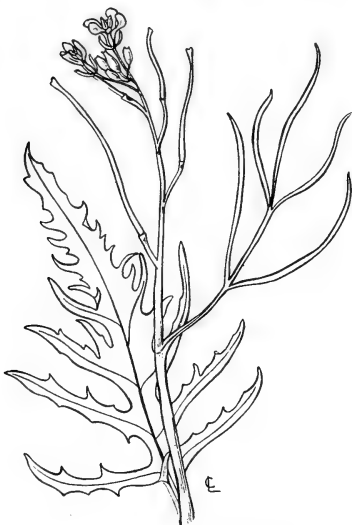


There is a flower, a little flower
 With silver crest and golden eye,
 That welcomes every changing hour,
 And weathers every sky.
A Field Flower—JAMES MONTGOMERY

TUMBLE MUSTARD

Sisymbrium altissimum L.

The Tumble Mustard is another immigrant from Europe which has spread over the continent, north from Virginia, Missouri, and Utah into Nova Scotia, Ontario and British Columbia. In many places it has become a very annoying weed.



This is a biennial which in the first year produces a rosette of leaves but no upright stem. The food manufactured by the leaves is stored in the root, from which the plant sends in the second year a smooth, erect and freely branching stem 2-4 feet high, on which flowers and seeds are produced all summer. The leaves vary greatly from the base to the top of the plant, all gradations between the kinds shown being found.

The small, pale yellow flowers have the typical structure of flowers of this family. The pods are very slender and divided longitudinally into 2 parts, each of which contains 1 or 2 rows of seeds. Sometimes an upper portion of the plant breaks off and is blown along over the ground, or it may get caught on a Tumbleweed or a Russian Thistle which is being blown about. In this way the seeds are threshed out of the pods and scattered over the soil.

The Hedge Mustard, *Sisymbrium officinale* (L.) Scop., is a common weed throughout Illinois. It is erect, 1-3 feet high, smooth or somewhat soft hairy, and its spreading branches are rigid. The flowers are deeper yellow and much smaller; the thick-walled pods are hairy, short stalked and appressed to the scarcely branched stem. The valves have a strong prominent midrib. It is likewise a European invader of waste ground.

WESTERN WALLFLOWER

Erysimum asperum DC.

Orange-yellow is an unusual flower color, not only in the Mustard family but among flowers in general. The large bright orange-yellow flowers of the Western Wallflower therefore have undoubted value in attracting certain insects that will accomplish pollination, and they make this plant a very conspicuous inhabitant of open places and woodland borders. It is found only locally from Illinois and Ohio to Newfoundland but is more common westward to Colorado and New Mexico.

The stem, 1-3 feet tall, is slightly rough with short hairs and is usually simple but may branch near the top. The stem leaves may be somewhat toothed as shown, or they may be entire. Lower leaves are somewhat larger and they taper into short petioles.

The flowers have the usual 4 sepals, 4 petals, 6 stamens and 1 pistil, and bloom from April to July. The pods are 4-sided and contain 2 rows of seeds.

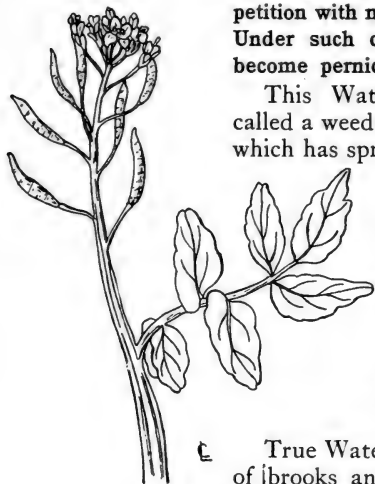
The Wormseed Mustard, *Erysimum cheiranthoides* L., blooms in July and August along the banks of streams and in the open. It is found locally in river bottoms throughout Illinois. The slender and branching stem is roughish and the lanceolate leaves are barely toothed. The small pods are upright on slender spreading pedicels, and are blunt angled. The flowers are the usual Mustard family yellow. Treacle Mustard or Tarrify are other names given it in various parts of its range, from Newfoundland through New Jersey to Missouri and the Pacific coast.



TRUE WATER CRESS

Radicula Nasturtium-aquaticum (L.) Britten & Rendle

It frequently happens that when a plant is introduced into a new country whose climate is agreeable it finds conditions for growth and reproduction unusually favorable, partly because it is freed from competition with many of its natural enemies. Under such circumstances many plants become pernicious weeds.



This Water Cress could hardly be called a weed but it is an introduced plant which has spread over most of the central part of the continent and is common in most places. It is a native of Europe and northern Asia, and is now found in the West Indies and South America as well. It is greatly prized and extensively used as a salad, for which purpose it was originally cultivated.

True Water Cress grows in the water of brooks and streams and forms very dense patches of considerable size. The smooth stems float on the water or creep on the mud, branching freely and rooting at the nodes. Leaflets of the pinnately compound leaves are 3-11, obtuse, ovate or oval, or the larger terminal one somewhat circular.

The small white flowers have the usual structure of flowers of this family, and the petals are about twice as long as the sepals. The pods, turned upward from the slender pedicels of equal length, are divided longitudinally into 2 parts, each of which contains 2 rows of seeds.

The Marsh Cress or Yellow Swamp Cress, *Radicula palustris* (L.) Moench, is common in wet places or shallow water. The smooth erect stem is 8-32 inches high and much branched. Leaves are pinnately cleft or more deeply parted; the upper may be deeply narrow lobed. The small orange-yellow flowers are on pedicels as short as the flower but longer than the ellipsoid-cylindric pods. The blooming season is May to August.

YELLOW ROCKET. COMMON WINTER CRESS

Barbarea vulgaris R. Br.

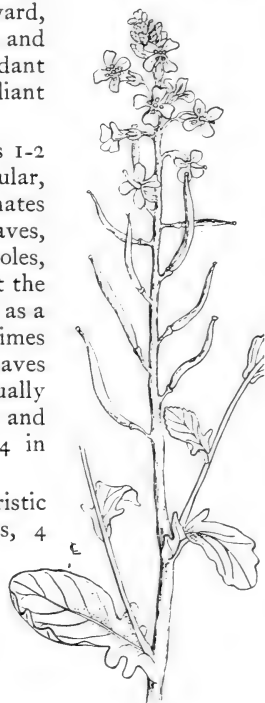
The Yellow Rocket, also called Bitter, Winter, Yellow or Rocket Cress, is among the first yellow-flowered members of the Mustard family to bloom, from April to June. It is distributed from western Pennsylvania to Minnesota, Missouri and southwestward, principally on waste lands, in meadows and along roadsides. Sometimes it is abundant enough to carpet large areas a brilliant yellow.

The single thick green stem grows 1-2 feet high. It is smooth, strong and angular, and each of its several branches terminates in a cluster of flowers. The lower leaves, 4-5 inches long, have short slender petioles, and form a rich shiny green tuft about the base of the stem. They are often used as a spring salad and the plant is sometimes cultivated for this purpose. The leaves have the shape of a lyre, being cut usually into 5 parts of which 1, rounded and terminal, is larger than the other 4 in opposite pairs.

The flowers have the characteristic Mustard family structure: 4 sepals, 4 petals, 6 stamens 2 of which are smaller than the other 4, and 1 pistil. The anthers are yellow and the calyx becomes yellow as the flower matures. The lower flowers open first and are soon followed by the seed pods while the top of the cluster is yet crowded with buds.

The Erect-fruited Winter Cress, *Barbarea stricta* Andr., is very similar to Yellow Rocket in foliage but the pale yellow flowers are in bloom gathered at the summit of the raceme in a flat-topped or convex open cluster. The pods, on slender pedicels, are appressed against the axis of the raceme.

Barbarea verna (Mill.) Asch. is the Early Winter Cress, which differs by having leaves with 5-8 pairs of lateral lobes, and longer pods on very thick pedicels. It is occasional in southern Illinois.



FALSE ROCKET. PURPLE ROCKET

Iodanthus pinnatifidus (Michx.) Steud.

The common name of this plant comes from the latter's similarity to another plant with larger flowers, which is cultivated in gardens under the name Rocket.



The False Rocket never becomes a weed. It grows mostly along river banks and in moist woods, and is found from western Pennsylvania to Minnesota and south to Tennessee, Louisiana, Missouri and Texas. It is the only species of *Iodanthus* and is not found in other parts of the world. The flowers bloom in May and June and the fruits mature in July and August.

The plant is a smooth erect perennial 1-3 feet high, branching toward the top. The lower leaves are ovate or oblong and 2-8 inches long. They taper into margined petioles which have earlike appendages at the base and clasp the stem. The leaf forms vary greatly from the base to the top of the stem; an upper leaf is shown.

The many flowers are purple, brightening to violet or even whitish. They are one-quarter inch broad and on spreading pedicels. The 4 sepals and 4 long petals are all quite slender. The 6 stamens are arranged as usual in this family, with 2 shorter than the other 4, but the pistil is provided with a stout style. The fruit is an ascending linear pod 1-1½ inches long, somewhat flattened and containing several oblong seeds in 2 rows separated by a thin partition.

TOOTHWORT. PEPPER ROOT

Dentaria laciniata Muhl.

The Toothwort, sometimes called Pepper Root, grows in rich moist woods and blooms in April and early May, thus taking advantage of the sun that reaches the then unshaded forest floor. It is found from Quebec to Minnesota, south to Florida and Louisiana, and is common throughout Illinois.

The plant is perennial by underground stems which are rather deep in the soil and are divided into tuberlike joints that are readily separable. These tubers are edible, having a pleasant peppery taste comparable to the Radish or Cress, and have furnished a delightful



addition to many a lunch on a springtime hike. The stem, growing 8-15 inches high, is usually hairy, at least towards the upper end, but it may be entirely smooth.

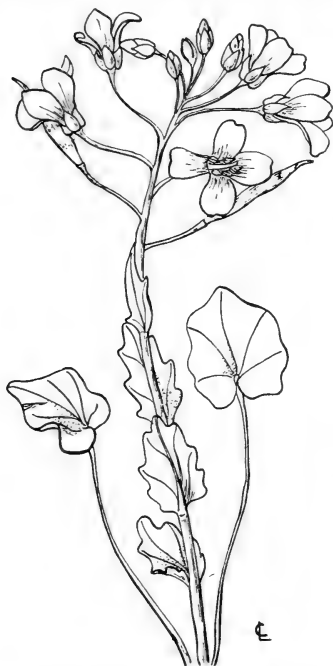
There are ordinarily 3 leaves, two of which are shown, arranged in a whorl on the stem. They are 3-parted nearly to the base, the divisions lanceolate, linear or oblong, deeply cut toothed or lobed, and the lateral ones often deeply 2-cleft. Usually there are no other leaves at flowering time but later some basal leaves, similar but with longer petioles, may be produced to carry the work of food manufacture well into the summer.

The flowers have the structure characteristic of the family and are white or in some cases tinged with pink or purple. The fruit is a linear, ascending pod 1-1 1/2 inches long and containing 1 row of seeds in each half.

PURPLE SPRING CRESS. BITTER CRESS

Cardamine Douglassii (Torr.) Britton

In low rich woods in April or early May, the Purple Spring Cress or Bitter Cress may be found in bloom. It occurs from Maryland and Kentucky far north and northwestward along the Canadian Rockies to Arctic America.



It is perennial by tuber-bearing underground stems, from which it comes up in masses over considerable areas. The slender stem is 5-12 inches high and may be somewhat hairy or entirely smooth. The basal leaves are borne on long slender petioles, whereas the stem leaves, 2-6, have short petioles or are sessile. They are usually toothed as shown but may be nearly or quite entire.

The 4 sepals are purple tinged and the 4 petals are pale or rose-purple. The mature pods are about 1 inch long and contain 2 rows of seeds separated by a partition. When ripe the halves curl up elastically from the base and the seeds may be thrown some distance.

The Spring Cress, *Cardamine bulbosa* (Schreb.) BSP., is a similar plant which blooms 2-3 weeks later, in late May and early June, but its flowers are white instead of purple and it is usually found in more open swamps or other wet places.

The Pennsylvania Bitter Cress, *Cardamine pennsylvanica* Muhl., occurs commonly on wet shores of ponds and stagnant waters as a much branched leafy plant 12 inches high. The small leaves have 7-11 lateral and terminal leaflets, the terminal broad, ovate, and the oblong laterals tending to unite along the central axis. The white flowers are very small and the pods are erect on ascending pedicels.

ROCK CRESS

Arabis lyrata L.

The Rock Cress grows in rocky and sandy places. It is likely to be found, therefore, in any of those places in the state where there are rock outcrops or sandy soil. It is widely distributed, being found in suitable situations from Ontario to Connecticut, Virginia and Tennessee, southwest to Missouri and northwestward through Manitoba and British Columbia to Alaska. It is also found in Japan.

The plant has a fleshy taproot that lives through at least one winter, as in the more northern parts of its range it is biennial, and perennial farther south. The solitary or several stems grow 4-12 inches high and usually are somewhat hairy toward the base but occasionally entirely smooth. There is a cluster of basal leaves, often several times the number shown, which may be hairy or smooth.

The number of flowers on each stem varies greatly. The 4 yellowish green sepals are small but the pure white petals are longer and quite conspicuous. There are the usual 6 stamens, 2 shorter than the others, and 1 pistil with a short slender style. The fruit is a pod containing 2 rows of seeds.

The Sicklepod, *Arabis canadensis* L., is a perennial 2-4 feet high, mostly unbranched, with numerous lanceolate leaves barely toothed or entire and sessile or nearly so. The small greenish white flowers are in terminal or lateral racemes. They are followed by flat green pods $2\frac{1}{2}$ -4 inches long and curved, which remain after the leaves have fallen and then open from below by the 2 elastic valves.

The Bank or Smooth Rock Cress, *Arabis laevigata* (Muhl.) Poir., is abundant on steep, shaded, wooded bluffs throughout. It is 2-4 feet tall, smooth and covered with a bloom. The lanceolate or linear stem leaves are mostly toothed and are attached by arrow-shaped clasping bases. The oblong-linear petals of the small greenish white flowers are scarcely longer than the calyx, and the long narrow pods are recurved-spreading on generally erect pedicels.



CLAMMYWEED

Polanisia trachysperma T. & G.

The Caper family is confined mostly to warm regions, only a few species being found in cool temperate climates. Capers, prepared from the young flower buds of one of the

members of this family, are pickled and used in salads. They have a pungent flavor similar to that of many members of the Mustard family.



This western plant has migrated into Illinois and is found in equal or greater numbers than the lesser-flowered species *Polanisia graveolens* Raf. It chooses sandy places, particularly along the Mississippi river and its branches, and along railroads coming in from the west. It is native from this state through Missouri and Texas to Cali-

fornia, and through Iowa to British Columbia.

The Clammyweed is a more or less branching annual, erect or reclining with the summit turned upward, and covered with long-petioled, trifoliate, very clammy leaves which give off a strong unpleasant odor when bruised or handled. The oblong-obtuse leaflets are entire and about 1 inch long.

The flowers are in leafy or bracted terminal racemes. The 4 sepals are purplish and slightly unequal, and the 4 yellowish white petals are nearly one-half inch in length and have long claws. Stamens are 9-12 with purplish filaments very much exserted, often twice the length of the petals. The single pistil becomes a rough pod $1\frac{1}{2}$ inches long, nearly or quite sessile, erect and containing many rough seeds.

The other Clammyweed is *Polanisia graveolens* Raf., separable by means of its flowers; they are half the size of *P. trachysperma*, have usually 11 stamens about equaling the yellowish white petals, and a very short style. The pod is slightly stalked and the seeds are smoothish.

PITCHER PLANT. HUNTSMAN'S CUP

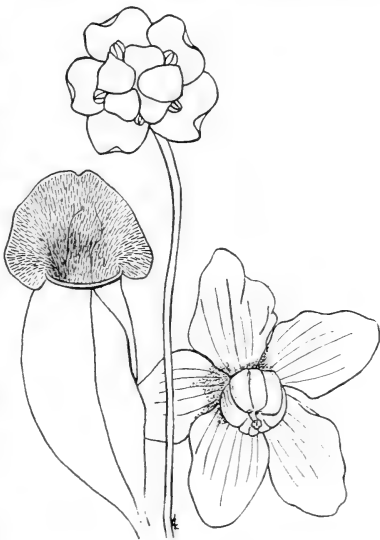
Sarracenia purpurea L.

This lone Pitcher Plant of the north is found throughout the Great Lakes region, eastern Canada and the northwestern states, and in Illinois the northern peat bogs. It produces a rosette of pitcher-shaped leaves which may be entirely green but more often are streaked with red or purple. These curious leaves are usually partly filled with water and trapped insects, the product of whose decay the plant absorbs and uses as part of its food supply.

Entrance to the pitchers is easy and insects often go in, perhaps merely by chance or perhaps attracted by the bright colors. Egress, however, is almost impossible because the rounded arching hood at the upper end of the pitcher is lined inside with

numerous short hairs which point downward. Most of the insects sooner or later get into the water and drown. On the other hand, several kinds of insects live or breed in the water in these pitchers.

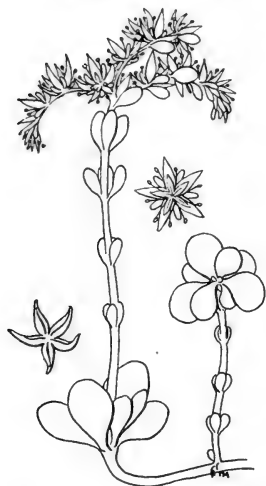
The nodding flowers, which appear on 1-2-foot scapes in June, are deep purple, nearly globose and 2 inches or more in diameter. Each consists of 5 sepals, which remain while the fruit matures, 5 incurved obovate petals, numerous stamens and a pistil which has a 5-celled ovary, 1 short yellowish style and a broad umbrella-shaped summit with 5 little hooked stigmas. Beneath the calyx are 5 little bracts colored like the sepals.



STONECROP

Sedum ternatum Michx.

Most members of the Orpine family are succulent, their leaves thick and fleshy. Probably the most familiar examples are the Live-forever and the Hen and Chickens, which are frequently planted in gardens and cemeteries.



This rare member of the family ranges in Illinois between Alexander and Kankakee counties, and is extremely local from Connecticut to Michigan and from Georgia to Tennessee and Missouri. It is a perennial by creeping rootstocks which bear ascending leafy branches 3-8 inches high. The leaves are oval, entire, fleshy and one-half to 1 inch long; and the lower are in whorls of 3.

Each branch terminates in 2-4 palmate racemes which are spreading or recurved in flower in May. The white flowers, one-half inch broad, have 5 greenish sepals, 5 acute petals, 10 long exserted stamens and 5 separate green pistils. The many-seeded follicles are one-eighth inch long and have a scale at the base.

The Showy Stonecrop, *Sedum pulchellum* Michx., is a rare and fine species found on rocks of Hardin, Pope and Johnson counties near the Ohio river. It may be immediately known by its decumbent or trailing habit, its very numerous small cylindrical leaves, which are slightly clasping, and in particular by the three-quarter-inch flowers of rose-purple varying to white, which are borne in long-armed spreading cymes.

The Ditch Stonecrop, *Penthorum sedoides* L., is not fleshy like the rest of the family. It is an upright weedlike perennial which grows in unshaded wet places from New Brunswick to Florida and west to Minnesota, Nebraska, Kansas and Texas. The stem is 6-24 inches tall and usually branched and somewhat angled near the top but round below. The yellowish green calyx is 5-lobed, and petals are usually absent. There are 10 stamens. The 5 pistils are united at the base and in fruit form a 5-beaked many-seeded capsule that opens by 5 slits.

ROUGH ALUM ROOT

Heuchera hispida Pursh

The Saxifrage family is of considerable economic importance in that it furnishes the fruits of Currants and Gooseberries as well as a number of ornamental shrubs.

The Rough Alum Root is an herbaceous plant and does not bear edible fruits. It is found on dry barren knolls or dry open wooded areas from Virginia to western Ontario and Kansas, Idaho and Saskatchewan. It will not likely be found in the southern end of Illinois but is fairly common in central and especially the northern part.

The plant is perennial by an underground stem. The upright stem is 2-4 feet tall and rough with rather stiff hairs. There are several geraniumlike leaves, usually basal, on long, slender, hairy petioles.

The flowers bloom in May and June. They have a greenish tubular calyx which is 5-lobed and very much 1-sided, and 5 petals which are small and project scarcely beyond the calyx lobes. The 5 stamens usually do not extend beyond the calyx. The pistil, with 2 slender styles, ripens into a 2-beaked capsule that opens between the beaks.

The genus *Saxifraga* of this family is largely and widely represented in Illinois by the Swamp Saxifrage, *Saxifraga pennsylvanica* L., and may be distinguished from the Alum Roots or genus *Heuchera* by the fact that its members have white flowers and 10 stamens instead of 5, and by its pinnately veined leaves. Forbes Saxifrage, *Saxifraga Forbesii* Vasey, is included in Britton & Brown with the Swamp Saxifrage, but not so in Gray's Manual, and it may be that the peculiar rock structure and constitution of its habitat, the cliffs of Giant City state park at Makanda, accounts for sufficient divergence in leaves, stamens and follicles to make it a separate species.



BISHOP'S CAP. MITERWORT

Mitella diphylla L.

One of the most modest and dainty of our spring wild flowers is the Bishop's Cap or Miterwort. It will not force one's attention and unless acquainted with it one is liable to pass it by with scarcely a glance. But although inconspicuous, the individual flowers are really very pretty.

The plant is especially fond of growing on old, greatly decayed logs and is found in rich woods from Quebec to Minnesota and south to Missouri and North Carolina. It is perennial by an underground stem and produces a cluster of heart-shaped basal leaves with slender petioles, and a slender stem, 10-18 inches high, that bears a pair of almost sessile leaves near the middle. Stems and leaves are hairy.

The flowers, in an elongated spikelike raceme, bloom in April and May. The calyx tube is grown fast to the ovary below and has 5 white lobes above. The corolla consists of 5 white petals which are narrow and deeply cut, appearing like fringe. There are

10 stamens with very short filaments and 1 pistil with 2 short styles. The fruit is a many-seeded capsule from the shape of which the name Bishop's Cap is derived.

The Naked or Northern Bishop's Cap, *Mitella nuda* L., is a dainty greenish-flowered plant of the north and has been found only in one county of northwestern Illinois. Its native heath is the Mackenzie region of Canada, east to Labrador. Its slender stem, 4-6 inches high and usually leafless, is few flowered, and will be discerned coming chiefly from among the mosses on rocks in rich moist woods. The hairy, kidney-shaped leaves are edged with rounded teeth.



GRASS OF PARNASSUS

Parnassia caroliniana Michx.

The Grass of Parnassus is a pretty perennial herb which grows in swamps and wet meadows from New Brunswick to Manitoba and south to Virginia and Iowa. It is common in the swampy parts of the Waukegan flats along Lake Michigan and in the bogs of Lake county but is not found in the central and southern parts of the state.

The unbranched flowering stem grows 6-24 inches high and bears a single terminal flower and 1 sessile clasping leaf somewhat below the middle. There are also several basal leaves on long petioles.

The flower blooms from July to September and produces an abundance of nectar. The calyx is small and 5-lobed nearly to the base. The 5 petals are white or creamy and delicately veined with pale green lines. Five fertile stamens with rather large anthers alternate with the petals, and at the base of each petal is a cluster of 3-5 imperfect stamens, called staminodia, each of which is tipped with a nectar gland. The pistil consists of an ovary and 4 stigmas but no style. It develops into a capsule containing many small, winged seeds.



Beyond the queen hydrangeas splendid rule
 Barbaric marigolds; chrysanthemums
 Outshine gladioli, and sunflowers flaunt
 Their crests of gold beneath the giant gourds.

The Garden in August—GERTRUDE HUNTINGTON MCGIFFERT

WILD HYDRANGEA

Hydrangea arborescens L.

The flower of our cultivated *Hydrangea* bushes appears to consist merely of a flat white calyx. It has been derived from the wild form and in clusters is more beautiful.

Breeding for this cultivated race has been possible due to the existence of a few such outermost flowers in the clusters of the Wild *Hydrangea*, where their function seems to be the attraction of insects.



The Wild *Hydrangea* is a shrub 4-10 feet high, which grows along the wooded slopes of ravines and banks of streams from New York to Georgia and west to Illinois, Missouri and Oklahoma. It does not occur in Illinois north of La Salle county but is not uncommon in the central and southern portions.

The stem is smooth or nearly so and the ovate opposite leaves are toothed and usually somewhat paler green beneath.

The plant blooms in June and July and sometimes again in September. Frequently all the flowers are perfect. The 8-10-ribbed calyx tube is hemispherical and remains as the outer covering of the fruit; the limb is 4 or 5-toothed. There are 4 or 5 ovate petals, 8 or 10 stamens and 1 pistil with 2-4 styles. The fruit is a 15-ribbed capsule with many seeds in its 2 cells, and it opens by a hole between the diverging styles.

The Gray or Pale *Hydrangea*, *Hydrangea cinerea* Small, of the Ohio river region differs principally in its branches, ash gray by means of a fine close down, and in the leaves, which are densely pale downy beneath. The small white flowers are in compound flat-topped clusters, but the outer ones are characteristically enlarged, showy and sterile.

MISSOURI GOOSEBERRY

Ribes gracile Michx.

This is a shrub of dry or rocky soil from Michigan and Indiana to South Dakota, south to Tennessee and Oklahoma. It grows up to $4\frac{1}{2}$ feet and usually has 1-3 spines at each node on the stem. The young branches are white or whitish and often covered with prickles.

The white or greenish white, epigynous flowers appear in April or May in inverted clusters on stalks which are usually somewhat hairy and gland bearing. The calyx consists of 5 long lobes and a short tube on the throat of which the 5 small petals are inserted. The 5 stamens alternate with the petals and have long threadlike filaments. The 2 long styles are somewhat united. The fruit matures from July to September as a smooth, purplish, many-seeded and edible berry. The tips which are picked from the fruits are the ends of the sepals, as the Gooseberry is the fleshy calyx enclosing the ovary and seeds.



The Prickly Gooseberry, *Ribes Cynosbati* L., which is quite common in central and northern Illinois, has greenish flowers in which stamens and style are not longer than the bell-shaped calyx, and the fruits are armed with long prickles. Rocky woods are the choice of this Gooseberry, from western Maine to the mountains of North Carolina, west to Manitoba and Missouri.

The Currants, both wild and cultivated, are closely related to the Gooseberries. They may be distinguished by the absence of spines at the nodes, and by the flower clusters, which are elongated racemes with several flowers instead of only 1-4 as in the Gooseberries. Our commonest wild Currant is the Wild Black Currant, *Ribes floridum* L'Hér., which has rather large yellowish flowers in April and May. This plant ranges from New Brunswick to Saskatchewan and southwestward.

WITCH-HAZEL

Hamamelis virginiana L.

The Witch-hazel family is relatively small and made up entirely of trees and shrubs. An extract distilled from the branches of this species is marketed as a remedy for sprains, bruises and the like, or as an astringent.



The Witch-hazel is a shrub with a maximum height of 25 feet, and is usually much smaller. It likes damp woods, in which it may be found from Nova Scotia to Florida and from Minnesota to Texas.

This plant is unique among shrubs because it blooms in late autumn and the fruits mature a year later. The persistent calyx is 4-parted and grown fast to the lower part of the ovary. The 4 yellow, long and narrow petals also persist a long time. There are 8 stamens, 4 perfect alternating with the petals and 4 imperfect and scalelike. The pistil consists of a 2-celled ovary and 2 short styles. The fruit is a woody capsule containing 2 seeds.

The capsules are ripe about the time the next crop of flowers appears. If they are collected in September or October and kept indoors they dry out and at length burst with a snap, discharging the seeds often more than 20 feet.

The Sweet Gum or Bilsted, *Liquidambar styraciflua* L., is the other of the two members of the family found in Illinois. This is a large and beautiful tree in the swampy woods of the south, known for its star-pointed, 5-7-lobed leaves and fragrant sap. It is found only in swampy woods along the Atlantic coast and the Gulf, up the Mississippi basin to Illinois and Missouri.

The Rose family is economically important because it is the great fruit family, furnishing among others the Apple, Pear, Peach, Plum, Cherry, Apricot, Strawberry, Raspberry and Blackberry. In addition to the fruits there is a large number of highly prized ornamental plants, especially the Rose and such shrubs as Bridal Wreath.

Practically all members of this family are insect pollinated; in fact so necessary are insects for the pollination of many fruit trees that in large orchards it is customary to keep bees as pollinating agents.

KEY TO GENERA

1. Strictly woody shrubs or small trees.....2
 Shrubs armed with prickles.....5
 Herbs.....6
2. Petals attached below ovaries; fruit dry.....*Spiraea* p. 146
 Petals attached above ovaries.....3
3. Branches armed with thorns.....*Crataegus* p. 149
 Branches without thorns.....4
4. Leaves sharply and finely toothed.....*Amelanchier* p. 148
 Leaves coarsely toothed.....*Pyrus* p. 147
5. Petals attached below ovaries.....*Rubus* p. 154
 Petals attached above ovaries.....*Rosa* p. 156
6. Petals attached below ovaries.....7
 Petals attached above ovaries.....*Agrimonia* p. 155
7. Styles jointed, elongated and persistent.....*Geum* p. 153
 Styles not thus.....8
8. Receptacle pulpy, enlarged and edible in fruit.*Fragaria* p. 150
 Receptacle dry, often hairy.....*Potentilla* p. 151

Love, it is the time of roses!
 In bright fields and garden-closes
 How they burgeon and unfold!
 How they sweep o'er tombs and towers
 In voluptuous crimson showers
 And untrammelled tides of gold!

How they lure wild bees to capture
 All the rich mellifluous rapture
 Of their magical perfume,
 And to passing winds surrender
 And their frail and dazzling splendor
 Rivalling your turban plume!

The Time of Roses—SAROJINI NAIDU

MEADOW SWEET

Spiraea salicifolia L.

The Meadow Sweet or Queen of the Meadow is a shrub 2-6 feet high, the tough yellowish brown stems of which are covered with fine hairs. It is found in moist places from New York to North Carolina and Missouri, northwestward to Saskatchewan, and blooms from June to August. It is not extensively cultivated because other species, such as the Bridal Wreath, *Spiraea prunifolia* Sieb. & Zucc., introduced from Japan, are preferred.

The alternate leaves are firm, pointed at tip and base, and finely and sharply toothed. They are about 2-2 $\frac{3}{4}$ inches long.

The flowers have a slight odor but are not fragrant; in this respect the name Meadow Sweet is somewhat misleading but it applies very well to the simple beauty of the plant. The short calyx is 5-lobed and persists as the fruit matures.

The 5 slightly curved and rounding petals are white, and 10-50 rosy stamens project from the flower to give it a feathery appearance. Five to 8 pistils are present and develop into small several-seeded pods.

The Hardhack or Steeplebush, *Spiraea tomentosa* L., is sometimes found in low grounds in the northern part of the state. Its stems and lower surfaces of the ovate or oblong and toothed leaves are very woolly. The rose or rarely white flowers are in short racemes in a dense panicle, and the pods are also woolly.

There were many flowers in my mother's garden,
Sword-leaved gladiolas, taller far than I,
Sticky-leaved petunias, pink and purple flaring,
Velvet-painted pansies smiling at the sky;
Scentless portulacas crowded down the borders,
White and scarlet-petalled, rose and satin-gold,
Clustered sweet alyssum, lacy-white and scented,
Sprays of gray-green lavender to keep 'til you were old.

In My Mother's Garden—MARGARET WIDDEMER



WILD CRAB

Pyrus ioensis (Wood) Bailey

One of the most beautiful and fragrant of all trees is the Wild Crab when it is in bloom in late April and May. The rose-colored buds and the delicately pink flowers have a distinctive beauty begging description. It is from this species that the Bechtel's Double-flowering Crab of our gardens is derived.

The Wild Crab is found from central Kentucky and Indiana to Wisconsin and Minnesota, south to eastern Kansas, Texas and Louisiana. The tree grows 10-20 feet tall. The lower surfaces of the alternate leaves are densely covered with downy hairs, at least when young, and the petioles are quite woolly.



The 5 green sepals and 5 pink or whitish petals are attached to the urn-shaped receptacle above the ovaries. Stamens are numerous and there are 2-5 styles. The extremely fragrant fruit is green when ripe and excellent for making jelly.

The Southern or Narrow-leaved Crab, *Pyrus angustifolia* Ait., is also a common tree of southern Illinois and southern states. It likewise seeks low ground near streams. It is particularly striking in bud, for the pink flowers do not open for perhaps 10 days after reaching full size. The fruit, much smaller than in the Wild Crab, is green and less fragrant.

In southern Illinois will also be found the American Crab, *Pyrus coronaria* L., a somewhat armed tree 10-35 feet high, growing in thickets and open woods. The leaves are thick, ovate or elliptic, shining and dark green above; and the fragrant pink flowers are few in each cyme and mostly less than 1 inch broad.

JUNEBERRY. SHAD BUSH

Amelanchier canadensis (L.) Medic. var. *Botryapium* (L.f.) T. & G.

The Juneberry, also called Shad Bush and Sarvice, is a tall shrub or small tree 9-30 feet high or possibly more. It is quite common in dry open woodlands from Nova Scotia to western Ontario and south to Louisiana and Florida. The wood of this plant is brown and very hard.

The alternate leaves when young are brownish purple and folded lengthwise. They are then also densely matted with wool, and retain a sparse hairiness even when old or become smoothish very late.

The flowers appear in April or May before the leaves are fully developed. The calyx is cleft into 5 short lobes, and the 5 white, strap-shaped petals and numerous stamens are attached above the ovary. There are 5 styles united at their bases.

The fruit ripens in June or early July. It is berrylike, reddish purple or dark purple, and divided by thin partitions into 10 parts, each of which contains 1 seed. Sometimes,

however, 1 or more seeds fail to develop. On some plants the berries are very juicy and sweet and are relished by man and birds, but on others they are dry and tasteless. The dark purple fruits are usually better than the reddish ones.

The Dwarf Juneberry, *Amelanchier spicata* (Lam.) C. Koch, is a shrub 3-4 feet high that grows on steep rocky banks, and because of its stoloniferous stems, in colonies. It is rare and local in Illinois. The small leaves are hairy and coarsely toothed. The flowers have 5 short, ovate petals, and 5 short, ovate, greenish white sepals. The red fruit is globular, one-quarter inch in diameter, and its top is woolly. This plant is restricted generally to the banks of streams from eastern Quebec and central Maine to the mountains of western Massachusetts and westward about the Great Lakes.



RED HAW

Crataegus mollis (T. & G.) Scheele

There are many kinds of *Crataegus*, at least 20 of which are in Illinois, and some are very difficult to identify. All are thorny shrubs or small trees with simple alternate leaves, white flowers, and fruits that resemble small apples. This is one of the commonest species in the state and is also the largest fruited.

The Red Haw grows in rich, preferably moist soil from southern Ontario to South Dakota, Kansas and Kentucky. The bark is grayish brown and somewhat scaly and furrowed, and the curved thorns are 1-2 inches long. The leaves are densely covered with short hairs beneath.



The white flowers appear in May and the tree is strikingly beautiful in full bloom. The green calyx is 5-lobed and the 5 white petals and about 20 stamens are attached above the ovaries. There are usually 5 styles and the fruit contains 5 little bony nutlets, each with 1 seed. The fruits shown are not mature. When they ripen in September they are smooth, scarlet, about 1 inch in diameter and with thick yellow flesh. They are eaten raw or made into jelly.

The Cockspur Thorn, *Crataegus Crus-galli* L., is another common species the small flowers of which are pretty because of the wine red anthers. The leaves are sharply toothed but not lobed, and the small greenish red fruits have a hard dry flesh. There are about 10 stamens and 1-3 styles, and the fruits contain usually 2 nutlets.

WILD STRAWBERRY

Fragaria virginiana Duchesne

The several varieties of garden Strawberries that we prize so highly have been derived from crossing a Chilean species with our native forms. The wild berries are smaller but fully as delicious as the cultivated.



The Wild Strawberry is common in fields and along roadsides and railroads in the northern middle west, blooming from April to June. The hairy leaves, flowering shoots and runners grow from the end of a simple, short underground stem. The dark green leaflets are rather thick and firm.

The calyx is deeply 5-cleft and has a bract in each sinus which appears to double the parts and make the flower seem 10-cleft. The 5 petals are white and the numerous stamens are orange-yellow. The fleshy receptacle forms the green cone-shaped center of the flower, and is covered with numerous pistils. It is the receptacle which enlarges to become the red edible berry; the seedlike structures on the surface of the berry are individual fruits, each an akenes.

Another form of this Wild Strawberry, *Fragaria virginiana* Duchesne var. *illinoensis* (Prince) Gray, is coarser and larger, with flower scapes and pedicels densely covered with spreading or widely diverging hairs. The fruit is quite apt to have a pronounced neck.

The Hill Strawberry, *Fragaria vesca* L. var. *americana* Porter, is common in open rocky woods. Its leaves are much smaller and thinner, its runners much longer and more slender, and its smaller fruits are less juicy and mounted on a dry tasteless neck.

PALE CINQUEFOIL. ROUGH-FRUITED CINQUEFOIL

Potentilla recta L.

Former belief in the medicinal powers of this plant accounts for the generic name, from the Greek *patens* meaning powerful.

The Pale Cinquefoil, blooming from June to September, is a handsome species entirely suitable for cultivation as a garden flower. It is a native of Asia and since its introduction into this country has become quite common in waste places in most of the northeastern states.

The plant is erect, 1-2 feet high, rather stout, very hairy and considerably branched. The leaves are divided into 5-7 leaflets and all but the uppermost are petioled. They are green on both sides and quite hairy, especially below.

Its flowers are larger and lighter yellow than those of most other species. The green calyx is 5-cleft and has a bractlet in each sinus. The 5 showy yellow petals are notched. There are about 20 stamens and many pistils with slender styles. The fruits are akenes whose rough surfaces account for the name Rough-fruited Cinquefoil.

In the bogs of northern Illinois the Shrubby Cinquefoil, *Potentilla fruticosa* L., is found. It is strictly a northern plant, being found in Greenland, Labrador and Alaska, south to New Jersey, northern Illinois, Minnesota and in the mountains to Arizona and California. This is a very leafy, much-branched shrub that grows 6-48 inches high and in some places is a troublesome weed. The leaves are pinnately compound, having 5-7 silky narrow oblong leaflets. The yellow flowers are produced abundantly from June to September.



FIVE-FINGER. CINQUEFOIL

Potentilla canadensis L.

The Five-finger or Cinquefoil is common from New Brunswick to Georgia and west to Minnesota and Texas, and blooms from April to August. It spreads by slender runners 3-24 inches long. The leaves are palmately 5-lobed and in their axils grow the 1-flowered peduncles, the first of which usually occurs in the axil of the second stem leaf.



The flowers resemble those of the Strawberry except that they are yellow. The flat green calyx is 5-cleft and has a bractlet in each sinus, so that it appears 10-cleft. The 5 roundish petals are yellow and notched at the end. Stamens are numerous, and the many pistils are collected into a head on a hairy receptacle that is dry instead of fleshy as in the Strawberry. The fruits are akenes.

The Silver Weed, *Potentilla Anserina* L., is a common perennial of moist sandy flats and shores, abundant in the northeast section of the state. Leaves and the many-jointed runners are white hairy beneath. The leaves are pinnately compound with 5-21 leaflets alternating large and small. In the axil grows the largest yellow-flowered *Potentilla*, with the usual structure for the genus.

The Rough Cinquefoil or Yellow Strawberry, *Potentilla montspeliensis* L., is another common species. It grows more erect than the Five-finger and the leaflets are 3 instead of 5. This species occurs over most of Canada to Alaska, south to Maryland, Missouri and New Mexico.

The largest of the genus in Illinois is the Tall Potentilla, *Potentilla arguta* Pursh, also the only native white-flowered species. The usually stout stem grows 4-40 inches high, is covered with brownish hairs and is glandular above. The 7-11 leaflets are pinnate instead of palmate, ovate, toothed and downy beneath. The Tall Potentilla inhabits rocky, gravelly or alluvial soil from eastern Quebec to Maryland and westward.

WHITE AVENS

Geum canadense Jacq.

This plant is common in shaded places, widely distributed along forest borders throughout most of the eastern United States and Canada, and blooms from June to August. It is common in rich open woodlands of Illinois.

The slender branching stems are often covered with soft hairs but may be entirely smooth as shown. They grow 18-30 inches high and bear alternate leaves which are 3 or 5-lobed or unlobed. In addition to the stem leaves there is a cluster of basal leaves which have long petioles and are 3-lobed or pinnately 3 or 5-divided into unequal segments, sometimes with smaller segments on the petioles.

The green calyx is 5-lobed and has a bractlet in each sinus. The 5 small petals are white and the numerous yellow-tipped stamens surround the central cluster of green pistils. The reflexed calyx lobes persist on the fruits, which are akenes on a cylindrical receptacle as shown. The persistent styles are jointed and hooked so that they readily cling to clothing or the fur of animals.

There are two yellow-flowered Avens common in Illinois. One is the Yellow Avens, *Geum strictum* Ait., which grows in swamps and moist meadows and blooms in July and August. The other is the Spring Avens, *Geum vernum* (Raf.) T. & G., which grows in shaded places and blooms from April to June. Its cluster of fruits is stalked and so raised well above the persistent calyx. The North American distribution of these species is about the same, being generally Ontario to Tennessee and Texas. The Yellow Avens ranges farther, however, to Newfoundland, British Columbia and New Mexico.



WILD BLACKBERRY

Rubus allegheniensis Porter

The Wild Blackberry occurs in dry soil from Nova Scotia to Ontario and south to North Carolina and Arkansas, and will likely be found in recent clearings of what was upland forest.



Its reddish to purple stems grow 2-8 feet tall and are covered with prickles, which fortunately prevent people from gathering them for bouquets. Leaves of the first year's growth usually have 5 leaflets, whereas most of those on the flowering canes, which are 1 year old, have 3 leaflets.

The starry white flowers are very conspicuous and exceedingly common in May and June. The large petals are about twice as long as the green sepals, and stamens and pistils are numerous.

The delicious juicy fruits mature during July and August, being successively green, red and black. Blackberry jam made from these fruits has long been a favorite preserve with city and country folk alike.

The Black Raspberry or Thimbleberry, *Rubus occidentalis* L., is also common in the state, occurring quite generally from Georgia and Mississippi to Quebec and Ontario. The stems are overcast with a whitish waxy bloom, and they often bend over and root at the tips. The flowers may easily be distinguished from those of the Blackberry because they are smaller, and the petals are shorter than the sepals. The purple-black fruits ripen early in July.

SOFT AGRIMONY

Agrimonia mollis (T. & G.) Britton

Various species of Agrimony were formerly gathered every fall by country people and used for many purposes, but especially as a substitute or additional flavoring for tea. The leaves have a spicy odor when crushed and were thought to have medicinal value.

The Soft Agrimony is a perennial branching herb 2-6 feet tall, with tuberous roots. It grows in woods and thickets from Massachusetts and North Carolina to Michigan, Illinois and Kansas, and blooms from July to October.

The alternate leaves are peculiar in having pairs of small leaf segments interposed with larger leaflets. There are usually 7 of the main leaflets, as shown, but these may be 5-11. The stems are covered with soft hairs and the leaves are velvety, especially on the lower surface.

The small flowers have 5 yellow petals and 5-15 stamens attached above the ovaries. The green calyx is 5-lobed and just below the lobes are many hooked bristles which, persisting and making a bur of the fruit, provide for its ready dispersal by animals. There are 2 simple pistils and the fruit consists of 1 or 2 akenes within the bur.

The Common Agrimony, *Agrimonia striata* Michx., also occurs in Illinois and is very similar but has fibrous instead of tuberous roots, and its leaves are dotted with glands. It blooms about a month earlier than the Soft Agrimony, in damp woods and alluvial soil from Newfoundland to Saskatchewan and Nebraska, south to West Virginia and New Mexico.



WILD ROSE. SWAMP ROSE

Rosa carolina L.

The Wild Rose is common in swamps and low ground, and blooms from June to August. It is found in all states from Minnesota and Mississippi eastward. It is a bushy species

1-8 feet high, sparingly armed with stout and usually more or less curved prickles. The compound leaves have 5-9, usually 7, leaflets, and long narrow stipules.

The flowers are a beautiful pink, and have numerous yellow stamens. The long narrow spreading sepals usually do not remain on the fruit as they do in some other Roses. The fruit is red and quite showy when mature.



Another species that will be found is the Prairie or Climbing Rose, *Rosa setigera* Michx. This is a climber with stems up to 12 feet long, and leaves with 3 or sometimes 5 leaflets. It is heavily armed with stout hooked prickles. The Prairie Rose blooms in June and July and the white to deep rose flowers are 3-15 in a cluster. The home of this plant is the borders of thickets and prairies from Ontario to Nebraska and south to Florida and Texas.

The Meadow Rose, *Rosa blanda* Ait., is also common here, especially in the northern part of the state. It grows 2-4 feet high in moist or rocky places and usually has no prickles. The handsome pink flowers are slightly fragrant and often 3 inches across. They open during June and July, and the sepals remain erect on the ripening fruit. The Meadow Rose is to be found westward from Newfoundland and New England to Missouri, chiefly in the region of the Great Lakes.

The Pulse family is extremely important to man. The Bean, Pea and Peanut are used as human food, Clover and Alfalfa are forage crops, and the Sweet Pea is highly prized as a garden flower.

Still more important, however, is the fact that on the roots of all members of the family are little tubercles inhabited by bacteria; these bacteria are capable of taking nitrogen from the air and combining it with other elements so that it may be used by plants for constructing protein foods. Wherever these plants grow, therefore, the amount of available nitrogen in the soil is increased, and on this account all crop rotations are planned to include a member of the Pulse family every three or four years.

Flowers of the genera *Cercis*, *Amorpha*, *Cassia* and *Petalostemum* do not have butterfly-shaped corollas.

KEY TO GENERA

1. Shrubs or small trees 2
Herbs 3
2. Leaves simple *Cercis* p. 160
Leaves compound *Amorpha* p. 165
3. Leaves with tendrils *Vicia* p. 172
Leaves without tendrils 4
4. Climbing plants 5
Plants not climbing 7
5. Leaflets 3 6
Leaflets 5-19 *Apios* p. 173
6. Leaflets more than $1\frac{3}{4}$ inches long, more than $1\frac{1}{2}$ inches wide *Phaseolus* p. 173
Leaflets not more than $1\frac{1}{2}$ inches long nor more than 1 inch wide *Strophostyles* p. 174
7. Stamens not united 8
Stamens, or all but 1, united 9
8. Leaflets 3 *Baptisia* p. 161
Leaflets more than 3 *Cassia* p. 158
9. Four of the petals attached to stamen tube . *Petalostemum* p. 166
No petals attached to stamen tube 10
10. Leaflets 3 11
Leaflets more than 3 13
11. Flowers yellow or white in slender racemes . . . *Melilotus* p. 163
Flowers yellow in dense heads *Medicago* in part p. 163
Flowers purple or pinkish 12
12. Ovule or seed 1; pod not jointed *Psoralea* p. 164
Ovules or seeds 2 or more; pod jointed *Desmodium* p. 170
13. Leaves palmate *Lupinus* p. 162
Leaves pinnate 14
14. Plant densely covered with silky, whitish hairs
 *Tephrosia* p. 168
Plant smooth or nearly so *Astragalus* p. 169

WILD SENNA

Cassia marilandica L.

The dried leaves of an Arabian species of *Cassia* are extensively used in medicine under the name *senna*, and frequently the leaves of our Wild Senna are collected and used as a substitute for the imported article.



This perennial has rather recently spread into Illinois from the east and may not be found in the extreme northern parts of the state. It grows in swamps and in wet soil along railroads and other waste places from New England to Tennessee, and blooms during July and August.

Its light green, nearly smooth and sparingly branched stem grows 3-8 feet high. The firm leaves are smooth and yellowish green, having small stipules that fall off long before the leaves mature; the 10-20 leaflets are arranged in pairs and the

petiole bears a club-shaped gland near the base.

Showy yellow flowers are clustered in the axils of the upper leaves. The 5 yellowish green sepals are slightly united at the base and the 5 yellow petals are nearly, though not quite, equal. There are 10 stamens, of which the upper 3 are imperfect and do not produce pollen. The pistil is hairy but becomes smooth as it matures into the many-seeded pod.

Another Wild Senna, *Cassia Medsgeri* Shafer, is the common form of western and southern Illinois and has commonly been mistaken for the above species because of their great similarity. This Senna differs, however, in the petioles, in the pod and in the number of leaflets.

PARTRIDGE PEA

Cassia Chamaecrista L.

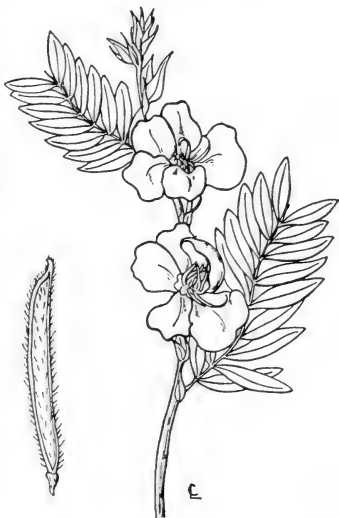
The Partridge Pea grows in dry open places from Massachusetts to Florida and west to Minnesota, Texas and Mexico. It is rather rare in the northern part of Illinois but is common farther south.

The plant is an erect, widely branched annual 1-2½ feet high. Its branches may be scantily hairy or entirely smooth. The 18-30 leaflets are somewhat sensitive to the touch and often fold up when the plant is handled. The petiole bears a cup-shaped gland below the lowest pair of leaflets.

The showy yellow flowers are produced from July to September and in contrast to most members of this family are not butterfly shaped. The calyx is composed of 5 small green sepals only slightly united at the base. The 5 yellow petals are slightly unequal and usually 2 or 3 have a purple spot at the base. The 10 stamens are distinct and the anthers, 4 yellow and 6 purple, are unequal and pollen bearing. There is 1 pistil with a slender style and the fruit is a many-seeded pod which may be smooth or hairy. When the pod is fully mature it opens somewhat elastically, the halves twisting and throwing out the seeds.

The commoner form in the south is the Large Partridge Pea, *Cassia Chamaecrista* L. var. *robusta* Pollard, which is stouter and very hairy.

The Wild Sensitive Plant, *Cassia nictitans* L., is a small erect or spreading annual having numerous small compound leaves with 10-44 leaflets, there being no odd terminal leaflet. Each leaf bears a small gland at the base of the stalk. The very small yellow flowers are totally inconspicuous, and they, together with its roadside habit, give it the appearance of a weed. This species is abundant along sandy stretches of road in southern counties.



REDBUD

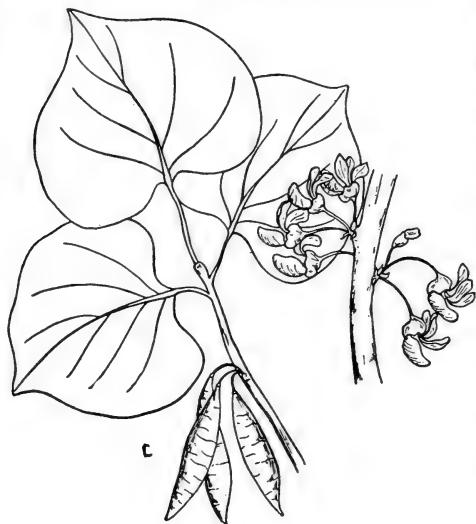
Cercis canadensis L.

The Redbud is a small tree 15-30 feet high, which is highly recommended for ornamental planting because it is a good-looking tree at all times and is extremely beautiful in bloom in

April and May.

Aside from its beauty it has no economic importance and is usually classed as a weed tree in the woodlot.

It is largely a southern species, occurring in rich soil from Florida and Texas to Iowa, New York and southern Ontario. In Illinois it is common in the south and central part but is not found north of Kankakee county.



Unlike most members of the Pulse family, the Redbud has leaves that are not compound; and the stipules soon fall off, so that they are seldom seen. The branch is shown as it appears in late autumn.

The flowers appear before the leaves on branches of the preceding year. They are pink or red and produced very abundantly in small clusters. The calyx is rather short and broad and 5-toothed. The corolla is imperfectly butterfly shaped. The standard, or upper petal, is smaller than the side or wing petals; the lower or keel petals are larger and not united. The 10 stamens are distinct and the simple pistil develops into a several-seeded pod.

Trees for the birds to build and sing,
And the lilac tree for a joy in spring;

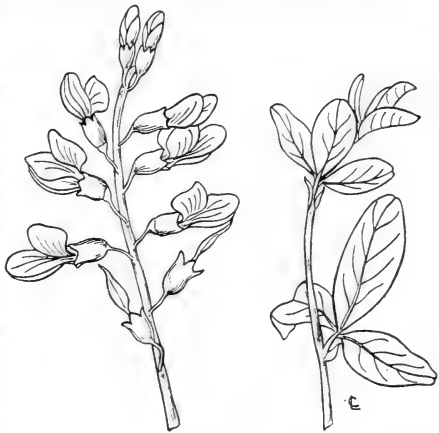
Trees—BLISS CARMAN

WHITE FALSE INDIGO. LARGE WHITE INDIGO

Baptisia leucantha T. & G.

False Indigo is a name applied to many species of this genus which blacken in drying, showing the presence of a blue dye resembling indigo. Some species contain the dye in quantities sufficient for commercial use.

The White False Indigo is a smooth, somewhat fleshy perennial 2-4 feet high, with numerous stout branches. It occurs in rich soil along railroads or other waste places and in open woods from Ohio and Ontario to Minnesota, south to Texas and Florida, blooming during June and July. All the leaves are as shown.



The flowers are white and arranged on lateral branches sometimes 1 foot long. The 2 upper teeth of the tubular calyx are united so that it is only 4-toothed. The reflexed standard, or upper petal, is about the same length as the 2 straight wing petals. The keel petals are also straight and nearly separate. The 10 stamens are distinct and there is 1 pistil. The many-seeded pod, about three-quarters of an inch long and ellipsoid or nearly cylindrical, is borne on a long stalk in the calyx and is tipped with the stout pointed style.

The Large-bracted Wild Indigo, *Baptisia bracteata* (Muhl.) Ell., is occasionally found in Illinois. It is a smaller plant and hairy. The spreading stems bend over and the heavy sprays of showy creamy flowers, blooming in May, often touch the ground. The hoary pods are pointed at both ends. Prairies, from Michigan to Minnesota and south to Texas, are the home of the Large-bracted Wild Indigo, a species which has gotten its common name from the large, leafy and persistent stipules and bracts.

WILD LUPINE

Lupinus perennis L.

Lupinus comes from the Latin word meaning wolf and was used because these plants were supposed to devour the fertility of the soil. The fact is that they increase it, just as other legumes do, by increasing the supply of nitrogen through activity of the bacteria that inhabit the tubercles on the roots.



The Wild Lupine grows mostly in sandy soil and occurs from Maine and Ontario to Minnesota, south to Florida and Louisiana. It is common in the sand areas of Illinois and blooms in May and June.

The plant is perennial, 1-2 feet high, much branched and somewhat hairy. The wheel-shaped leaves are light green and have 7-11 leaflets.

The butterfly-shaped flowers are sweet scented,

and very showy, as they bloom in profusion. The calyx is deeply 2-lipped. The large standard has its sides turned back, and the keel is pointed and curved inward. The 2 wing petals are oblong. The 10 stamens are grown together to form a sheath about the pistil. Anthers of 2 sorts, oblong and round, alternate. The pistil matures into a very hairy pod which contains 5 or 6 seeds.

There are white and pink races of this plant as well as the ordinary blue to purple form.

YELLOW SWEET CLOVER

Melilotus officinalis (L.) Lam.

The Yellow Sweet Clover and its close relative White Sweet Clover, *Melilotus alba* Desr., are very similar except in size and the color of their flowers. Both are naturalized from Europe and are common mostly throughout the United States. In many places they are extensively grown as forage crops and honey plants. They produce nectar most abundantly in a rather dry climate, such as that west of the Mississippi river.

The white species grows up to 10 feet and the yellow not much more than 3. Branchlets and leaves are covered with short fine hairs. The foliage has a delightful fragrance, especially as it dries, and because of it the branches are often gathered and hung in rooms and closets. They are likewise hung at the doorways of country homes to keep away flies, which dislike the odor.

The White Sweet Clover usually begins blooming in June about 2 weeks before the Yellow and both continue to produce their butterfly-shaped flowers through the summer. In the flowers of the yellow species all the petals are about the same length but in the white species the standard is longer. The pods contain 1 or 2 seeds.

Another very common Yellow Clover, also from Europe, is the Black Medick or Nonesuch, *Medicago lupulina* L. This is a low creeping annual with wedge-shaped or nearly round leaflets toothed near the tip. The yellow flowers are nearly like those of Sweet Clover but are in short spikes. The pods are kidney form and 1-seeded.



FRENCH GRASS

Psoralea Onobrychis Nutt.

This perennial grows along rivers and railroads, and in moist thickets and open woods from Ohio to Illinois and Missouri, southeast to South Carolina. It blooms in June and July.



Some species of *Psoralea* have edible tuberous roots, but not the French Grass. Its nearly smooth, branched stem grows 3-6 feet high and bears numerous flower clusters both in the axils of leaves and at the ends of branches.

The purplish flowers are butterfly shaped. The persistent calyx is 5-toothed, the lower tooth a little longer than the others. The standard is broadly oval and the 2 wing petals are

oblong. The keel is curved inward between the 2 wings. The 10 stamens are alike and 9 of them are united. The pistil develops into a rough and wrinkled 1-seeded pod that does not open at maturity.

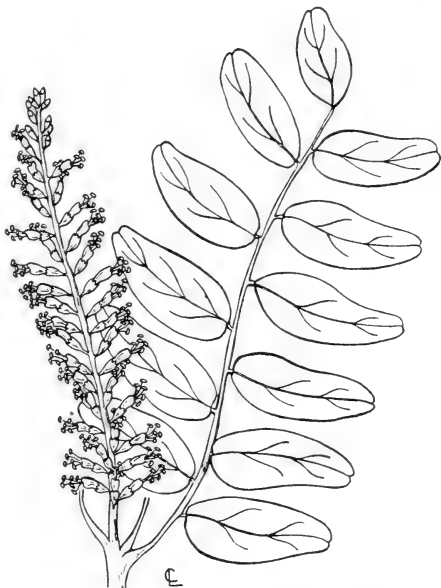
The Few-flowered *Psoralea*, *Psoralea tenuiflora* Pursh, grows on prairies in Illinois and westward to Texas, Colorado and Montana. It is slender but much branched and bushy and grows 2-4 feet high. The 3 leaflets are very short stalked, oval and less than 1 inch long. The plant is smooth except for glandular dots sprinkled throughout and especially on the ovate pods. The purplish flowers, about one-quarter inch long, are 6-14 in loose racemes and bloom from June to September. Lobes of the calyx, as well as the scalelike, persistent bracts, are ovate and acute. The single seed is ovoid and brown.

FALSE INDIGO

Amorpha fruticosa L.

The False Indigo is a beautiful shrub suitable for ornamental planting. It grows 5-20 feet tall along streams and in other moist places from Pennsylvania to Florida and west to Saskatchewan and Texas. It is found in some places in the Rocky mountain region.

The young branches are greenish and somewhat velvety, becoming gray or brown and smooth as they get older. The 9-25 leaflets, usually somewhat hairy until mature, have two forms of arrangement. Frequently all but the terminal one are opposite in pairs, or they may be alternate as shown.



The flowers of most members of the Pulse family have 5 petals but those of the False Indigo have only 1. This single petal is purple and is wrapped around the stamens and pistil. The funnellform calyx has 5 short lobes or teeth, and persists on the fruit. The 10 stamens are united at the very base but are otherwise distinct. The pistil develops into a rather rough 1 or 2-seeded pod.

The Lead Plant, *Amorpha canescens* Pursh, is also common in Illinois on hills and prairies and along railroads. It is a smaller shrub, 1-3 feet tall, and densely covered with white hairs. The leaflets are smaller and more numerous, being 21-51. The flowers are blue in densely clustered spikes 2-7 inches long. The pod is 1-seeded.

PURPLE PRAIRIE CLOVER

Petalostemum purpureum (Vent.) Rydb.

The structure of these flowers differs markedly from that of any other genus in the family. The calyx is nearly equally 5-toothed and somewhat hairy. There are only 5

stamens and their filaments are united to form a sheath which is cleft down 1 side. Four of the white petals are nearly alike and are borne at the top of the stamen sheath, whereas the fifth is nearly round or heart shaped and inserted in the base of the calyx. The genus name *Petalostemum* comes from the combination of two Greek words meaning petal and stamen, and refers to the peculiar union of these parts.

This smooth herb inhabits dry prairies from Indiana and Louisiana to the Rocky mountains and Manitoba. It grows 1-3 feet high, generally in small clumps and frequently along with its relative White Prairie Clover, page 167. It is abundant along railroads.

The numerous small leaves, often so thickly clustered as to conceal the stiff and slender stems, have 5-9

very narrow leaflets about one-half inch long and sharp tipped.

The flowers are in dense cylindric spikes one-half inch thick and up to 2 inches long. The calyx has 5 ovate, pointed sepals, and is silky hairy. The corolla is purple, slightly more than one-eighth inch long; the standard is heart shaped, and wings and the keel are oblong.



CLOVER

Little masters, hat in hand,
Let me in your presence stand,
Till your silence solve for me
This your threefold mystery.

Tell me—for I long to know—
How, in darkness there below,
Was your fairy fabric spun,
Spread and fashioned, three in one.

WHITE PRAIRIE CLOVER

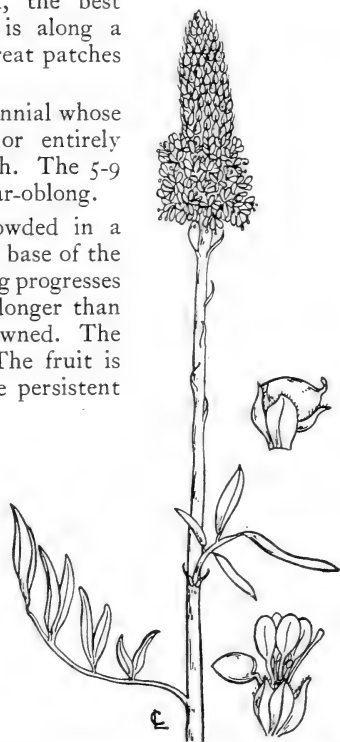
Petalostemum candidum Michx.

White Prairie Clover occurs on dry plains from Indiana to Minnesota and Manitoba, south to Tennessee, Louisiana and Texas, and west to Colorado. Inasmuch as most of our Illinois prairies have been destroyed, the best place to look for this plant is along a railroad, where it appears in great patches in June and July.

This is a very common perennial whose smooth, sparingly branched or entirely simple stem grows 1-2 feet high. The 5-9 leaflets are lanceolate or linear-oblong.

The white flowers are crowded in a cylindrical spike. Those at the base of the spike open first and the blooming progresses upward. The bracts, a little longer than the nearly smooth calyx, are awned. The fifth petal is heart shaped. The fruit is a 1 or 2-seeded pod within the persistent calyx.

The Leafy Prairie Clover, *Petalostemum foliosum* Gray, is a species which seems to be very limited in its distribution here. It has been found along the Kankakee river, along the Illinois river at Romeo, near Joliet, and perhaps a few other places, but it is very local. It has purple flowers but is easily distinguished from the Purple Prairie Clover by the numerous leaflets, 13-31, close together. They are about one-half inch long and oval. The petal inserted at the base of the calyx is nearly round.



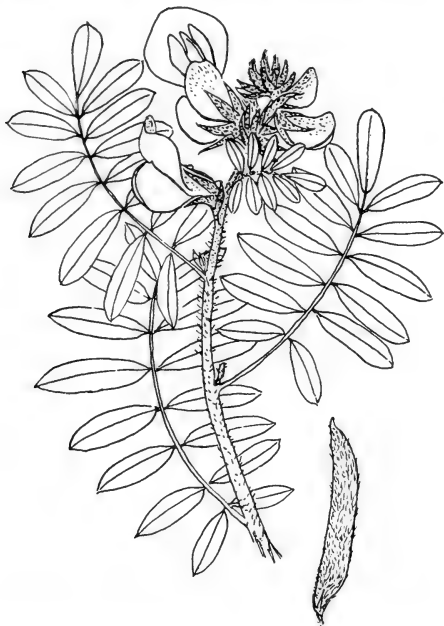
Did your gossips gold and blue,
 Sky and Sunshine, choose for you,
 Ere your triple forms were seen,
 Suited liveries of green?
 Can ye—if ye dwell indeed
 Captives of a prison seed—

Like the Genie, once again
 Get you back into the grain?
 Little masters, may I stand
 In your presence hat in hand,
 Waiting till you solve for me
 This your threefold mystery?
 JOHN BANISTER TABB

GOAT'S RUE. CATGUT

Tephrosia virginiana (L.) Pers.

The Goat's Rue is common in dry sandy soil from Maine to Minnesota and south to Florida and northern Mexico. It is a somewhat branched herb that grows 1-2 feet high and is covered



with silky whitish hairs. Its slender roots are very tough, because of which it is sometimes called Devil's-shoestrings and Catgut. Wild Sweet Pea is a fourth name in some localities. The stems are quite leafy and the leaflets on each leaf are linear-oblong and 17-29.

The yellowish white flowers, marked with purple, bloom during June and July. The calyx is about equally 5-cleft. The standard is nearly round, with the sides turned back, and is silky

on the outside. The 2 wing petals are oblong and the keel is somewhat curved. The filaments of 9 of the 10 stamens are united nearly to the top, but the tenth is united to the others only at the base. The pistil matures into a flat, several-seeded pod that is densely hairy.

Like all members of the Pulse family the Goat's Rue is pollinated by insects. It is the only one of 120 species of this genus to be found in Illinois.

Oh, garden of grasses deep and wild,
So dear to the vagrant and the child
And the singer of an hour.

Wild Gardens—ADA FOSTER MURRAY

MILK VETCH

Astragalus canadensis L.

There are many species of Milk Vetch but most of them are northern and western plants and only a few occur in Illinois. This is the one most frequently found in the state, although it is nowhere very common. It grows in rather dry or gravelly soil along railroads and in other open places from Quebec, Saskatchewan and Nebraska to Georgia, Louisiana and Utah.

This plant is an erect, branching, smooth or slightly hairy herb 1-5 feet high. Its oblong leaflets are 15-31 on each of the 8-12 pinnately compound, short-petioled leaves.

The flowers are greenish yellow or creamy, and very numerous in long dense spikes. They bloom during July and August. The calyx is tubular, its 5 teeth nearly equal, and the corolla is long and narrow. The standard is about the same length as the 2 oblong wing petals, or slightly longer, and the keel may be a little shorter. Nine of the 10 stamens are united and 1 is free. The pistil matures into a several-seeded pod which is oblong, cylindrical, smooth and nearly straight.

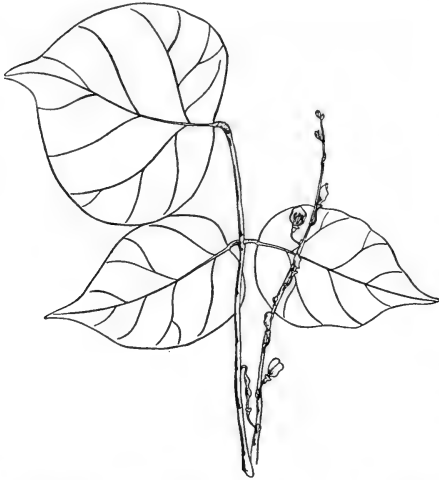
The Ground Plum, *Astragalus mexicanus* A. DC., is sometimes found on prairies and other open places in this state. It grows only 6-15 inches high and branches from the base. The leaflets are about the same number as in the Milk Vetch. This species blooms in late April and May and the flowers are creamy with bluish tips. The unripe fruits resemble green Plums and are edible raw or cooked. They are frequently collected by prairie dogs for their winter store.



POINTED-LEAVED TICK TREFOIL

Desmodium grandiflorum (Walt.) DC.

The Pointed-leaved Tick Trefoil is an erect perennial herb 1-5 feet high. It is found in rich or dry woods from Quebec to Ontario and South Dakota, south to Oklahoma and Florida,



and blooms from June to September. The leaves are clustered at the summit of the stem; above them arises the long naked peduncle of the inflorescence. The leaflets have scattered hairs on both surfaces.

The purple butterfly-shaped flowers are in wide-spreading panicles and have an obovate standard and wing petals of the same shape, a straight keel, and 10 stamens

of which 9 are united and the tenth adherent only at the base. The mature pod is 2 or 3-jointed and long stalked within the calyx. The joints are somewhat longer than broad and well covered with hooked hairs.

A most striking and easily identified member of this genus is the Naked-flowered Tick Trefoil, *Desmodium nudiflorum* (L.) DC., common practically throughout Illinois. The leaves are crowded at the summit of stems that bear no flowers. The inflorescence is a raceme on a mostly leafless stalk or scape 24-40 inches high. The 1-4-jointed pod is raised on a stalk many times longer than the calyx.

The Few-flowered Tick Trefoil, *Desmodium pauciflorum* (Nutt.) DC., forms with *D. grandiflorum* and *D. nudiflorum*, above, a natural group of the genus which differs markedly from the other species. The flowers of *D. pauciflorum* are medium to large, on long peduncles, and the pods have conspicuous, tightly clinging joints. The leaves are single or two alternate.

SHOWY TICK TREFOIL

Desmodium canadense (L.) DC.

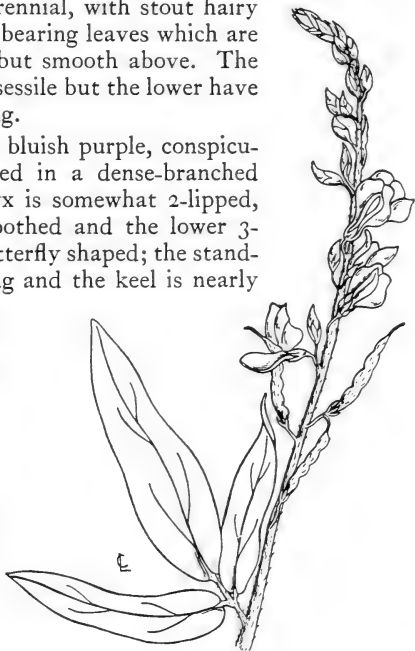
Of the dozen or more Tick Trefoils found in Illinois this is the showiest. It grows in open woods and along streams and railroads from Nova Scotia to Manitoba and south to North Carolina and Oklahoma, and blooms from July to September. It is perennial, with stout hairy stems 2-8 feet high and bearing leaves which are somewhat hairy below but smooth above. The upper leaves are nearly sessile but the lower have petioles up to 1 inch long.

The large, purple or bluish purple, conspicuous flowers are produced in a dense-branched inflorescence. The calyx is somewhat 2-lipped, with the upper lip 2-toothed and the lower 3-lobed. The corolla is butterfly shaped; the standard and wings are oblong and the keel is nearly straight. Nine of the 10 stamens are united.

The pistil develops into a pod which when mature is nearly sessile in the calyx, about 1 inch long and 3-5-jointed. Each triangular joint contains 1 seed and is covered with hooked hairs that enable it to cling tenaciously to clothing or to animals.

The Hoary-leaved Tick Trefoil, *Desmodium canescens* (L.) DC., is another species quite common in Illinois, especially along railroads. It grows 3-5 feet high and is densely clothed with short, hooked hairs and also longer glutinous hairs that make the plant somewhat sticky. The 3 leaflets are 1-4 inches long, about equaling the petiole, and the terminal leaflet is usually somewhat larger than the other 2.

The Illinois Tick Trefoil, *Desmodium illinoense* Gray, is similar to the Showy Tick Trefoil but may be distinguished by its thick, rigid leaves which are very strongly netted below, the large and persistent stipules, and the 3-5 oval segments of the jointed pod.

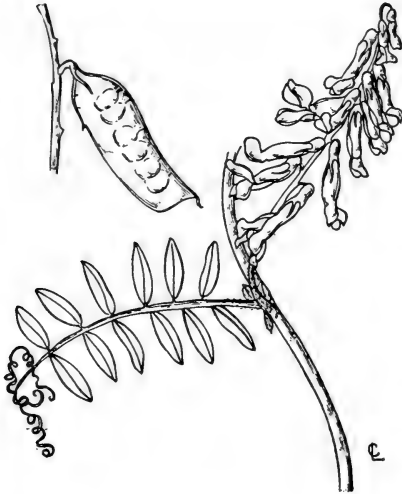


HAIRY VETCH

Vicia villosa Roth

The Hairy Vetch is a European plant which is frequently planted as a forage crop in this country, and has escaped into dry open soil until in some places it is more common than any

native species. This annual or sometimes perennial is known throughout the eastern half of the United States, particularly in orchards, where experience has shown it to be the best legume for enriching the soil.



The rather weak and slender, climbing or trailing stems grow 2-4 feet long. They, together with the flower stalks and leaves, are densely covered with soft short hairs. Leaflets are 8-24 and usually the terminal 3 are modified into tendrils,

by means of which the plant climbs.

The white and bluish or violet flowers, blooming from May to September, are crowded in large numbers in the more or less 1-sided flower clusters. The calyx is 5-toothed with the 2 upper teeth shorter. The standard is oblong and stalked. The wing petals, also oblong, are attached to the middle of the keel, which is curved and slightly shorter than the other petals. Stamens are united at the base but 1 is separate the greater part of its length. The style is slender and has a tuft of hairs at the end, but the short-stalked, 5-8-seeded pod is smooth.

In the northern half of the state the Purple or American Vetch, *Vicia americana* Muhl., is quite common in moist places. It is perennial and nearly smooth, trailing or climbing 2-3 feet. The stipules are conspicuous, being leaflike, sharply toothed and sometimes one-half inch long. There are only 2-9 bluish purple flowers loosely arranged in each cluster, and the smooth, short-stalked pod is 4-7-seeded.

WILD BEAN. GROUNDNUT

Apios tuberosa Moench

Many a country boy has rooted out and eaten the pear-shaped tubers of the Wild Bean. These tubers are said to have been used commonly in colonial days as a substitute for bread.

Because of them the plant is often called Groundnut.

The Wild Bean grows in moist places from New Brunswick to Florida and west to Ontario, Minnesota, Kansas and Texas, and blooms from July to September. It is a beautiful vine whose slender twining stems climb over bushes to a height of several feet. The leaflets of the alternate compound leaves are usually 5 or 7, and there are stipules which soon drop off.



The flowers are brownish purple. The calyx is somewhat 2-lipped, the 2 lateral teeth being very small, the 2 upper united into 1 which is very short, and the lower 1 longest and pointed. The butterfly-shaped corolla has 5 petals and in this case the standard is turned back somewhat and the long keel is incurved and twisted. There are 10 stamens, 9 united and 1 free. The simple pistil develops into a many-seeded pod.

Another Wild Bean, sometimes called Kidney Bean, *Phaseolus polystachyus* (L.) BSP., is fairly common on dry rocky hillsides in open woods. From the thick fleshy root springs the smooth green stem which is conspicuous for its unusual length. Sometimes it climbs over bushes 12 feet away from its rooting place. The purple flowers are small but handsome, in racemes through summer and fall. The calyx is 5-toothed or cleft with the 2 upper teeth often shallower, and the drooping pods are 4 or 5-seeded.

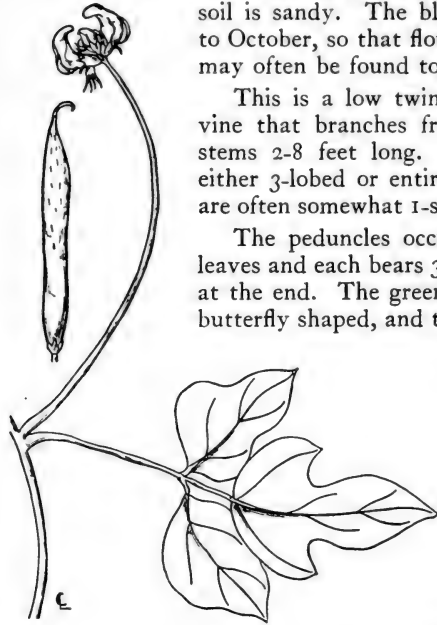
TRAILING WILD BEAN

Strophostyles helvola (L.) Britton

The Trailing Wild Bean is found throughout the eastern half of the United States. In Illinois it is common on sand ballast along railroads and on sandy shores of streams and ponds, and is found also in open woods where the soil is sandy. The blooming season is July to October, so that flowers and mature fruits may often be found together.

This is a low twining or trailing annual vine that branches from the base and has stems 2-8 feet long. The leaflets may be either 3-lobed or entire and the lateral ones are often somewhat 1-sided.

The peduncles occur in the axils of the leaves and each bears 3-10 flowers in a cluster at the end. The greenish purple flowers are butterfly shaped, and the 5-toothed calyx has the 2 upper teeth a little shorter than the rest. The standard is nearly round and the 2 wing petals are oval or oblong. The long and slender keel is strongly incurved and encloses the stamens and style. Filaments of 9 of the 10 stamens are united



and the other is free. The pistil develops into a nearly cylindrical, slightly hairy, several-seeded pod.

The Pink Wild Bean, *Strophostyles umbellata* (Muhl.) Britton, is a slender trailing perennial whose stems are clothed with backward pointing hairs. The unlobed leaflets are oblong, blunt and hairy on both sides. The pink flowers, one-half inch long, are on long peduncles in umbels that look like heads. The straight and slender pods are slightly flattened, about 2 inches long and somewhat hairy. The plant favors dry sandy ridges, knolls and dunes from Long Island to Illinois, south to Florida and Louisiana.

VIOLET WOOD SORREL

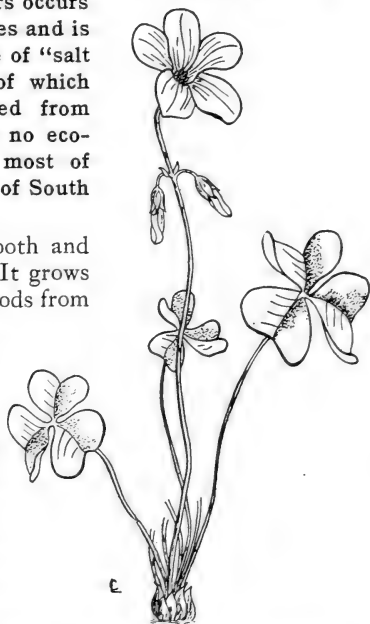
Oxalis violacea L.

The generic name of the Wood Sorrels comes from a Greek word meaning sour, and is applied because these plants contain a good deal of the sour oxalic acid. A species with white flowers occurs in the New England states and is used there as the source of "salt of lemons" by means of which rust stains are removed from linen. The family is of no economic importance and most of its members are natives of South America and Africa.

This herb is nearly smooth and has a bulblike scaly base. It grows in rocky places and open woods from eastern Massachusetts to Minnesota and southwest. The blooming season is May and June.

Three to a dozen umbellately arranged flowers top the scape. Often they are dimorphic or even trimorphic. There are 5 sepals and 5 violet petals. The 10 stamens are somewhat united at the base and are unequal, the shorter alternating with the longer. There is 1 pistil with 5 distinct styles, and the ovary matures into a dry pod containing several seeds.

The Creeping Yellow Wood Sorrel, *Oxalis repens* Thunb., is a prostrate, freely branching herb with erect clusters of leaves and yellow flowers, 1-6 inches high. It prefers rich soil and frequents the grounds of greenhouses. The flower stalks are covered with very stiff reflexed hairs, and the 5-sided pods, one-half inch long or longer, contain many seeds. There has been some confusion among *Oxalis* records, so that this species is sometimes included as part of *O. corniculata*, p. 176.



LADY'S SORREL. SOUR GRASS

Oxalis corniculata L.

The Lady's Sorrel is an herb, usually more or less hairy but sometimes smooth, that has become a common weed everywhere. Leaves and stems have an agreeable sour taste which accounts for the name Sour Grass.



There are usually a few creeping stems, by means of which the plant is perennial. The upright stems may be only a few inches high, and they bear the petioled, trifoliate leaves whose leaflets fold at night.

The plant blooms from early spring to late autumn and the small yellow flowers open only while the sun shines. The calyx consists of 5 yellow sepals, which remain on the fruit. There are 5 yellow petals, 10 stamens and 1 pistil with 5 distinct styles. The mature fruit is nearly cylindrical but tapers toward the summit. Its 5 compartments have several seeds each.

The Yellow Wood Sorrel, *Oxalis stricta* L., is a closely related species. In it the pedicels are turned downward as the fruits mature, but the pods themselves are erect.

The Great Yellow Wood Sorrel, *Oxalis grandis* Small, is the most striking yellow-flowered species. It grows 1-4 feet high in rich moist woodlands and blooms from May to August. Stems and pedicels are thickly covered with bristly hairs. The entire, broadly heart-shaped leaves, notched at the tip, are hairy beneath and generally have a brown margin. There are 3 to several flowers with smooth yellow petals in each of the long-peduncled inflorescences.

WILD CRANESBILL

Geranium maculatum L.

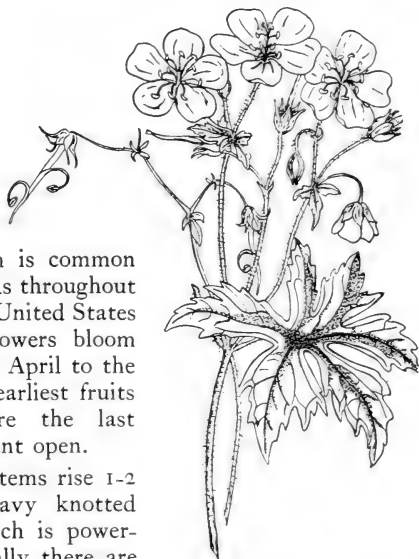
The Geranium family is distributed throughout the world but is of no great importance except for the beauty of some of its flowers. The cultivated Geraniums belong to the genus *Pelargonium*. The species described here gets its common name from the long beak, like the bill of a crane, which the styles form on the fruit.

The Wild Cranesbill or Wild Geranium is common in open woods and fields throughout the eastern half of the United States and Canada. The flowers bloom from the latter part of April to the end of June, and the earliest fruits usually mature before the last flowers of the same plant open.

The erect forking stems rise 1-2 feet high from a heavy knotted underground stem which is powerfully astringent. Usually there are several basal leaves on long petioles; the stem leaves are smaller and sessile or on very short petioles.

The petals are rose-purple. The 10 stamens are arranged in 2 circles of 5; those in the outer circle mature first and the pollen is distributed, then the inner stamens mature, and finally the 5 stigmas are ready for cross-pollination. The ovary matures into a 5-celled fruit with 1 seed in each cell. When the fruit is mature the parts break loose at the base, curl up suddenly and discharge the seeds.

The Carolina Cranesbill, *Geranium carolinianum* L., is a weedy species of dry barren soils throughout Illinois. The stems are fleshy, much branched and loosely hairy. The leaves are 5-9-cleft into oblong-linear, toothed segments. The pale pink flowers are small in compact umbelled clusters.



NORTHERN PRICKLY ASH. TOOTHACHE TREE

Zanthoxylum americanum Mill.

The Rue family is important because to it belong the citrus fruits, including the Orange, Lemon, Grapefruit, Lime and Tangerine.



The Prickly Ash or Toothache Tree is a shrub that grows 5-10 feet tall. It occurs throughout the eastern part of the United States except in the extreme south. In Illinois it is found on floodplains, banks of streams and in moist woods, where it frequently forms dense thickets. The bark and fruit were formerly much used in medicine.

The branches are always armed with prickles in pairs at the bases of the leaves and sometimes on the petioles as well.

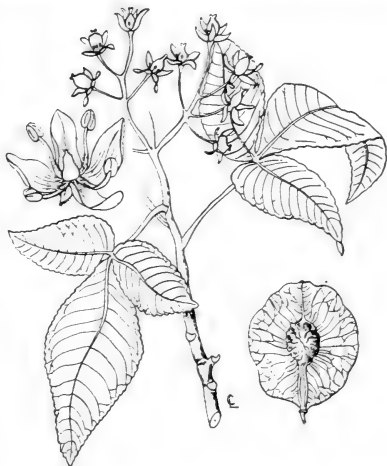
The dioecious flowers appear in April and May. Both forms are greenish white and relatively inconspicuous. The calyx is missing or obsolete, but there is a corolla of 4 or 5 petals. The pistillate flowers contain 2-5 separate pistils with slender styles. Stamens are as many as the petals and alternate with them. The reddish fruit, which matures in August and September, is a somewhat fleshy 1 or 2-seeded pod, strongly aromatic and exceedingly bitter. The seeds are black and shining.

SHRUBBY TREFOIL. HOP TREE

Ptelea trifoliata L.

Ptelea is the Greek name of the Elm and is applied to this genus because of its similar fruits.

The Hop Tree is a tall shrub or small tree which is found in rocky places from New York and Ontario to Minnesota and southwest. It has many local names, some of which are Wafer Ash, Shrubby Trefoil, Swamp Dogwood and Wingseed. Of no economic importance, it is frequently cultivated as an ornamental shrub and its bark was formerly much used in medicine.



The small greenish white flowers that appear in June are usually very ill scented, the odor resembling that of a skunk, but fragrant flowers are occasionally found. Stamens and pistils are always present but the stamens in one form (the pistillate flowers) are small and do not produce pollen, whereas in the other form the pistils are dwarfed and functionless. Petals and sepals are 3-5 and the number of stamens is the same as the number of petals. The pistil consists of a 2-celled ovary, a short style and 2 stigmas. The fruit, which matures in August or September, is a 2-seeded samara, well adapted to wind dissemination. It is very bitter and is sometimes used as a substitute for Hops.

A form of this Hop Tree more common in Illinois is *Ptelea trifoliata* L. var. *mollis* T. & G. Practically the only difference is in its thickish leaflets, which are densely and permanently downy on both surfaces. The Lake Michigan shore is probably the preferred habitat of this variety in Illinois, and it is known in woods from Long Island to Florida and Minnesota to Texas.

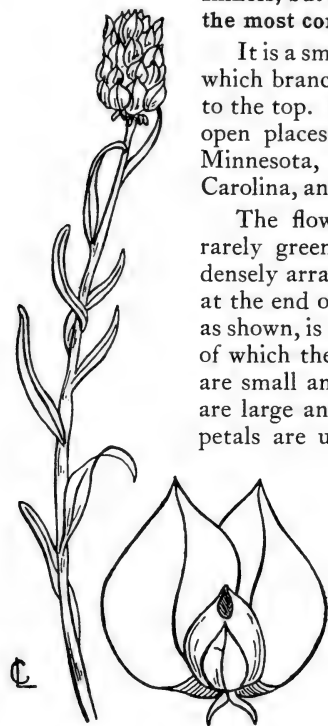
PURPLE MILKWORT

Polygala sanguinea L.

The Milkwort family is relatively small and of little economic importance except that a few of its members are used in medicine. Several species of *Polygala* occur in Illinois, but in most parts of the state this is the most common.

It is a smooth annual herb 6-15 inches high, which branches above the middle and is leafy to the top. It is found in fields, meadows and open places in woods from Nova Scotia to Minnesota, south to Louisiana and North Carolina, and blooms from June to September.

The flowers are usually rose-purple but rarely greenish and even white. They are densely arranged in a globular or oblong head at the end of each branch. The single flower, as shown, is very irregular. There are 5 sepals, of which the uppermost and the 2 lowermost are small and greenish, whereas the lateral 2 are large and colored like the petals. The 3 petals are united into a tube which is split down the back. Filaments of the 6 or 8 stamens are united below into a split tube attached to the petals. The pistil has a 2-celled ovary and a long curved style, and develops into a 2-seeded pod. Each seed bears an outgrowth called a caruncle, which is nearly as large as itself.



The Seneca Snakeroot, *Polygala Senega* L., is quite common in some places, especially in rocky soil. Several unbranched stems come from the thick and knotty rootstock, and bear the lanceolate, rough-margined leaves. The white flowers are borne in a terminal cylindrical spike. The wing petals are round-obovate and concave, and the crest on the back of the keel-shaped lower petal is short. The caruncle is nearly as large as the seed. The plant blooms from May to July and is to be found southwest from New Brunswick, Hudson Bay and Alberta, Canada.

GLANDULAR CROTON

Croton glandulosus L. var. *septentrionalis* Muell. Arg.

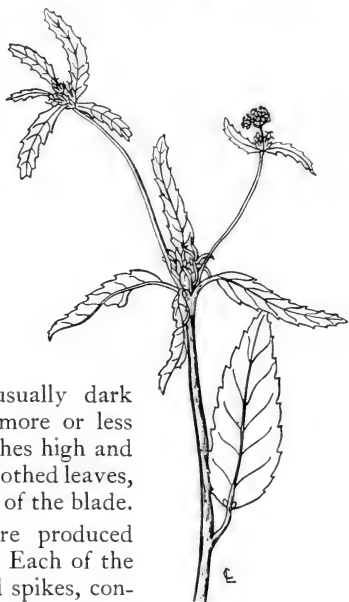
Most members of the Spurge family live in warm-climated countries and contain a milky juice; some of them contain an appreciable amount of rubber. A common cultivated plant of this family is the Castor-oil Bean.

The Glandular Croton is found in sandy soil from Virginia to Indiana and Illinois, south to Florida and Texas. It also occurs in the West Indies and South America. Although not common in Illinois, it is likely to be found in any of the sandy regions of the state.

It is an annual herb, usually dark green. The rather slender, more or less branched stem grows 8-30 inches high and bears the alternate, coarsely toothed leaves, each with 2 glands at the base of the blade.

The imperfect flowers are produced from March to late autumn. Each of the staminate flowers, in terminal spikes, consists of a 4-parted calyx, 4 petals, a 4-rayed glandular disk and 8 stamens. The pistillate flowers are clustered at the base of the staminate spike. Each has 5 sepals, very rudimentary petals and a pistil with 3 styles whose stigmas are 2-cleft. The fruit is a 3-seeded capsule.

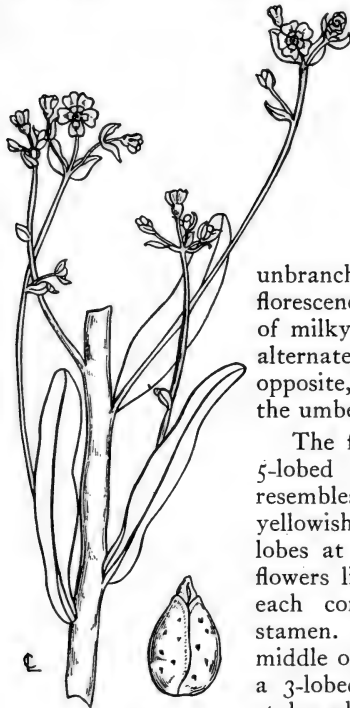
The Three-seeded Mercury, *Acalypha virginica* L., is a member of this family common in fields and waste places. The long-petioled, ovate leaves are coarsely toothed and they often turn purplish. Staminate and pistillate flowers are in the same axillary cluster and are subtended by a large, palmately lobed bract. The capsule is decidedly 3-lobed and the seeds are nearly smooth. The plant ranges from Nova Scotia to Minnesota, south to Florida and Texas. It blooms from July to September.



FLOWERING SPURGE

Euphorbia corollata L.

The Flowering Spurge is the prettiest and most conspicuous Spurge in the state. It is frequently used as a cut flower under the name White Forget-me-not. It is common everywhere in rich or sandy soil from Massachusetts to Ontario and Minnesota, south to Florida and Texas, and it blooms from July to October.



This Spurge is perennial by a long stout underground stem. The upright stem is 10-36 inches high, usually unbranched up to the umbelike inflorescence, and contains an abundance of milky juice. The lower leaves are alternate, those of the inflorescence are opposite, and usually those just below the umbel are whorled.

The flowers are clustered within a 5-lobed involucre that is white and resembles a corolla. It bears 5 large yellowish green glands between the lobes at the base. Several staminate flowers line the base of the involucre, each consisting merely of a single stamen. The 1 pistillate flower is in the middle of the involucre and consists of a 3-lobed and 3-celled ovary, and 3 styles which are 2-lobed also.

The Spreading Spurge, *Euphorbia humistrata* Engelm., is a species very common on lawns. It often kills the grass and in autumn becomes reddish and causes unsightly spots. It grows prostrate; the involucre are small and, unlike those of the Flowering Spurge, inconspicuous. The leaves are elliptical to obovate, toothed toward the apex and sparsely hairy underneath. The pod fruits are sharply angled and minutely covered with short soft hairs. The seeds are red, ovate, blunt angled, minutely roughened and one twenty-fifth of an inch long.

FALSE MERMAID

Floerkea proserpinacoides Willd.

The single genus which represents this family in Illinois was named in honor of Gustav Heinrich Flörke, a German botanist who lived from 1790 to 1835. Two species compose the genus; both are strictly North American plants, the False Mermaid being eastern and the other occurring only in the west. This plant is called False because there is a true Mermaid Weed, *Proserpinaca*, of the Water Milfoil family.

This is a rather inconspicuous annual which grows in marshes, moist forests and along rivers from Quebec to Delaware and west to Wisconsin and Missouri. Its slender stems, 4-15 inches long, are too weak to stand upright and so trail along the ground instead, or lean upon other plants.

The minute flowers are white and bloom from April to June. The 3 green sepals are united at the base and remain attached to the fruit. The base of the calyx is filled by a fleshy disk having 3 very small lobes. The 3 petals, shorter than the sepals, are attached to the margin of the disk and alternate with its lobes. There are 6 stamens, the 3 that alternate with the petals a little the shorter. The pistil consists of 2 or 3 ovaries united only at the base, and a style 2 or 3-lobed at the top. The ovaries develop into somewhat fleshy and roughened akenes.

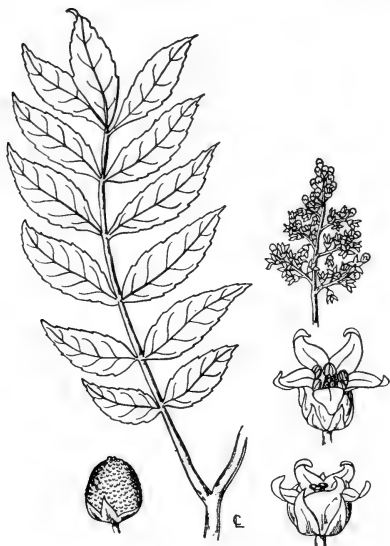


SMOOTH SUMACH

Rhus glabra L.

This is exclusively a family of trees and shrubs, and is represented in Illinois by several species of *Rhus*, only.

This shrub grows 4-12 feet high and is used for ornamental plantings because of its pretty red fruits and leaves which also turn a brilliant red in autumn. It is apt to spread too rapidly from root shoots, and the foliage is subject to a mildew disease. The bark has been used as a source of tannin and the leaves and berries were formerly much used in medicine. It is found in dry sandy or gravelly soil from Nova Scotia to North Dakota and south to Florida and Louisiana, often in places where upland forests have been cut.



The blooming season is June and July, and the fruit matures in September and October. The calyx is usually 5-cleft and usually there are 5 greenish white or yellowish petals, 5 stamens and 1 pistil with 3 styles. The berries when ripe are covered with red hairs that have a sour taste and are an excellent substitute for lemon juice in making a refreshing summer-time drink.

The Shining Sumach, *Rhus copallina* L., is another species, found in the northern and southern parts of Illinois but rare or absent in the central part. It can be recognized by the fact that the main axis or central rib of the leaf is narrowly winged between the leaflets. Also, its branches and stalks are downy, whereas those of *Rhus glabra* are smooth with a whitish bloom.

The Smoke Tree, *Rhus cotinoides* Nutt., is grown as an ornamental plant but is not native in Illinois.

POISON IVY. POISON OAK

Rhus Toxicodendron L.

Poison Ivy or Poison Oak contains a nonvolatile oil which if it comes in contact with the skin may produce the irritation and blistering that is commonly called

Ivy poisoning.

Some persons are immune to it and others are very susceptible; cases are known both of persons who were very susceptible in youth but became immune or nearly so later, and of others immune for years, who later were victims of the

poisoning. Susceptible persons who come in contact with Poison Ivy should wash the hands and face as soon as possible. Water alone will help but strong soap suds or solutions of sugar of lead or chloride of iron are better.

The plant is common from Nova Scotia to British Columbia and south to Florida and Mexico, blooming in June and July. It will grow almost anywhere except in low peaty soil. It usually grows as a densely fine-hairy vine, climbing by means of aerial roots, and will climb trees more than 100 feet tall. Occasionally it is found growing as an erect shrub.

The flowers are similar to those of the Smooth Sumach, page 184, but they are arranged in a loose panicle, and the fruits are white. One must learn to recognize the plant, however, by its petioled, trifoliate and more or less downy leaves. The leaflets are ovate or round-diamond shape, 1-4 inches long, mostly acuminate, entire, finely round toothed or coarsely few toothed or lobed, and short soft hairy beneath.

Poison Sumach or Poison Dogwood, *Rhus Vernix* L., is our most poisonous species. It is common in the swamps of Lake county and probably nowhere else in the state. It grows as an upright shrub 6-15 feet high and has smooth, pinnate leaves with 7-13 ovate-oblong, entire leaflets.



WINTERBERRY

Ilex verticillata (L.) Gray

The American Holly, *Ilex opaca* Ait., does not occur in Illinois, but the Winterberry is a shrub with deciduous leaves which belongs to the same genus. It occurs from Nova Scotia to



Minnesota and south to Florida and Mississippi, and is usually found in low swampy woods or on low borders of lakes. In Illinois it is found in northern swamps, especially in Lake county, and in swampy woods of the south.

The twigs are brown and the dark green leaves, which frequently turn black in autumn, are rather thick and leathery, smooth above but

somewhat hairy below, at least on the veins.

The small, whitish and inconspicuous flowers are produced in June or early July. They are imperfect and in axillary clusters, the staminate in clusters of 2-10 and the pistillate 1-3. The pistillate flowers commonly have 6 sepals, 6 petals and 1 pistil, whereas the parts of the staminate flowers are in fours, fives or sixes. The fruits are bright red berrylike drupes containing 4-6 nutlets. They remain on the branches until midwinter and because of them the plant is recommended for ornamental planting in moist places.

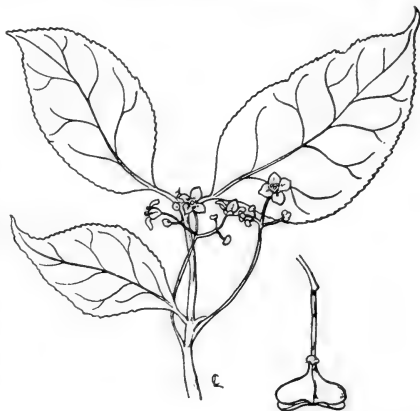
The Swamp or Meadow Holly, *Ilex decidua* Walt., is a small tree found here only in the swamps of the south. It is noted for its light gray bark and its large scarlet berries, which remain after leaf fall to the last of December. The leaves are characteristically wedge shaped, shiny dark green above, and lighter and downy on the midrib beneath.

BURNING BUSH. WAAHOO

Euonymus atropurpureus Jacq.

The Burning Bush or Waahoo is a shrub or small tree 6-26 feet high, which has greenish 4-angled twigs. It is found mostly in open woods from Ontario to Florida and westward to Montana, Nebraska and Oklahoma.

Because of the numerous dark purple flowers that open in June and the brilliant scarlet fruits that mature in autumn, the Burning Bush is highly recommended for planting as an ornamental shrub. The flower usually has 4 sepals united at the base, and 4 purple petals. The 4 stamens are



attached to the 4-angled disk that is stretched from the calyx over the ovary. The style is very short or lacking.

The crimson fruit is a 4-lobed pod with 1 or 2 seeds in each lobe. Each seed is enclosed in a bright red outgrowth or pulp called an aril, and when the pod bursts these arils are exposed and so increase the beauty of the display. The fruits hang on nearly all winter unless eaten by birds.

The Running Strawberry Bush or Creeping Waahoo, *Euonymus obovatus* Nutt., is another species common in moist woods throughout the state. It is a low trailing shrub which roots from the branches and seldom rises more than 1 foot from the ground. The obovate or oblong leaves are thin and dull. The parts of the greenish flowers, which bloom in April and May, are usually in fives. The petals do not have a distinct claw. The crimson fruits are rough with warts on the outside. This is a good plant to use for covering the ground under trees, since it can grow in the shade and forms dense mats. The plant is known from western Ontario to Pennsylvania, Kentucky and Illinois.

CLIMBING BITTERSWEET. WAXWORK

Celastrus scandens L.

The Climbing Bittersweet is called by various names in different places, such as Shrubby or False Bittersweet, Staff Tree, Staff Vine and Fever Twig. It occurs throughout the eastern half of the United States except in the extreme south, and in Canada. It can grow in the open or in shade and in dry or moist soil, but does best in rich moist soil in shady situations. In Illinois it is often found along fence rows.



This is a twining woody vine which may climb 30 feet or more. It is easily propagated by seeds or by root cuttings and is frequently used for trellis work or as a cover for fences. It grows rather rapidly and will stand a great deal of pruning without permanent injury, but the fruits have become so popular for winter bouquets that in some places the plant is threatened with extermination and should be protected.

The small greenish yellow flowers, mostly dioecious, appear in May or June. The calyx is 5-lobed and there are 5 round-toothed petals much longer than the calyx lobes. In the staminate flower the petals and 5 stamens are inserted on a disk that fills the bottom of the calyx. In the pistillate flower the pistil has 3 stigmas and a 3-celled ovary. The fruit, which matures in autumn, is orange outside but breaks open by 3 valves to expose a crimson-red pulp which surrounds the seeds, usually 6.

AMERICAN BLADDER NUT

Staphylea trifolia L.

The Bladder Nut family is small and unimportant. Most of its members occur in Asia, this species alone being found in Illinois.

The American Bladder Nut is a shrub 3-12 feet high, which occurs from eastern Canada and the New England states to Minnesota and south to Missouri and South Carolina. Although found throughout Illinois it is not common, occurring locally on slopes and banks and occasionally in low forest places. It is easily propagated from seeds or cuttings and could profitably be used for ornamental planting much more extensively than it is.



The perfect flowers appear in April or May.

The deeply 5-parted calyx is greenish white or sometimes pinkish, and persists on the fruit. There are 5 white petals, and 5 stamens alternate with them are borne on the outside of a large disk. There is 1 pistil with a 3-lobed and 3-celled ovary.

The fruit, maturing in September or October, is a 3-lobed capsule which is hairy when young but smooth when mature. At maturity it opens at the top and the cells split along the inner side. There are usually 1-4 bony seeds, which are light brown, smooth and about the size of peas.

But here's a magic cometh new—
A joy to gladden thee, indeed:
This passionate out-flowering of
The jewelweed.
That now, when days are growing
drear,

As Summer dreams that she is
old,
Hangs out a myriad pleasure-bells
Of mottled gold!

Jewelweed—FLORENCE EARLE COATES

OHIO BUCKEYE

Aesculus glabra Willd.

The Soapberry family is a large family in the tropics, where many of its members are woody climbers. This is the only common representative in Illinois, and despite its

being a large tree is included here because its large and beautiful flowers bloom early, usually in May.



This tree is to be looked for in woods, where it is usually associated with Sugar Maple and Red Oak, from Pennsylvania to Florida and west to Iowa and Oklahoma. Its leaflets are usually 5, which serves to distinguish it from the introduced Horse Chestnut, *Aesculus*

Hippocastanum L., which usually has 7 leaflets.

The flowers are produced in large terminal panicles. The calyx has 5 somewhat unequal lobes. The corolla is pale yellow and consists of 4 upright but unequal petals, another distinction between this tree and the Horse Chestnut, whose flowers have 5 petals. The 5-8 stamens are curved and elongated, extending beyond the corolla. The pistil consists of a 3-celled ovary and 1 style. The fruit is a spiny capsule which usually contains 1-3 very large brown seeds. These seeds are mealy and contain a bitter poisonous principle.

The Red Buckeye, *Aesculus Pavia* L., is a highly ornamental shrub or small tree of southern Illinois. It is distributed from Virginia to Kentucky and Missouri, south to Florida and Texas. The flowers, having a bright red corolla and tubular calyx, bloom in May. Stamens are not longer than the corolla. The leaves are smooth or soft downy beneath. The capsule fruits are smooth and contain 1-3 large, light brown, heavily wrinkled seeds.

SPOTTED TOUCH-ME-NOT. JEWELWEED

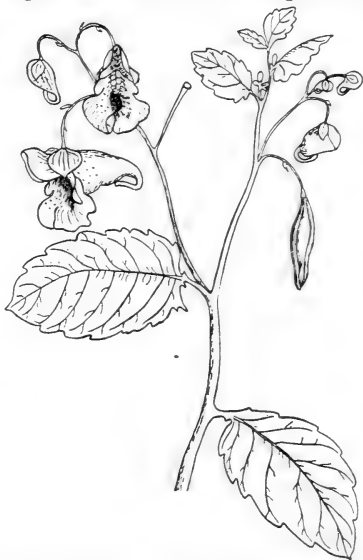
Impatiens biflora Walt.

The Spotted Touch-me-not, also called Wild Balsam and Jewelweed, is found in moist shady places, often forming dense patches, from Quebec to Oregon and south to Georgia and Kansas. It is an annual, 2-5 feet tall, with stems that contain so much watery juice that they are nearly transparent.

The flowers are orange-yellow thickly mottled with reddish brown, and occasionally pale and not mottled. They are axillary, single, and hang almost horizontal by slender pedicels. Their peculiar shape suggests some of the jewels worn as earrings by women of the nineteenth century.

There are 3 sepals, the 2 lateral being small, green and nerved, and the third large, saclike with a long slender incurved spur one-half the length of the enlarged portion, and colored like the petals. The petals are 5, each side petal united to the one just behind, so that the apparent number of petals is 3. The anthers of the 5 stamens, alternate with the petals, are united around the stigma. A scale is borne on the inner side of each filament and the 5 scales come together over the stigma. The styles of the 5-parted pistil are lacking or obsolete and the fruit is a 5-celled, elastically dehiscent capsule filled with many seeds hanging in single rows.

Although the large flowers are much visited by bumblebees they often do not develop fruits; instead, small flowers that never open but are pollinated in the bud are more likely to do so. Mature fruits are under such tension that a touch causes them to split into their 5 parts, hence the name Touch-me-not.



NEW JERSEY TEA

Ceanothus americanus L.

The Buckthorn family consists only of trees and shrubs and is not of great importance. Four species, including the New Jersey Tea, occur in Illinois and are used for ornamental planting.

This is one of our finest plants to show the association or partnership called mycorrhiza, between plant roots and fungi. The root tubercles resemble those in the Pulse family but are much larger and much more numerous.

This species grows 1-3 feet high from a dark red root and makes a very good hedge plant. It grows in dry open woods and on dry or sandy prairies from Maine to Manitoba, south to Florida and Texas. Though found throughout Illinois, it is probably less common in the south.

The leaves are ovate or ovate-oblong, strongly 3-nerved,

toothed and finely hairy, especially beneath, 1-2¼ inches broad and often slightly heart shaped at the base. They were brewed for tea during the American Revolution.

The flowers are produced in dense oblong clusters in June and July. The elongated peduncles are terminal or axillary and are often leafy. The calyx is top shaped and 5-lobed, with the tips of the lobes curving inward. Both the calyx and pedicel are white like the 5 petals. The latter are hooded and longer than the calyx. There are 5 stamens with long threadlike filaments. The pistil consists of a 3-lobed ovary and a short 3-cleft style. The nearly black fruit is dry, depressed, less than one-eighth inch high, and at maturity it separates into 3 nutlets, each containing 1 seed.

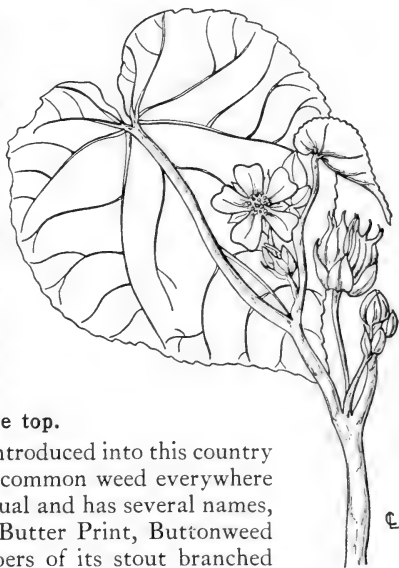


VELVET LEAF. INDIAN MALLOW

Abutilon Theophrasti Medic.

The Mallow family is extremely important because it is the family to which the Cotton plant belongs. A number of highly prized ornamental plants, such as Hollyhock, Hibiscus and Rose of Sharon, are members.

Stamens of all flowers in the family are united into a sheath or central column around the pistil and joined with the bases of the petals. In the first 4 species presented, the column bears anthers at its summit; in the last 4 it bears anthers for a considerable portion of its length and is 5-toothed at the top.



The Velvet Leaf was introduced into this country from India and is now a common weed everywhere in waste places. It is annual and has several names, such as Indian Mallow, Butter Print, Buttonweed and Pie Marker. The fibers of its stout branched stem, 3-6 feet high, are said to be used in China for making twine or rope. The whole plant is densely velvety and has a somewhat disagreeable odor when handled. The long-petioled leaves are heart shaped, 4-12 inches wide, toothed or nearly entire, and acuminate but the point blunted.

The yellow flowers are produced from August to October. The calyx is 5-cleft and persistent, and there are 5 yellow petals. Stamens are numerous and united into a column bearing anthers only at the top. The pistils are also numerous but the ovaries are united in a ring so that in fruit they form a several-celled pod or capsule. Many seeds are produced and it is said that some of them have been known to germinate after they were 60 years old.

PRICKLY SIDA

Sida spinosa L.

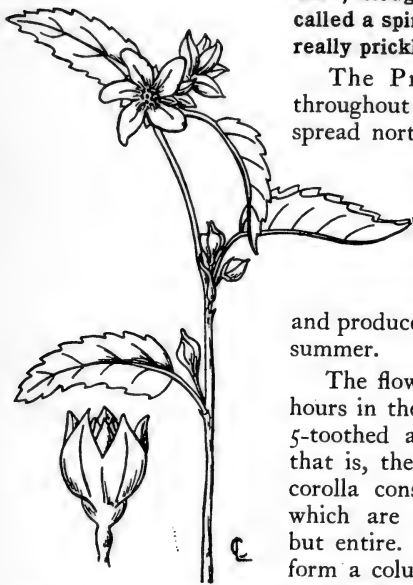
The specific name of this plant comes from the occurrence of a little pointed tubercle at the base of each of the larger leaves, but it is somewhat inept, for this protuberance, though solid, can hardly be called a spine and the plant is not really prickly.

The Prickly Sida is native throughout tropical America and has spread northward to Maine, Michigan, southern Wisconsin and Iowa. It is the only *Sida* in Illinois. It is a much branched, finely and softly hairy annual which grows 1-2 feet high and produces small yellow flowers all summer.

The flowers open for only a few hours in the morning. The calyx is 5-toothed and naked at the base; that is, there is no involucre. The corolla consists of 5 yellow petals which are usually slightly 1-sided but entire. The numerous stamens form a column which bears anthers only at the top. There are 5 pistils

grown together to form a compound ovary but the 5 styles are distinct. The 5-parted fruit is within the persistent calyx and each part splits at the top into 2 beaks so that the fruit becomes 10-beaked. Each division of the fruit contains 1 seed.

The Poppy Mallow, *Callirhoë involucrata* (T. & G.) Gray, is a diffuse spreading herb of sandy areas, blooming from April to August. Its palmately 5-9-lobed leaves, with conspicuous, ovate, persistent stipules, are alternately arranged and on medium, long-haired petioles. The hairy upper stems and branches end in long hairy peduncles terminated by solitary red-purple flowers 2 inches in diameter. Sepals and petals are 5, and the pistils are indefinite. This is a common annual weed from Massachusetts to Michigan, Kansas and southwestward.



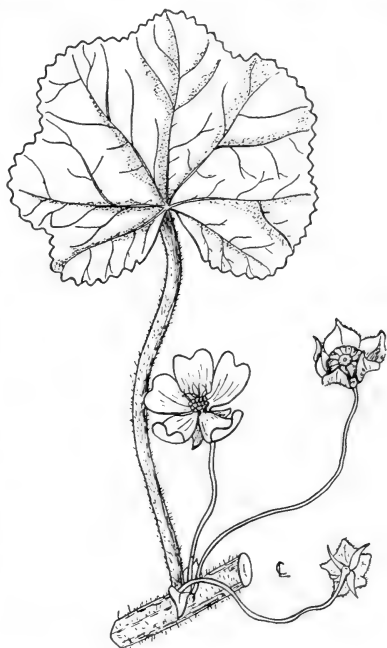
COMMON MALLOW. CHEESES

Malva rotundifolia L.

The Common Mallow or Cheeses was introduced from Europe, has become naturalized and is now common throughout in waste places and cultivated grounds. The flowers yield a blue coloring matter which serves as a test for acids and alkalies, being reddened by the former and rendered green by the latter.

This is a biennial, the deeply penetrating root living over winter. The stems are prostrate, spreading and branching to such an extent that a single healthy plant may cover several square feet of soil. The leaves, elevated on their long petioles, are so sensitive to light that their blades turn toward the east in the morning and follow the sun during the day, keeping the broad face always at right angles to the source of light.

The Mallow blooms throughout summer and autumn, and unopened buds, flowers and mature fruit may be found at the same time. The flowers open only during sunny weather. The 5 green sepals, united at the base, persist as the fruit matures. At the base of the calyx are 3 little leaflike bracts which form a sort of outer calyx or involucrel. The 5 petals vary from whitish to purplish red but their veins are always purplish red. The flattened fruits, divided into as many 1-seeded parts as there are styles, are while green the edible "cheeses."



WOOLLY-FRUITED ROSE MALLOW

Hibiscus lasiocarpus Cav.

This Rose Mallow is a large perennial herb of low grounds and marshy places from Georgia to Texas, extending up the Mississippi basin to Kentucky and Missouri, and to southern Illinois and Indiana. The plant blooms from July to September.



The stems, in clumps of 3-20, are 2-5 feet high and downy pubescent, especially above. The leaves are broadly or narrowly ovate, toothed or 3-7-lobed, soft downy on both surfaces and in addition bearing long hairs on the upper surface.

The large flowers are white or rose with deep crimson eyes. The petals are 5 and the hairy calyx 5-toothed or cleft. The bractlets of the involucrel are narrow and as long as the calyx or shorter, and fringed with long marginal hairs. The short cylindrical

capsule is densely stiff hairy and opens by 5 valves so that the many small, brown and nearly smooth seeds are shaken out by the wind.

More rarely found in swamps and along streams of the state is the Swamp Rose Mallow, *Hibiscus Moscheutos* L. This is likewise a perennial herb with numerous canelike stems 5-6 feet high. The flowers, produced from July to August, are much like those of the woolly-fruited species, may be 7 inches across and varying from white through several shades of pink, but are usually rose. The column bears anthers a considerable portion of its length, and the pollen may be white or yellow. The style divides into 5 short branches, each bearing a large stigma. The smooth or sparingly soft-hairy fruit is a capsule with several to many seeds in each of its 5 cells.

HALBERD-LEAVED ROSE MALLOW

Hibiscus militaris Cav.

The Halberd-leaved Rose Mallow rivals the cultivated Hollyhock in beauty of floral display. It grows along streams and in other wet places from Pennsylvania to Minnesota, south to Florida and Louisiana, and blooms in August and September.

This is a perennial which sends up each year a cluster of smooth stout stems 3-5 feet high. Some or all of the leaves are halberd shaped; that is, they are shaped like an arrowhead but with the 2 basal lobes extending outward almost at right angles.

The large flowers are produced in the axils of the upper leaves as well as at the ends of branches. They are delicately pink or flesh color, with a purplish base. The green 5-lobed calyx persists and becomes inflated as the fruit develops. Below it is an involucre of many narrow bractlets. The long column bears the anthers along the greater part of its length. Within is the compound pistil with a 5-celled ovary and 5 united styles whose stigmas are separate. The fruit is a capsule containing many silky seeds.

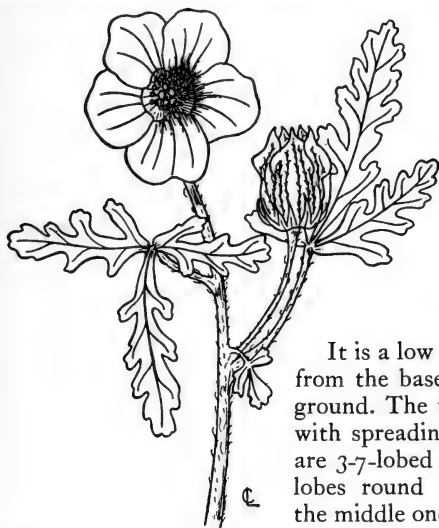
The Rose Mallows should not be confused with the European Marsh Mallow, *Althaea officinalis* L., which belongs to the same family but is a quite different plant with much smaller flowers. The Marsh Mallow is the plant whose roots furnish the mucilage used in making marshmallow confectionery. It has become naturalized in some places in this country but is seldom found in Illinois.



FLOWER OF AN HOUR

Hibiscus Trionum L.

The Rose Mallows described on the preceding pages are rather shy plants, but the Flower of an Hour, belonging to the same genus, is much bolder and dwells in places frequented by



man, such as roadsides, the edges of cornfields and other waste or cultivated places. This species is a native of southern Europe but it seems to like America very well and is now found from Nova Scotia to Florida and west to South Dakota and Kansas.

It is a low annual which branches from the base and spreads over the ground. The whole plant is covered with spreading hairs and the leaves are 3-7-lobed or divided, the obtuse lobes round toothed or cleft, and the middle one longest.

During the blooming season of August and September the Flower of an Hour opens for only a short while in the morning, thus acquiring its common name. The flowers, produced in the axils of the upper leaves, are sulfur yellow with a dark purple center, and the outer edges of the petals are tinged purple also. The involucre of many narrow bractlets is much shorter than the beautifully veined, inflated calyx, which is 5-lobed and 5-angled. The numerous stamens are united into a column around the compound pistil and the style has 5 branches at the end, each branch bearing a stigma. The fruit is a hairy, nearly spherical, several-seeded capsule.

The Rose of Sharon, *Hibiscus syriacus* L., is a southern plant which frequents rocky soil near streams. It is a tall, smooth shrub with wedge-shaped to ovate, pointed and cut-toothed or lobed leaves. The flowers, pink or white with a crimson center, bloom from July to September.

ROUND-PODDED ST. JOHN'S-WORT

Hypericum cistifolium Lam.

The St. John's-wort family is of little economic importance, although the Mangosteen, a very highly prized Asiatic tropical fruit, belongs to it. About a dozen species of St. John's-wort occur in Illinois but some of them are not common. They may usually be recognized by the opposite, mostly sessile leaves, dotted with blackish spots that can readily be seen by holding the leaf up to the light; and may be known also by the greater proportion of yellow flowers, though some have flesh color or purple blooms.



The Round-podded St. John's-wort grows 1-2½ feet high and is simple or sparingly branched. It is found on rocky banks from southwestern Ohio to Iowa, Alabama, Arkansas and Kansas. The stems are somewhat woody at the base and slightly 4-angled.

The numerous yellow flowers are produced in cymes from July to September. The 5 ovate green sepals are narrow and usually shorter than the petals. The numerous stamens are distinct and there is 1 pistil with 3 styles. The fruit is a capsule containing many seeds that are roughly pitted and larger than in most species.

The Shrubby St. John's-wort, *Hypericum prolificum* L., grows 1-4 feet high and has 2-edged branches. The leaves are narrowly oblong and narrowed at the base. Often there are tufts of smaller leaves in the axils of the larger. The yellow flowers are produced abundantly from July to September. The stamens are very numerous and the styles are 3. The oval capsule is about one-half inch long. This plant occurs from southern Ontario to Minnesota, south to New Jersey, Georgia and westward.

BIRDFOOT VIOLET

Viola pedata L.

In some parts of the world there are shrubs and even trees that belong to the Violet family, but our Violets are all herbaceous plants, of which only cultivated Pansies

are economically important. The many Violets, some white, some yellow and some blue, are much alike and sometimes not readily distinguished. Cross-pollination and the resultant forming of hybrids complicates attempts to find specific types.



ground and the leaves and flower stalks appear to be growing directly from the ground.

This species, rivaling the cultivated Pansy, is one of the most beautiful of our wild Violets. It is not as common here as it is farther east, Massachusetts and southwestward, but it is locally abundant in dry or sandy fields and hillsides and in open woods.

The underground stem is short, stout and erect, and from it are given off the heavy fibrous roots. The leaves, as shown, are cleft into segments resembling the claws of a bird, and give the plant its common name.

The Birdfoot Violet blooms in May and June and sometimes produces a few flowers again in late summer or autumn. The typical flower has the 2 upper petals dark violet and the 3 lower lilac-purple with dark veins, but the common Illinois form has all 5 petals lilac-purple. The orange tips of the stamens are large and conspicuous in the center of the flower. The pods are smooth and green, and the seeds are copperish.

HAIRY BLUE VIOLET

Viola sororia Willd.

By act of the state legislature in 1908 the Violet was made the official state flower of Illinois. No particular species was designated but it is commonly assumed that the lawmakers had in mind the common Blue Violets, of which there are several species in the state.

Blue Violets should never be picked except in places where they are very abundant; but where there are hundreds of plants and literally thousands of blossoms it does no harm to pick them provided only the flowers are taken and roots and leaves are not disturbed.



Often the beautiful blue flowers that we so admire produce no seeds. Late in the season small flowers without petals are produced on short peduncles. These never open but are self-pollinated and produce seeds abundantly.

The Hairy Blue Violet is found in moist meadows and woods and by shady ledges from western Quebec and New England to Minnesota, south to North Carolina and Oklahoma. The lower surfaces of the leaves and usually the petioles are covered with very short hairs.

It blooms in April and May and sometimes again in autumn. The peduncles are often 6 inches or more in length and the flowers shade through deep violet to lavender or lighter. The fruit is a many-seeded capsule.

The Common Blue Violet, *Viola papilionacea* Pursh, is very similar but the leaves are smooth beneath. Occasionally the flowers, as in the above species, may be white. (See frontispiece.)

SWEET WHITE VIOLET

Viola blanda Willd.

The Sweet White Violet is a small plant with a slender underground stem, basal leaves and fragrant white flowers. It is found in moist woodlands from western Quebec to Minnesota and southward



to northern Georgia and Louisiana, and blooms in April and May.

The whole plant is usually smooth except that there are short white hairs on the upper surfaces of the leaves. Midribs, petioles and flower stalks are often tinged red. In summer the plant spreads by slender leafy runners.

The flowers are very irregular. The 5 green sepals are slightly unequal and have earlike appendages at the base. The white petals are purple veined, and the lower has a spur at the base in which nectar accumulates. There are 5 stamens, 2 of which have appendages that project into the spur of the corolla. There is 1 pistil.

The Large-leaved White Violet, *Viola incognita* Brainerd, is similar, but the upper surfaces of the leaves are smooth, and the rest of the plant is somewhat hairy. Also, the 2 lateral petals are bearded.

The Striped White Violet, *Viola striata* Ait., is found in rich wooded bottomlands throughout the state but is most common in the south. It is much branched, 1 foot high or less, and has numerous heart-shaped and toothed leaves. The many large flowers are axillary on long peduncles. The petals are white, cream color or pale lavender, with the 2 lateral bearded and the lowermost thickly striped with purple veins.

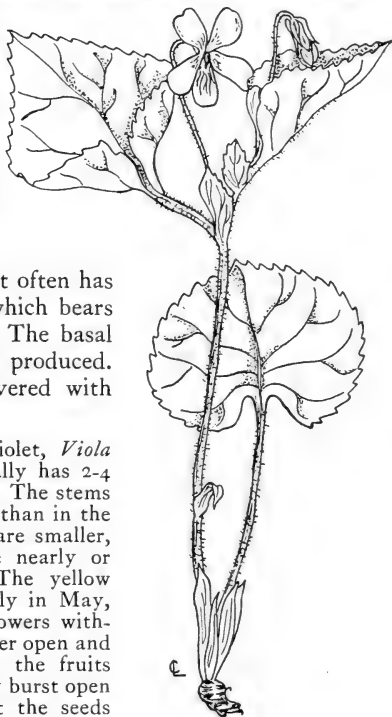
A violet by a mossy stone
Half hidden from the eye!
Fair as a star when only one
Is shining in the sky.
Lucy—WILLIAM WORDSWORTH

DOWNY YELLOW VIOLET

Viola pubescens Ait.

We have two common Yellow Violets, both of which occur in woods or thickets, and both of which belong to the group with leafy stems. In both the petals are yellow with large purple veins, and the seeds are light brown and relatively large, being nearly one-sixteenth of an inch long.

The Downy Yellow Violet is found in rich dry woods from southern Maine and Ontario to Maryland and Kansas. It often has only 1 stem, as shown, which bears 2-4 leaves near the top. The basal leaf shown may not be produced. Stem and leaves are covered with soft downy hairs.



The Smooth Yellow Violet, *Viola scabriuscula* Schwein., usually has 2-4 stems and 1-3 basal leaves. The stems are shorter and more leafy than in the downy species, the leaves are smaller, and stems and leaves are nearly or entirely without hairs. The yellow flowers are produced usually in May, but later in the summer flowers without petals occur. These never open and are self-pollinated. When the fruits are ripe they dry and finally burst open with such suddenness that the seeds are hurled out, often several inches.

The Arrow-leaved Violet, *Viola sagittata* Ait., has intensely blue flowers on long peduncles coming from the vertical underground stem. The leaves are oblong and somewhat heart shaped at the base, where they expand into 1-3 spreading lobes that look like barbs and contribute to the common name.

Of all her train, the hands of Spring
 First plant thee in the watery mould,
 And I have seen thee blossoming
 Beside the snowbank's edges cold.
The Yellow Violet—WILLIAM CULLEN BRYANT

PRICKLY PEAR

Opuntia Rafinesquii Engelm.

The Cactus family is strictly American in distribution and is largely confined to the desert regions of North and South America. The members assume a variety of shapes, from flat and sprawling to erect and polelike, some at least 25 feet high.

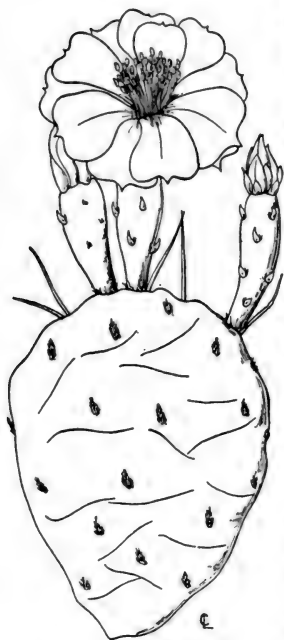
Leaves of the Cactus, in all but certain tropical species, come out tiny and fleshy but soon drop off and are replaced by prickles or spines.

The only Illinois Cactus is the Prickly Pear, growing in dry sandy or rocky soil and blooming in the middle of summer. It is found from Ohio to Minnesota and south to Kentucky and Texas.

This is a prostrate plant with very fleshy branching stems made up of flattened joints, one of which is shown. The leaves are very small and awl shaped and soon fall off, but the stems are a deep green and carry on the work of food manufacture. In the axils of the leaves are clusters of short barbed bristles and often longer spines as well. The bristles are bright reddish brown

and the spines are whitish but may be red at base and tip.

The large brilliant flowers are yellow but often have a reddish center. They open only in sunshine, but for several days in succession. The flower parts are attached above the ovary. The green sepals are numerous and spreading and there are 10 or 12 petals. Stamens are very numerous and arranged in several rows. There is only 1 style but several stigmas. The ovary matures into a pear-shaped, fleshy and edible berry nearly 2 inches long.



SWAMP LOOSESTRIFE. WATER WILLOW

Decodon verticillatus (L.) Ell.

The Loosestrife family is relatively small and unimportant. Its members are widely distributed but are most abundant in the American tropics. The flowers are dimorphous or trimorphous, and the calyx tube bears the stamens and petals at its throat.

The Swamp Loosestrife is not uncommon in swamps and along the borders of ponds and streams from Maine to Minnesota, south to Florida and Louisiana. The 4-6 sided stems of this perennial grow 2-8 feet high and are curved over at the top. Often the submerged parts have a spongy thickened bark and are somewhat woody at the base. The willowlike leaves are sometimes opposite and sometimes whorled.

Pink-purple trimorphic flowers are found in the axils of the upper leaves. The short calyx has 5 erect teeth and as many longer hornlike processes between the teeth. The corolla consists of 5 wedge-shaped petals. There are 10 stamens inserted on the calyx tube, 5 short and 5 long and exserted. The fruit is a globose, 3-5-celled capsule which is included in the calyx and dehiscent along the dorsal suture.

The Long-leaved Ammannia, *Ammannia coccinea* Rottb., is a smooth branching herb 6-18 inches high, common on muddy banks throughout Illinois. In such places and on wet sandy shores it may be found from New Jersey to Florida and from Ohio to the Dakotas and southwestward. The linear-lanceolate leaves, 1-3 inches long, are paired and with somewhat clasping bases. The small scarlet flowers are 1-5, sessile in the axils of the leaves. The 4 petals, with the 4-8 more or less exserted stamens, are attached directly to the top of the 4-parted calyx tube. The styles are long and slender. The capsule fruit bursts irregularly, scattering many fine seeds.



LOOSESTRIFE

Lythrum alatum Pursh

In low wet places from southern Ontario to northern Georgia and west to Minnesota, South Dakota and Utah, the Loosestrife may be found blooming abundantly from June to August. It is conspicuous then because it often grows in masses and its deep purple flowers are showy, though small.

The tall and wandlike stems are 1-4 feet high, much branched, 4-angled and usually wing margined, but not hairy. The leaves are oblong-ovate to linear-lanceolate, and the bases are rounded or heart shaped, whereas the tips are acute.

Dimorphous flowers are produced singly and nearly sessile in the axils of the upper leaves. The calyx tube is cylindrical, nearly straight and not spurred at the base. It is 10-14-ribbed and has 5-7 teeth with as many appendages in the sinuses. The 5 identical purple petals and the 5-7 stamens are inserted in the throat of the calyx tube. Stamens of the short-styled flowers extend beyond the corolla. The fruit is a 2-celled capsule.

The Spiked Loosestrife, *Lythrum Salicaria* L., is a European species scattered in swamps and wet places in Illinois. Its round, smooth to downy stems grow 2-3 feet high, are mostly unbranched and bear many lanceolate leaves with clasping or heart-shaped bases. The reddish purple flowers are trimorphic and in dense terminal and branching spikes. Each has

4-6 petals and sepals, 8-10 stamens and 1 pistil. The calyx and bracts are greenish and somewhat covered with soft downy hairs, and the lobes of the calyx are much shorter than the awl-shaped appendages in the sinuses. The cylindrical capsule is generally 2-celled and filled with many flat seeds, which are shaken out when the fruit bursts irregularly.



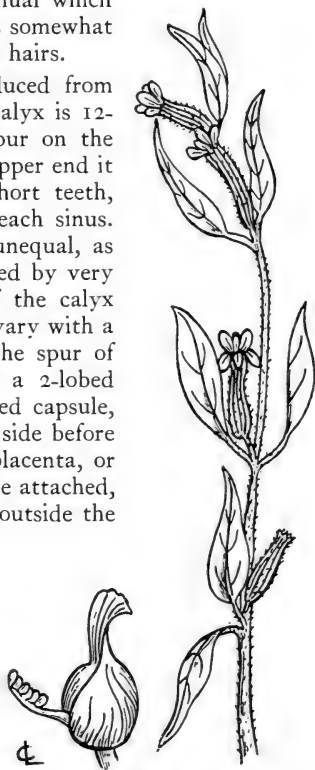
CLAMMY CUPHEA. BLUE WAXWEED

Cuphea petiolata (L.) Koehne

The Blue Waxweed grows in dry soil from New Hampshire to Illinois and Kansas, south to Georgia and Louisiana. It is rare in the northern part of this state but becomes more common farther south. It is a small annual which grows 6-20 inches erect, branches somewhat and is covered with very sticky hairs.

The purple flowers are produced from July to October. The tubular calyx is 12-ribbed and has a very short spur on the upper side at the base. At the upper end it is slightly 1-sided and has 6 short teeth, usually with a little process in each sinus. The 6 purple ovate petals are unequal, as are the 11 or 12 stamens attached by very short filaments near the top of the calyx tube. The pistil consists of an ovary with a curved gland at its base next the spur of the calyx, a slender style and a 2-lobed stigma. The fruit is a few-seeded capsule, peculiar in that it splits along 1 side before the seeds are mature, and the placenta, or portion to which the flat seeds are attached, projects so that the seeds ripen outside the capsule.

The Meadow Beauty, *Rhexia virginica* L., is the only well-known Illinois member of the Melastoma family, the Melastomaceae. This plant sends up its square stem 12-18 inches from a slender tuber-bearing rootstock. The rose-purple flowers are in terminal cymes and are about 1½ inches broad. The 4 sepals are very glandular outside. The blooming season is July to October, and the flowers give way to a 4-celled capsule containing numerous bent or coiled seeds. Sandy swamps and shores from Maine to Florida harbor this plant, and it is also known from Ontario to Illinois, Iowa and southwestward.

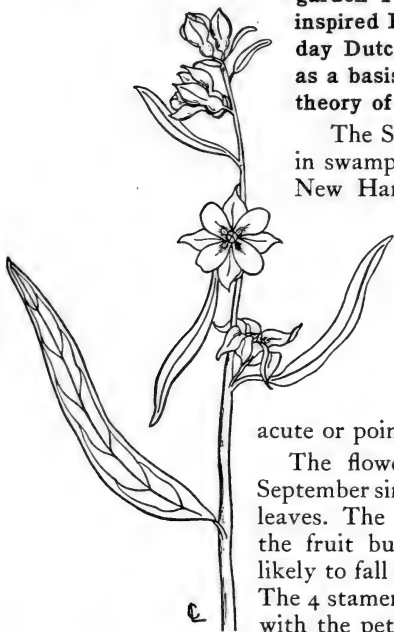


SEEDBOX

Ludvigia alternifolia L.

The Evening Primrose family is small and none of its members are economically important. The varied forms of the Evening Primrose of this family and the common garden Pea of the Pulse family inspired Hugo De Vries, present-day Dutch botanist, to use them as a basis of observations for his theory of mutation.

The Seedbox grows 2-3 feet high in swamps and low wet woods from New Hampshire, southern Ontario and Michigan to Florida, Kansas and Texas. It is an erect, branching and nearly smooth perennial herb having tuberous or clustered roots. The leaves are lanceolate to linear-lanceolate and acute or pointed at both ends.



The flowers appear from June to September singly in the axils of the upper leaves. The 4 green sepals persist on the fruit but the 4 yellow petals are likely to fall away if the plant is jarred. The 4 stamens are inserted on the calyx with the petals. The fruit is a cubical capsule about one-quarter inch long, which contains many seeds and is the source of the plant's common name. It opens by a pore at the base of the short style.

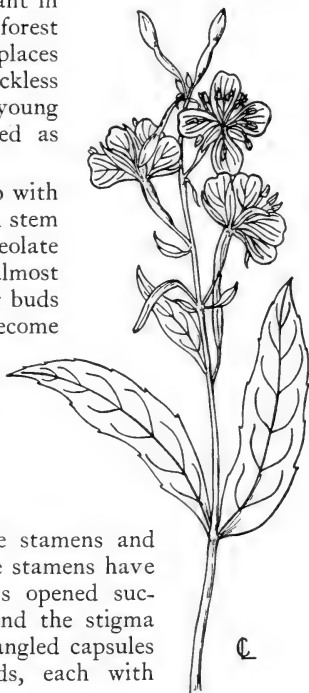
The Water Purslane, *Ludvigia palustris* (L.) Ell., is quite common in muddy ditches and swamps. It is very different from the Seedbox. Its oval leaves are opposite instead of alternate and its stems creep upon the mud or float, and root at the nodes. The calyx lobes are very short and when the plant grows in water there usually are no petals; if it grows on land there are often 4 small reddish petals. The capsule is 4-sided and about one-fourth of an inch long. This plant ranges throughout the United States and blooms from June to November.

GREAT WILLOW HERB. FIREWEED

Epilobium angustifolium L.

The Great Willow Herb or Fireweed is common in open places across the continent from North Carolina, Kansas and California to Greenland and Alaska. It also occurs in Europe and Asia. It is especially abundant in recently cleared and burned forest areas, coming up thickly in such places as though in protest against the reckless destruction of woods. The young tender shoots are sometimes used as "greens."

This is a showy perennial herb with a rather stout, simple or branched stem that grows 2-8 feet high. The lanceolate leaves are pinnately veined and almost entire. The pedicels of the young buds are turned downward but they become erect before the flower opens. The limb of the brownish calyx is 4-divided to the top of the ovary, and the 4 large petals are narrow, entire and violet-purple. There are 8 stamens and 1 style with a stigma having 4 long lobes. Usually as the flower opens, the stamens and style are turned down. After the stamens have straightened up and the anthers opened successively, the style straightens and the stigma opens. The fruits are slender 4-angled capsules containing numerous small seeds, each with a coma.



The Northern Willow Herb, *Epilobium coloratum* Muhl., is common in low grounds in Illinois. It is a bushy species 1-3 feet high, distinguished by its lance-shaped, toothed leaves which are conspicuously red-purple veined. They may grow to lengths of 5-6 inches with corresponding widths of one-half to three-quarters of an inch. The flowers are much like those in the above species, and the coma when mature is cinnamon color. The plant occurs southward from Maine to Nebraska, and blooms from July to September.

COMMON EVENING PRIMROSE

Oenothera biennis L.

The Common Evening Primrose grows abundantly in open places, usually in rather dry soil, from Labrador to Florida and west to Minnesota and Texas. This is a biennial that produces the first year only a rosette of leaves and a strong root. The fleshy root is said to have been used as a table vegetable long before potatoes were cultivated so universally. The rosette of leaves remains green all winter and in the spring there is produced an upright, leafy, more or less branched shoot that grows 1-6 feet high and bears the flowers and fruits.



In Illinois this Evening Primrose begins blooming in June and continues until stopped by the frosts of October. The beautiful and fragrant flowers open at sundown and are interesting to watch. They close the following day and so are pollinated by night-flying moths. The 4 bright yellow petals and 8 stamens are inserted on the long and

narrow calyx tube, which is terminated by 4 narrow reflexed lobes. The style is slender and the stigma 4-lobed. The mature capsules are three-quarters to $1\frac{1}{2}$ inches long and are covered with short hairs. They contain as many as 40 seeds each, and a mature plant once examined was thus found to produce 500,000 seeds.

The Northern Evening Primrose, *Oenothera muricata* L., is commonly associated in this state with the above species, and is usually mistaken for it. However, it grows not more than 3 feet high instead of having the 6-foot range of the Common Evening Primrose, its leaves are narrower and more nearly entire, and above all, the hairs on its stems rise from reddish glands.

MEADOW SUNDROPS

Oenothera pratensis (Small) Robinson

The Meadow Sundrops is closely related and very similar to the Evening Primrose, page 210, but it is perennial and its large and handsome yellow flowers open in the morning instead of evening. It can easily be grown under cultivation and will be admired in any flower garden. It grows in open places and rather low grounds from Ohio and Iowa south to Arkansas, and blooms from June to August.

The stem is 1-2 ½ feet high, often branching near the top, and is covered with long, soft, widely spreading hairs. The leaves are oblong-lanceolate, one-half to three-quarters of an inch long, and slightly coarse or stiff hairy on both surfaces.

Flowers on the upper part of the stem are terminal, and the lower ones are produced in the axils of decidedly leaflike bracts. As in all members of the family, the flower parts are attached above the ovary. The calyx tube is slender and ends in 4 lobes which are finally reflexed. The 4 large bright yellow petals and 4 long stamens alternating with 4 short are attached to the calyx tube. The style is slender and the stigma 4-cleft. The capsule is somewhat club shaped, 4-angled, prominently winged and very hairy. The seeds are numerous.

The Common Sundrops, *Oenothera fruticosa* L., is very similar and the two are often confused. This plant, however, grows in drier soil and is ordinarily less hairy or nearly smooth. The spikes are on naked peduncles. The capsule is oblong, winged and either hairy or smoothish. This species is found on dry sandy soil from southern New England to South Carolina, and also in Ohio, Michigan and Indiana.



GAURA

Gaura biennis L.

This *Gaura* is the only species in Illinois. It is a biennial herb which grows in rather dry soil from Quebec to Ontario and Minnesota, south to Georgia and Arkansas, and blooms from July to September.

The first year it produces a rosette of leaves which manufacture food to be stored in the roots and used the following year. The second year it sends up an erect, much branched stem 2-5 feet high, covered with short downy hairs and bearing alternate sessile leaves.

The rather loose spikes are produced at the ends of branches as well as at the terminus of the main stem. The flower parts are attached above the ovary. The slender calyx tube is prolonged beyond the ovary and at the summit is divided into 4 rather long, narrow and reflexed lobes. The 4 slightly unequal petals are white, becoming pink with age. Petals and the 8 stamens are inserted on the throat of the calyx tube. Stamens and the slender style are at first turned down. The stamens straighten as the anthers mature, and after the pollen has been discharged or nearly so the style straightens and the 4-lobed stigma, closed and surrounded by a cuplike ring, opens. The 4-ribbed nutlike



fruit is acute at both ends, less than one-quarter inch long, covered with soft hairs and contains 1-4 seeds.

Because the flowers are quite small and not a vivid color, the name *Gaura*, which comes from a Greek word meaning superb, seems not to characterize our species very well.

ENCHANTER'S NIGHTSHADE

Circaea lutetiana L.

The Enchanter's Nightshade is a branching perennial herb whose slender stems, swollen at the nodes, grow 1-2 feet high. It is common in woods from Nova Scotia to Ontario and North Dakota, south to Georgia and Kansas. The genus name is derived from Circe, enchantress of the Odyssey.

The slender-petioled, ovate leaves are 2-4 inches long, acuminate at apex and with the margins having widely spaced teeth.

The small white flowers are produced from June to August. The flower parts are attached above the ovary. The calyx tube is prolonged only a short distance beyond the ovary and is then divided into 2 lobes which are turned back. Filling the end of the calyx tube is a cup-shaped disk to which the 2 white petals and 2 stamens are attached. The style is slender and unbranched. The pedicels become reflexed in fruit as shown. The fruit is densely covered with hooked hairs, making it a sort of bur. It contains only 1 or 2 seeds and does not open.

The Small Enchanter's Nightshade, *Circaea alpina* L., is a low smooth perennial 2-8 inches high, which favors cold places, woods and rocky cliffs. Leaves are somewhat heart shaped at the base and the white flowers greatly resemble those of the above species but are smaller. The 1-celled bur fruits are narrowly obovoid and the hairs are soft and fine.

A form between these two and growing along with the Enchanter's Nightshade is *Circaea intermedia* Ehrh., not commonly named. It grows 8-16 inches high and the leaves are thinner, ovate and more or less heart shaped, and the teeth are prominent. Minute bracts are usually present at the base of each flower.



Many species in this large family have flowers so nearly alike that to identify the plants with certainty one must have the fruits. The flowers are usually in umbels and the leaves are in most cases compound, with the bases of the petioles expanded or sheathing the stem.

Some members of the family are poisonous, as is the Poison Hemlock, which the ancient Greeks used to kill prisoners and which was the death potion of Socrates. Others are very valuable as garden vegetables, such as Celery, Parsnip and Carrot.

The following key is intended only for the 14 genera given place in this book; for the remaining species standard reference works will be required.

KEY TO GENERA

1. Leaves thick, long, narrow, parallel veined.. *Eryngium* p. 215
 Leaves not thus..... 2
2. Flowers yellow..... 3
 Flowers white or greenish white..... 4
3. Plant small or medium; leaves ternate..... *Zizia* p. 221
 Plant coarse, large; leaves pinnately compound. *Pastinaca* p. 221
4. Stems very large, hollow, smooth, purple; flowers greenish
 white..... *Angelica* p. 222
 Plant not thus..... 5
5. Stems very large, coarse, hairy; umbel very large.....
 *Heracleum* p. 222
 Plant not thus..... 6
6. Stems tall, marked lengthwise with purple lines; leaves 2 or
 3 times pinnately compound..... *Cicuta* p. 219
 Stems tall, green; leaves simply pinnate..... *Oxypolis* p. 222
 Plant not thus..... 7
7. Leaves palmately divided..... *Sanicula* p. 216
 Leaves pinnately or ternately compound..... 8
8. Upper leaves pinnate, lowest pinnately dissected.. *Sium* p. 220
 Leaves not thus..... 9
9. Petals flat..... *Erigenia* p. 219
 Petals with tips turned in..... 10
10. Fruit prickly..... *Daucus* p. 224
 Fruit hairy..... *Osmorhiza* p. 218
 Fruit smooth or nearly so..... 11
11. Leaflets sharply toothed..... *Cryptotaenia* p. 220
 Leaflets coarsely and bluntly lobed..... *Chaerophyllum* p. 217

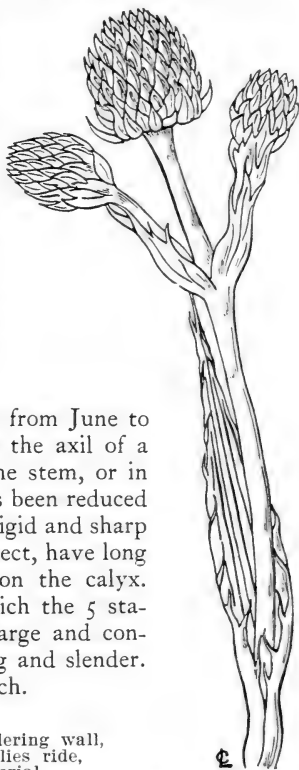
RATTLESNAKE MASTER. BUTTON SNAKEROOT

Eryngium yuccifolium Michx.

The Rattlesnake Master or Button Snakeroot is common in open places in all prairie portions of the state. It occurs locally as far east as Connecticut and New Jersey, as far south as Florida and Texas, and west to South Dakota and Kansas. It differs markedly from other members of the family in that the leaves are not compound, and the flowers are not in umbels.

This is a smooth stout plant whose 2-6-foot stem is unbranched or branched near the top. The stiff spiny-toothed leaves are mostly clasping at the base and the lower may be 3 feet long, whereas the upper are much smaller. All are parallel veined and thick.

The small white flowers bloom from June to September. Each is produced in the axil of a bract, in a dense head topping the stem, or in the axil of an upper leaf which has been reduced to a bract. The 5 calyx teeth are rigid and sharp pointed. The 5 white petals are erect, have long incurved tips and are mounted on the calyx. The disk above the ovary, to which the 5 stamens are attached, is relatively large and conspicuous, and the 2 styles are long and slender. The scaly fruits contain 2 seeds each.



Here, by the broken, moldering wall,
Where still the tiger lilies ride,
Once grew the crown imperial,
The tall blue larkspur, white Queen Margaret,
Prince's feather, and mourning bride.

Beyond their pale, a humbler throng,
Grew bouncing bet and columbine;
The mountain fringe ran all along
The thick-set hedge of cinnamon roses.
And overhung the eglantine.

A Puritan Lady's Garden—SARAH N. CLEGHORN

SHORT-STYLED BLACK SNAKEROOT

Sanicula canadensis L.

Growing 1-4 feet high, rather dull green, and producing numerous forked branches, this Black Snakeroot is very common in woods from New Hampshire to Florida and west to South Dakota and Texas. The leafy stems have 3-5 divisions, and the leaves are alternate and petioled, except those which form the involucre as shown. The root was formerly used in medicine and the genus name is derived from the Latin word meaning to heal.



The very small white flowers are produced from June to August, the flower parts being attached above the ovary as in all members of the family. The calyx is about one-twentieth of an inch long and is divided into 5 pointed lobes which are longer than the

5 minute white petals. The 5 stamens are attached to a flat disk at the base of the 2 short styles.

The fruit shown is immature. When mature it is about one-fifth of an inch long, nearly spherical and thickly covered with hooked bristles which are longer than the 2 persistent styles. It is one of the very common burs that cling to our clothes in autumn.

Another species of Black Snakeroot, *Sanicula marilandica* L., is very common. It is usually less branched and has firm bluish green leaves, the lower of which are on long petioles. The stamens are greenish white and the petals, of the same color, are slightly longer than the calyx. The fruit is about one-quarter inch long and the slender recurved styles are longer than the stout bristles.

WILD CHERVIL

Chaerophyllum procumbens (L.) Crantz

The Wild Chervil, which produces its small white flowers in abundance from April to June, is common in rich woods and often in open places on moist soil from New York to North Carolina and west to Iowa and Louisiana. It is a much branched annual herb 6-20 inches high, with slender, more or less hairy, spreading stems.

The flowers are produced in small compound umbels, each cluster consisting of 2-6 few-flowered umbels on peduncles which are in turn arranged as an umbel. There is a cluster of small bracts forming an involucre below each little umbel but ordinarily there is no involucre below the compound umbel.

The flower parts are attached above the ovary as is true of all members of the family. The calyx tube is so short as to be almost absent and there are no calyx teeth. The 5 white petals have the tips turned in and 1 is slightly larger than the others. The 5 stamens alternate with the petals and are attached with them to a sort of disk that crowns the ovary and surrounds the base of the 2 styles. The fruit when mature is a nearly smooth, oblong, somewhat angled or ribbed akene. There is 1 seed in each of the identical halves.



The gladiolus and the fervent rose,
Which in their splendor move unshadowèd,
Upon their vital stems expose
Their cups of gold and red.

Within The Garden There is Healthfulness—EMILE VERHAEREN

SMOOTH SWEET CICELY. ANISE ROOT

Osmorhiza longistylis (Torr.) DC.

The Sweet Cicelys are perennial herbs and have clusters of thick edible roots which possess the fragrance and flavor of anise. One must be very sure of his identification here since the roots of some members of the Parsley family are deadly poisonous.



There are two common Sweet Cicelys, the Hairy, *Osmorhiza Claytoni* (Michx.) Clarke, and the Smooth. They are very similar. Their distributions are not quite identical but they are likely to be found in any woods from Nova Scotia to Alabama, west to South Dakota and Colorado, and in Illinois are usually intermingled. Chief differences between them are that the stems of the Hairy Sweet Cicely are much more hairy, the leaves somewhat more deeply and finely divided, and the styles in fruit not more than half as long as those of the smooth species.

The Smooth Sweet Cicely grows 1-4 feet high and branches considerably. The stems are essentially without hairs except at the nodes. The lower leaves are long petioled and may be 1 foot wide, but the upper are much smaller.

The white flowers are produced in May and June. There are no calyx teeth and the tips of the petals are turned back. The bristly fruits are a little more than one-half inch long at maturity, and the persistent styles are about one-tenth of an inch in length.

MUSQUASH ROOT. WATER HEMLOCK

Cicuta maculata L.

The fame of this plant rests on its poisonous nature. Its toxic principle is the most violent to livestock of that from any Illinois plant, and is found in all its parts. An unpleasantly strong narcotic odor is characteristic.

From the large, fleshy and tuber-bearing roots of the Water Hemlock rises a slender stem 3-6 feet high and marked lengthwise with purple lines. It is found mostly on marshy ground from New Brunswick to Florida and is common westward to Manitoba and New Mexico, but will endure moderately dry soil. The leaves are sometimes 1 foot long, are 2 or 3 times pinnately divided, and the oblong-lanceolate segments are coarsely toothed.

The many-flowered compound umbels are 2-4 inches broad. The umbellets are one-half inch across or more, and the small flowers are white. Usually there is no involucre, but there are involucels of several slender bractlets. The small fruits are oval or broadly ovate.

The Harbinger of Spring, *Erigenia bulbosa* (Michx.) Nutt., is a low perennial herb which gets its name from the fact that it blooms very early, often in March, or even February in the southern part of the state, continuing through April. It is the only species of *Erigenia* in the world and is found only in the central part of the continent. There are usually 2-4 basal leaves, and the flowering stem, 3-9 inches high, bears no leaves except the 1 or 2 that serve as an involucre below the compound umbel. The flower has no calyx teeth and its white petals are flat, not turned in at the tip. The 5 stamens are attached with the petals to the disk that surrounds the 2 styles above the ovary. The fruit contains 2 seeds.



HONEWORT

Cryptotaenia canadensis (L.) DC.

A common characteristic of members of this family is a series of longitudinal canals, between or beneath the ribs of the fruit, which contain aromatic oil. The name *Cryptotaenia*

comes from two Greek words which have reference to these concealed oil tubes.



The Honewort is a common woods plant from New Brunswick to Georgia and west to western Ontario, South Dakota and Texas. Once entered into a garden it tends to become a weed.

This is a smooth perennial herb 1-3 feet high, which branches freely and blooms from June to August. The lower and basal leaves are long petioled, whereas the upper are nearly sessile as shown. All are 3-divided.

The compound umbel usually consists of 4-10 small umbels whose pedicels are unequal in length. There are no involucre or involucels. There are no calyx teeth and the white petals are turned in at the tip. The fruits are smooth, narrowed at both ends, sometimes curved, and about one-quarter inch long.

The Water Parsnip, *Sium cicutaefolium* Schrank, is common in swampy and marshy places. It is a stout perennial 2-6 feet high, which produces large compound umbels of white flowers from July to October. The leaves are very variable. The lower have long petioles and may be very finely dissected, especially if they are submerged in water. The upper are simply pinnate and have 7-17 leaflets that are 2-5 inches long and usually less than 1 inch wide. Involucres and involucels are present, composed of numerous narrow bracts. The fruit is oval, flattened, about one-fifth of an inch long, and has prominent ribs.

GOLDEN ALEXANDERS

Zizia aurea (L.) Koch

The Golden Alexanders is common in fields, swamps and along roadsides from New Brunswick to Ontario and South Dakota, south to Florida and Texas. Its flat-topped clusters of golden flowers make it very conspicuous in spring.

The hollow, juicy, branching stem is smooth and grows 1-2½ feet high. It is often tinged with red and when bruised or broken has an odor resembling that of fresh varnish. The lower leaves are long petioled and 2 or 3 times compound, each division having 3 smooth and rather thin leaflets similar to those shown.

The flowers begin blooming in April and continue into June. The 5 tiny yellow petals have their tips turned in toward the rather prominent stamens.

The Wild Parsnip, *Pastinaca sativa* L., is another yellow-flowered herb of the Parsley family. It was introduced into this country from Europe and has become a weed. It is a stout, widely branching biennial that grows 2-5 feet high. The stem is usually smooth but conspicuously grooved. The lower leaves are often more than 1 foot long, petioled and pinnately compound, with the leaflets variously lobed and sharply toothed. The upper leaves are much smaller and their bases clasp the stem. The numerous little yellow flowers are grouped in a flat-topped cluster like that of the Golden Alexanders but much larger. The oval fruits are about one-quarter inch long.

The Heart-leaved Golden Alexanders, *Zizia cordata* (Walt.) DC., is occasionally found in southern Illinois. Its root leaves are long stalked, typically heart shaped or even round, and prominently round toothed. Stem leaves are 3-5-divided, with broadly lanceolate or ovate leaflets serrate, cut toothed or lobed. The ovate fruit is narrowly ribbed and about one-eighth inch long.



COW PARSNIP

Heracleum lanatum Michx.

The Cow Parsnip grows in rich low woods from Newfoundland to Alaska, south to North Carolina and California. Its stem attains a height of 8 feet and a diameter of 2 inches, is hollow and



covered with long white hairs. The leaves are very hairy, petioled, 6-10 inches broad and ternately divided. The segments are ovate, heart shaped at the base, and toothed. An unpleasant odor comes from all parts of the plant.

The great umbels of showy white flowers bloom in June. They may be 12 inches across and have 8-30 rays or branches, in turn supporting the many pedicels. The corollas are large, white, and with the petals of the outer flowers of each umbellet enlarged and

notched. The fruits are oval, nearly one-half inch long and finely hairy.

The Cowbane, *Oxypolis rigidior* (L.) Coult. & Rose, is a swamp plant whose smooth slender stems rise 2-6 feet from tuberous roots. The leaves are alternate and pinnately compound, the lower being about 1 foot long, with commonly 9 narrow, oblong or lanceolate leaflets that have widely spaced teeth at the margins. The umbel is 2-4 inches broad, with 7-25 rays 1-4 inches long. The umbellets are one-half to 1 inch in diameter, crowned with white flowers having the usual incurved petals. The fruits are oval, smooth and flattened on the sides, and about one-quarter inch long.

PURPLE-STEMMED ANGELICA

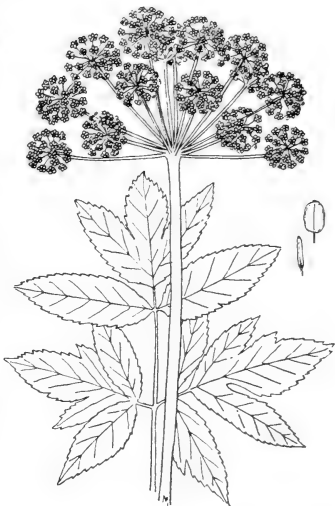
Angelica atropurpurea L.

Candied sweetmeats called Angelica are made from young stems of this giant Parsley and command a high price. This is particularly true of the confectionery imported from England, whereas it might easily be made from the same plant growing here.

This plant grows in marshy spots from Newfoundland to Minnesota, Delaware and Iowa. The purple to green stems are smooth, commonly 8-9 feet high, and 1½ inches in diameter. They bear large twice-ternate leaves, the lower of which are sometimes 2 feet across. The leaflets are oval or oblong and finely toothed.

The greenish white flowers bloom in June and July. The umbels are 2-4 inches broad and contain 7-16 rays 1-2½ inches long. The secondary umbels are small and dense, bearing the small flowers on pedicels one-half inch long. The petal tips are incurved. The seeds are one-quarter inch long, ovate and somewhat flattened.

An ornamental relative is the Hairy Angelica, *Angelica villosa* (Walt.) BSP. It is much smaller and in Illinois is found only in the Ozark extension. It is a perennial 2-6 feet high, with the upper stem and umbels densely covered with grayish hairs. The lower leaves are ternate or twice ternate and the pinnately arranged segments are thick, oval and finely toothed. The upper leaves are reduced to sheathing petioles. The umbels are 2-4 inches broad, compound and 7-30-rayed. The rays are 1 inch long and the pedicels very short; thus the inflorescence is dense and, because of the white flowers, conspicuous.



WILD CARROT

Daucus Carota L.

The Wild Carrot is a native of Asia and Europe, having been introduced into this country from the latter. It is often called Queen Anne's Lace and many farmers would be better pleased if Queen Anne had kept her lace at home, for this plant has become a pernicious weed in many places. Nevertheless it adds immensely to the beauty of many a wayside for it is very pretty.



It is usually biennial and its slender branching stems grow 1-3 feet high. Stems and leaf petioles usually bear short scattered bristly hairs. The root is white, fleshy and somewhat similar to that of the cultivated Carrot, which originated from this wild species. The leaves are yellowish green and the lower are very much cut and divided.

The plant begins blooming in June and continues until the frosts of autumn. The involucre below the compound umbel is composed of several leaflike, pin-

nately divided bracts, whereas the involucre below each umbellet consists of several entire or toothed bracts. The flowers vary from white to rose or pale yellow, and often 1 sessile flower in the center of each cluster is dark purple. There are no calyx teeth, 1 petal is usually larger than the other 4, and the tips of all petals are turned in. In the outermost flowers of a cluster the petals are often enlarged and 1 or more may be 2-lobed. There are 5 minute stamens with yellow anthers. The prickly fruit is oblong, flattened dorsally, and with each half (carpel) of the pistil bearing one seed. Each carpel has 5 slender bristly primary ribs and 4 winged secondary ribs, each of the latter bearing a single row of barbed prickles.

FLOWERING DOGWOOD

Cornus florida L.

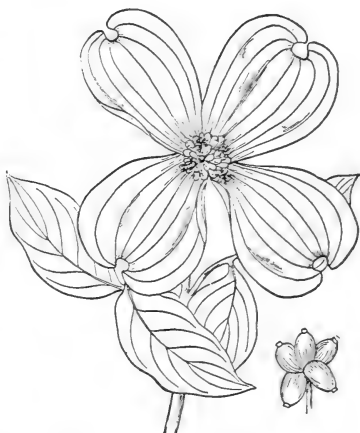
This is the state flower of Virginia and it well merits the honor. Though frequently recommended for ornamental planting it might be used even more extensively. It is rather difficult to transplant, however, and seems to thrive best when the hole in which it is planted is filled with soil taken from beneath a living Dogwood tree. The bark is very rough and the wood hard, strong and capable of taking a high polish.

In Illinois this small tree is quite common in moist forest regions of the state, but is rare or absent elsewhere. It grows in dry or well-drained situations from southern Maine and

Ontario to southern Minnesota, south to Florida and Texas. Specimens 40 feet high are occasionally found.

The leaves are opposite, dark green above and paler beneath, and nearly smooth except for some hairs on the veins below.

The tree is very beautiful when in bloom in May and again when the fruits are ripening in September or October. The flowers are small and yellowish green, arranged in a little cluster which is surrounded by 4 large white petallike bracts as shown. Each flower consists of a 4-lobed calyx, 4 petals, 4 stamens and 1 pistil. The stone fruits resemble little plums and are bright red when ripe. They are eaten in great quantities by squirrels and birds.



The thrush is back with his old note;
 The scarlet tulip blowing;
 And white—ay, white as my love's throat—
 The dogwood boughs are glowing.

April Weather—LIZETTE WOODSWORTH REESE

SMALL WHITE DOGWOOD

Cornus paniculata L'Hér.

The Small White Dogwood is a shrub with smooth gray twigs, which grows 6-15 feet high. It is found in rich, or more often in sandy, soil in both moist and dry places from Maine to

Minnesota, south to South Carolina and Arkansas. It is common in the northern part of the state but less common or rare farther south. It prefers to grow in full sunlight and is strictly erect and very leafy. Because of its numerous flower clusters and bunches of white fruits it makes a very showy ornamental shrub.

The opposite leaves are ovate-lanceolate, acute at the base, minutely hairy on both sides and pale beneath.

The flowers are produced in June. The calyx tube is bell shaped and slightly 4-toothed. The 4 petals are white and there are 4 stamens. The pistil consists of a 2-celled ovary, a short style and 1 stigma. The fruit is a 2-seeded drupe which is white when mature in August or September.

The Pagoda or Alternate-leaved Dogwood, *Cornus alternifolia* L. f., is a larger shrub or small tree, reaching 15 feet in height. It is our only species with alternate leaves; these, clustered near the ends of the greenish and white-streaked branches, are pale and minutely hairy beneath. The flowers are white or creamy and the ripe fruits are dark blue on reddish stalks. This small tree is well distributed throughout Illinois on steep banks and bluffs, cliffs and in ravines. It is known from Nova Scotia to Minnesota, south to West Virginia and Missouri.



INDIAN PIPE. CORPSE PLANT

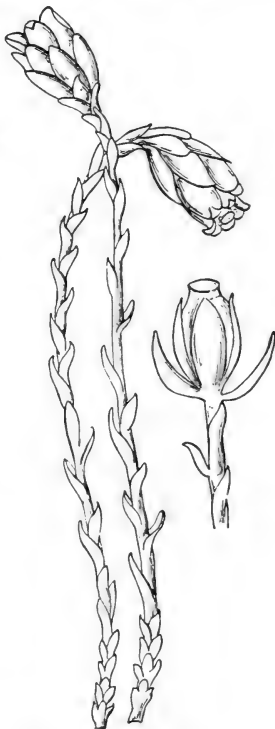
Monotropa uniflora L.

This most curious flower has no green parts. Stems, leaves and flowers are white—so white that the plant is sometimes called Corpse Plant or Ghost Flower, and is often mistaken for a fungus.

It was formerly thought that the Indian Pipe obtained its food from dead organic matter just as many fungi do. Now, however, it is known that a fungus entirely covers the roots and is partly within them; it is believed that in some way the Indian Pipe is a parasite on the fungus and obtains at least part of its food from the fungus body.

The Indian Pipe grows in dense rich woods nearly throughout North America except in the far north. The scapes, usually clustered, rise 2-12 inches high from mats of brittle roots.

The solitary odorless flower is nodding at the tip of the scape, and blooms from June to August. The calyx consists of 2-4 irregular scales or bracts and the corolla of usually 5 wedge-shaped scalelike petals a little longer than the 8 or 10 stamens. The pistil consists of a 4 or 5-celled ovary, a short stout style and a disklike stigma. The fruit is a capsule containing innumerable very small seeds.



Deep in the wood, of scent and song the daughter,
 Perfect and bright is the magnolia born;
 White as a flake of foam upon still water,
 White as soft fleece upon rough brambles torn.

The Magnolia—JOSE SANTOS CHOCANO
 (Translated by John Pierrepont Rice)

BEARBERRY. KINNIKINIC

Arctostaphylos Uva-ursi (L.) Spreng.

Many members of this large family inhabit arctic and high mountainous regions. The Azaleas and Rhododendrons of the eastern ranges are noted for their beauty, and Blueberries, Huckleberries and Cranberries are sought throughout the country for their edible fruits. Heather of Scotland is a particularly famous member. Blueberries and Azaleas are examples of the certain kinds of plants in the family which can be grown only in soil that is kept acid.



This trailing and much branched shrub is found in dry sandy or rocky soil throughout the northern part of the continent from New Jersey, Missouri and California to Labrador and Alaska. Confirmed reports of this plant in Illinois have been comparatively few, most of them having come from counties bordering Lake Michigan and one or two from Peoria.

The branches are 6-24 inches long and spread over the ground to form a complete cover. The leathery and ever-green leaves have been much used in medicine and were formerly mixed with tobacco by the Indians and smoked.

The flowers are produced in May and June. The small calyx is 5-parted and persists on the fruit. The tubular white corolla has 5 short teeth that are slightly recurved. There are 10 short stamens whose anthers have 2 reflexed awns on the back, and the pollen sacs open by pores at the upper end. There is 1 pistil with a slender style. The ripe fruit is a red drupe containing 5 nutlets that cling together to form a solid stone edible to bears, squirrels and birds, but not to man.

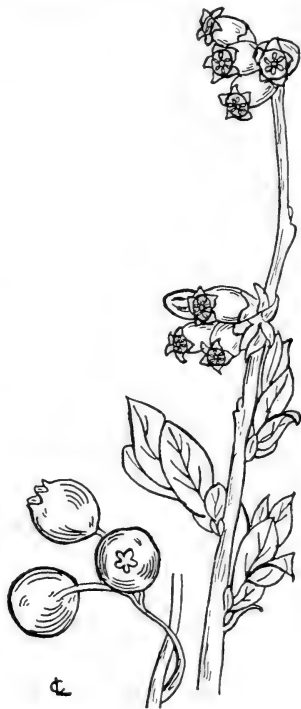
LOW-BUSH BLUEBERRY

Vaccinium pennsylvanicum Lam.

This plant furnishes some of our market blueberries. It grows only in the dry sandy or rocky areas of the north, such as are about Lake Michigan, near Kankakee, at Starved Rock and in Ogle county. It is also known in the mountains of New York and New England, and far to the northeast.

The Low-bush Blueberry is a branching shrub 6-24 inches high, with green, somewhat warty branches that are without hairs. The alternate leaves are green and smooth on both sides, and are very finely toothed.

The small clusters of white or occasionally pinkish flowers are produced in May and June. The flower parts are attached above the ovary: the calyx with 5 short lobes that persist on the fruit, and the corolla oblong-bell shaped, slightly narrowed near the top and with 5 spreading or curved teeth at the end. There are 10 stamens whose anthers are without awns and whose pollen sacs are prolonged to form tubes that open by pores at the ends. The single style is straight and the stigma small. The fruits are many-seeded berries, very sweet and blue or nearly black and rarely white or reddish when ripe in June or July.

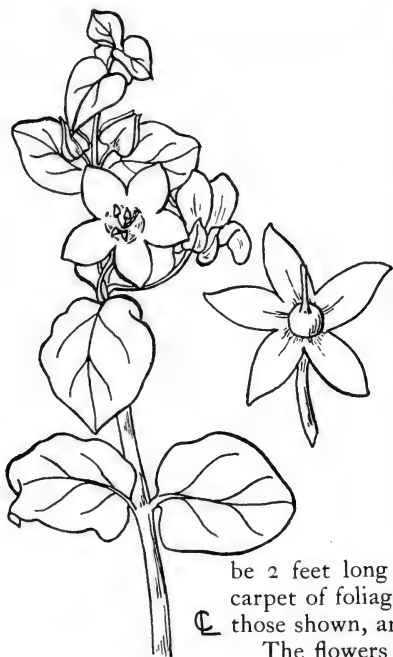


The Late Low Blueberry, *Vaccinium vacillans* Kalm, is also found in Illinois. It is similar but the oval leaves are very pale beneath and are often entire. The fruits are smaller. The calyx is usually reddish and the corolla greenish yellow tinged with red.

MONEYWORT

Lysimachia Nummularia L.

The genus name of this plant comes from two Greek words meaning a release from, and strife. The Moneywort is therefore a Loosestrife, but of the Primrose instead of the Loosestrife family.



The Moneywort is sometimes called Wandering Jenny or Wandering Sally because of its habit of spreading by rooting at the nodes of its runners. It is a native of Europe and was introduced into this country as a garden flower, but has wandered out to many places from Newfoundland and Virginia to Illinois. This plant grows only in wet soil, is often found along ditches and sometimes in the water. In fact it grows well as a water plant in aquaria.

The smooth stems may be 2 feet long and massing into a thick carpet of foliage. The opposite leaves, like those shown, are dotted with glands.

The flowers are produced singly in the leaf axils from June to August. The 5 lobes of the calyx are about half as long as those of the yellow wheel-shaped corolla. On the corolla throat are attached the 5 stamens whose filaments bear glands and are grown together at the base. There is 1 pistil with a spherical ovary and a slender style. The fruit is a capsule containing only a small number of seeds.

In this low vale the promise of the year,
Serene, thou openest to the nipping gale,
Unnoticed and alone,
Thy tender elegance.

The Early Primrose—HENRY KIRK WHITE

NARROW-LEAVED LOOSESTRIFE

Steironema lanceolatum (Walt.) Gray

This genus differs from *Lysimachia*, preceding, in that its leaves are not dotted with glands. The staminodia described below are the cause of the genus name *Steironema*, coming from two Greek words meaning sterile thread.

The Narrow-leaved Loosestrife is found on low grounds and in thickets from Maine and North Dakota to Florida, Louisiana and Arizona. The stem is usually 1-2 feet high and bears many opposite leaves which, however, often appear whorled.

The yellow flowers are produced on slender axillary peduncles from June to August. The 5 petals are united at the base. There are 5 stamens, 1 at the base of each petal. Alternating with them are 5 slender filaments without anthers; these are the staminodia. The pistil is simple with a 1-celled ovary, 1 style and 1 stigma, and the fruit is a 10-20-seeded capsule.



The Southern Loosestrife, *Steironema intermedium* Kearney, is a perennial of dry rocky soil from Virginia to southern Illinois, Alabama and Tennessee. Its 4-angled stem is 8-28 inches high, smooth below and downy and glandular above. The leaves are ovate-lanceolate, acute at the tip and somewhat heart shaped at the base, 2-3 inches long and minutely hairy. The flowers are on slender petioles in open leafy panicles. The 5 lanceolate sepals are very acutely tipped and the 5 segments of the corolla are tipped with a sharp point. The capsule is shorter than the calyx.

The Yellow or Trailing Loosestrife, *Steironema radicans* (Hook.) Gray, is a rare and unusual species found only in the southern part of Illinois, particularly near river courses. The stem is slender and reclining, its elongated branches often rooting in the mud. Leaves, on very slender stalks, are lanceolate or broader and round at the base. The yellow flowers are less than three-quarters of an inch across, and petals and sepals are equal. The fruiting calyx is about one-quarter inch long.

MARSH LOOSESTRIFE

Steironema quadriflorum (Sims) Hitchc.

This showy perennial herb grows along streams and lakes and in swamp borders from Virginia to western New York, west to Missouri and Manitoba. It is common in such places in Illinois, especially in the north.



The smooth 4-sided stem grows 6-36 inches high and branches little or not at all. All but the lowest leaves are sessile and similar to those shown. They are very narrow, 1-nerved and with slightly rolled margins, opposite but often with clusters of smaller leaves in their axils. The basal leaves are broader and shorter on slender petioles.

The yellow flowers appear in June and July, tending to be produced in fours at the ends of the branches. The persistent calyx is 5-lobed and somewhat shorter than the corolla. The deeply 5-parted and wheeled-shaped corolla is yellow and beautifully fringed; to it are attached the perfect stamens, 1 at the base of each petal, and the 5 sterile filaments or staminodia which alternate with the petals. The pistil has a nearly spherical ovary and a slender style. The fruit is a capsule

containing somewhat angled seeds.

The Common or Fringed Loosestrife, *Steironema ciliatum* (L.) Raf., is the largest of the genus, growing 1-4 feet high. It is also distinguished by its broad leaves, heart shaped at the base. The margins of the leaf base and the petioles are fringed with long white hairs. The large yellow flowers, blooming from June through August, have their corollas longer than the calyx, and the latter is also exceeded in fruit by the capsule. This species may be found in low grounds and thickets from Nova Scotia to British Columbia, south to Georgia and Arizona.

SHOOTING STAR

Dodecatheon Meadia L.

The only claim to eminence or economic importance that can be made by the Primrose family lies in the beauty of some of its flowers, but the claim is a good one and shared by Primroses and Shooting Stars alike. The pert nodding flowers of this handsome species decorate moist cliffs and ridges in open woodlands and prairies from the Atlantic to the Pacific and from southern Canada to Texas.

This perennial has a stout underground stem and fibrous roots. The leaves are clustered at the base of the simple, naked flowering stem, which grows 8-24 inches high.

The pedicels curve so that the flowers are nodding in bloom as shown, but they straighten as the fruits ripen so that the latter are erect when mature. The calyx is deeply 5-lobed and persistent. At first the lobes are turned back but in fruit they are erect. The corolla varies from rose-pink to white and its 5 lobes are turned back. To the throat are attached the 5 stamens with their short flat filaments converging into a conelike structure. This conical formation is continued by the long tapering anthers, attached to the filaments by their bases and separate from each other. The threadlike unbranched style of the single pistil extends through the open tip of the anther cone. The fruit is a capsule containing numerous minute seeds.

Always growing under the overhang of moist cliffs, and found in Illinois only in the south, is the other Shooting Star, *Dodecatheon Meadia* L. var. *Frenchii* Vasey. The ovate leaves are abruptly contracted into narrow petioles and the flowers are about half the size of the species type, and paler or white.



INDIAN PINK

Spigelia marilandica L.

The Logania family is largely a family of warm and tropical regions. The beloved Yellow Jasmine of the south is its most famous member. Some violent poisons,

strychnine for example, are obtained from the family, but apart from the beauty of its flowers it is of little note. This genus is named for Adrian Spiegel, a seventeenth century writer on botany, who was possibly the first to give instructions

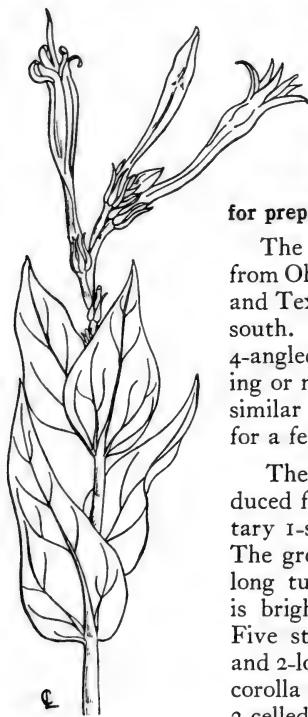
for preparing an herbarium.

The Indian Pink is found in rich woods from Ohio to Missouri and south to Florida and Texas. In Illinois it occurs only in the south. It is a perennial whose smooth 4-angled stem grows 1-2 feet high, branching or not. The opposite sessile leaves are similar to those shown and smooth except for a few hairs on the veins underneath.

The very attractive flowers are produced from May to July, usually in a solitary 1-sided spike at the end of the stem. The green calyx is deeply 5-parted. The long tubular corolla, 5-lobed at the end, is bright red outside and yellow within. Five stamens, whose anthers are narrow and 2-lobed at the base, are attached to the corolla tube. The pistil consists of a short 2-celled ovary, a long slender style which

is hairy at the upper end and jointed a little below the middle, and a blunt stigma. In fruit the 2 cells of the ovary enlarge to produce a sort of twin capsule.

The corolla tubes are so long that nectar cannot be obtained from them by bees or flies; instead, hummingbirds and butterflies visit and pollinate the flowers.



ROSE PINK

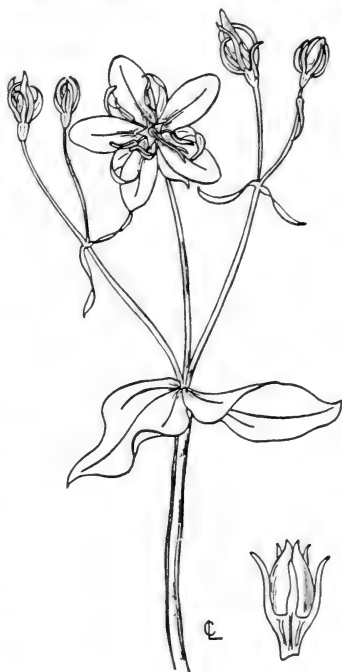
Sabatia angularis (L.) Pursh

The Gentian family furnishes some of our most beautiful wild and cultivated flowers. Most species have blue, late-blooming flowers whose beauty has in many cases caused their destruction. They have been victims of relentless flower hunters so that now scarcely any grow where formerly grew hundreds.

This handsome species occurs locally from New York to western Ontario and south to Florida, Louisiana and Oklahoma, preferring the rich soil of thickets and meadows. It grows from seed each year and may therefore not be found in the same place year after year.

The sharply 4-angled stem is usually rather stout, much branched and 2-3 feet high. Leaves, all similar to those shown, and branches are opposite. The whole plant is smooth, as is the rule in the Gentian family with but few exceptions.

The fragrant rosy flowers are produced in July and August. The calyx is a short green bell topped by 5 narrow lobes. The deeply 5-parted corolla is rose-pink with a greenish star-shaped center. The 5 stamens are attached to the short corolla tube and have short filaments and long, curved or twisted anthers. There is 1 pistil with a simple ovary and a style 2-cleft about to the middle. Stigmatic surfaces are along the inner side of each branch. The capsule fruit contains a great many small seeds.



FRINGED GENTIAN

Gentiana crinita Froel.

The Fringed Genetian has been exterminated in many places and has become very rare in others, but is still found occasionally on low grounds in the northern part of the state, particularly in

the northeast. The rare beauty of the sky-blue flowers makes the plant much sought for by thoughtless people, who do not understand that picking the flowers may destroy it. Its range is from central Maine and Quebec, south to Georgia, Ohio and Iowa.

The plant blooms in late summer and autumn. It is not a perennial and must therefore depend upon seed for its perpetuation. The fringed borders of the 4 blue corolla lobes give the flower its name. The calyx is also 4-lobed and its parts are somewhat unequal. The 4 stamens are attached to the tube of the corolla, alternating with its lobes, and between their filaments at the base is a row of glands.



The pistil consists of a 1-celled ovary and 2 stigmas. The fruit is a capsule containing many small rough seeds.

A Fringed Gentian, *Gentiana affinis* Griseb., very similar, grows in the Rocky mountains, but it is darker purple-blue.

The White Gentian, *Gentiana flavida* Gray, is the only eastern species that is not blue. Its generally unbranched stem grows 1-2 feet high in thickets and open woodlands scattered throughout Illinois, but not commonly. Its creamy white flowers, about an inch across, are clustered at the top and occasionally in the upper axils. This species is frequently mistaken for a white-flowered form of the Closed Gentian, page 237.

CLOSED GENTIAN

Gentiana Andrewsii Griseb.

The Closed Gentian is probably our commonest species, especially in the northern part of the state. It frequents moist grounds from Quebec to Manitoba, south to Georgia and Nebraska. It is perennial and if undisturbed will persist in the same place for many years, but unfortunately in most places very few seeds mature because of the depredations of insects with which the plants are infested. Therefore if the plants are pulled up in any place, they will likely be extinct there for all time.



The flowers are produced from August to October in a terminal cluster and commonly in 1 or 2 of the upper axils. The calyx is tubular and 5-cleft. The tubular corolla is nearly or entirely closed, blue with white plaits or sometimes all white. The 5 stamens are included within the corolla and the anthers are grown together in a tube. The pistil consists of a 1-celled ovary and a short style. The fruit is a capsule.

The Prairie Gentian, *Gentiana puberula* Michx., is our only hairy-stemmed species. The rigid stem stands 5-20 inches high and bears many small, ovate-lanceolate and sessile leaves whose margins are roughened with short stiff hairs. The intensely blue flowers are large and borne in a terminal cluster. Their parts, like the rest of the plant, are rigid. The spreading ovate lobes of the corolla are 2 or 3 times the length of the cut-toothed appendages in the sinuses. This species lives on dry prairies from Maryland to Georgia, west to Minnesota and Kansas, and blooms in October. It is to be looked for here on original prairies in the northern half of the state.

AMSONIA

Amsonia Tabernaemontana Walt.

Nearly all members of the Dogbane family have an acrid milky juice which in some species is extremely poisonous. Familiar cultivated plants belonging to this family are the

Oleander and the Periwinkle or Myrtle. The Dogbane has that name because at one time it was thought to be poisonous to dogs.



The Amsonia is a southern plant, abundant in the Ohio river valley and increasingly rarer to its northern limit in Illinois—Fulton county. It grows in moist soil in open places from New Jersey to southern Illinois and Missouri, south to Florida and Texas.

It is a perennial herb with alternate membranous leaves and rather large blue or bluish flowers. The stem is smooth or nearly so, 2-4 feet high and simple or

branched above. Leaves vary from ovate to lanceolate and 2-5 inches in length, but are always entire and sometimes hairy beneath.

The numerous flowers are produced from April to July. The calyx is 5-parted, the segments narrow and pointed. The corolla has 5 linear lobes as long as the cylindrical tube, which is somewhat enlarged at the top and lined with soft hairs. The 5 short stamens are inserted in the throat and do not extend beyond the tube. There are 2 ovaries with their styles united. The rounded stigma is surrounded by a cuplike membrane. The fruit consists of a pair of cylindrical, several-seeded follicles 2-4 inches long and smooth. The seeds are also cylindrical or oblong and somewhat rough but without appendages.

CLIMBING DOGBANE

Trachelospermum difforme (Walt.) Gray

The Climbing Dogbane is found in Illinois only in the southernmost counties. It grows in moist woods and along streams from Delaware southward, mostly near the coast, to Florida, and from Illinois and Missouri to Texas and Mexico. Only this species occurs in North America but a few others are natives of eastern Asia.

This plant is a more or less woody, twining and high-climbing vine, with milky juice, thin opposite leaves and yellow or creamy flowers. Usually the whole plant is smooth but sometimes the young twigs are somewhat hairy. The stems are one-half inch or more in diameter.



The flowers are produced from June to August. The small green calyx is glandular inside and has 5 narrow acuminate lobes. The yellowish corolla is funnel shaped and 5-lobed at the end, the lobes being rolled back and more or less twisted. The 5 stamens are attached to the base of the corolla tube. The filaments are separate but the arrow-shaped anthers are close together around the stigma, to which they cling slightly. The 2 ovaries and 2 slender styles are distinct but the stigmas are united. The ovaries develop into long slender follicles which when mature are 5-9 inches long. Each follicle contains numerous small oblong seeds that have a tuft of long hairs at 1 end. Because of these hairs the seeds are readily scattered by the wind.

SPREADING DOGBANE

Apocynum androsaemifolium L.

This is a common perennial along roadsides and in fields and open woods from Georgia, Missouri and Arizona far north into Canada. The widely branching stem grows 1-4 feet high.

The leaves are smooth above but pale and more or less hairy beneath. Often during July great numbers of iridescent beetles are found feeding upon the foliage of the Dogbane.



The flowers bloom from June to early August and though small are fragrant and pretty. The green calyx is 5-parted. The 5 lobes of the corolla are turned back, and the tube, delicate pink with darker veins, is longer than the calyx. To its base are attached the 5 yellowish stamens, whose anthers

are crowded around the stigma and slightly attached to it. There are 2 ovaries, whose sessile stigmas are united. The fruit is a pair of follicles containing a large number of small seeds. Each seed is tufted with long white hairs which well adapt it for wind dissemination.

The Intermediate Dogbane, *Apocynum medium* Greene, is a more or less erect, branching herb 2-4 feet high. The oblong or elliptic leaves are finely hairy beneath and have a fine, sharp and abrupt tip. The compactly flowered cymes are terminal on long peduncles. The white or pink corollas are urn shaped, with the 5 lobes acute and spreading.

INDIAN HEMP. RHEUMATISM ROOT

Apocynum cannabinum L.

The Indian Hemp is common in fields and thickets from Alabama to Kansas and north into Canada. It is quite similar to the Spreading Dogbane, page 240, but its flowers are much smaller and greenish white, and it grows from a deep-branching, vertical root, whereas the Spreading Dogbane has a horizontal underground stem. The root is used to some extent in medicine and consequently accounts for the name Rheumatism Root.

The plant as a whole varies greatly under different environmental conditions. The stem is usually 1-4 feet high and extensively branched, but when growing on exposed



gravelly beaches is often dwarfed and wide spreading. The stems contain very tough fibers comparable to those of Hemp and are said to have been used by Indians for making twine, fish nets, baskets and other articles. The leaves are usually pale green and either entirely smooth or with short whitish hairs beneath. They may be sessile, especially on lateral branches, or they may have short petioles.

The flowers are produced from June to August. The 5 calyx segments are about as long as the tube of the greenish white corolla. The 5 corolla lobes are not turned back as are those of the Spreading Dogbane, but are nearly erect. Stamens, pistil, fruits and seeds are, however, similar.

The Milkweed family consists of about 2,000 widely distributed species, most of which are found in the tropics and warmer temperate regions.

As a whole, the family is characterized by paired leaves, copious milky juice or latex, and curiously shaped flowers. It furnishes some minor drugs, one or two notorious weeds such as the Common Milkweed and the Anglepod, and in young shoots of the former possible asparaguslike food for human beings. The latex contains the hydrocarbons that form rubber, which has been produced experimentally from some species.

Some of the flowers are beautiful and delightfully fragrant, and others are ill smelling, but all have practically the same highly specialized form for insect pollination. The formation, however, is not to insure self-pollination, as stigma and anthers do not ripen together, but is to compel visiting insects to gather pollen in the act of sipping nectar from the flower. From the base of the corolla grows a corollalike structure called the crown. The 5 lobes of the crown are united at the base, usually into a short column or collar whose height varies with the species, and bear at varying heights along their inner surface spurs which may or may not be included in the crown. The lobes are usually called hoods and the spurs are referred to as horns. The whole structure surrounds the stamens and forces the anthers to touch in a circle around the pistil. In most cases the filaments are united into a column. Sepals and petals are reflexed in full bloom.

Insert a pin into one of the slits in the crown, with the point inward toward the anthers. Pull upward and you will find 2 pollen masses adhering to the pin. Now the bee, when it comes in search of nectar, alights on the adequate surface of the crown. It is highly probable that its foot will slip into one of these crevices, engage the pollen masses much as the pin did, and pull them out as the foot is withdrawn. The insect flies to another flower where it may come in contact with the stigmatic surface and deposit some of the pollen; often, however, its foot is caught too tightly and it dies.

The fruits are follicles, many of whose seeds are copiously provided with silky hairs, collectively called a coma, which aid in distribution. These comae are dyed and used extensively for ornamentation.

KEY TO GENERA

- Flowers green in umbels.....*Acerates* p. 247
 Flowers not green in umbels.....*Asclepias* p. 243

BUTTERFLY WEED. PLEURISY ROOT

Asclepias tuberosa L.

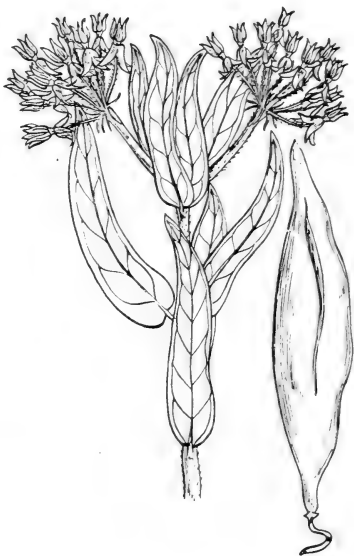
This plant served the Indians with medicine and food. The root was used in treatment of pleurisy, the green fruits in the cooking of buffalo meat much as green Peppers are used with chicken or other meats, and from the flowers crude sugar was extracted.

Most beautiful of Milkweeds and handsome enough for any flower garden, the Butterfly Weed is at its best in dry field, hillside or along the road. It is found in practically all states east of the Rockies and its glowing orange flowers, blooming from June to August, are everywhere admired.

Numerous stout hairy stems from the same stout and deeply penetrating root grow 1-2 feet high and give a bushy appearance to the plant. The leaves are alternate instead of opposite, and the abundant milky juice characteristic of other Milkweeds is lacking.

The corolla is greenish orange and the hoods, 2 or 3 times as long as the anthers, are bright orange or yellow. The horns are slender and within the crown. The follicles are covered with very short whitish hairs.

A form of this plant which is identical except for its yellow flowers in place of orange has been recognized by two Illinois authorities as occasionally growing with the Pleurisy Root. It is the Yellow Butterfly Weed, *Asclepias tuberosa* L. forma *lutea* Clute, according to Pepon.



PURPLE MILKWEED

Asclepias purpurascens L.

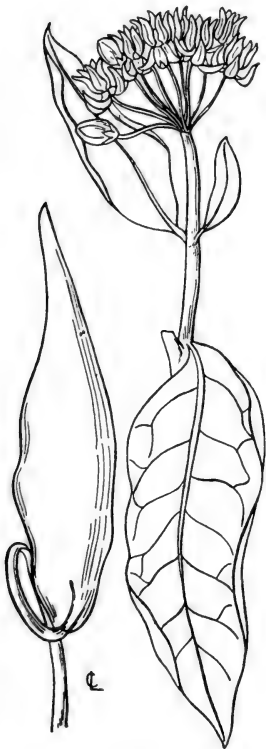
This species is less common than some of the other Milkweeds but its large, deep purple flowers are among the most beautiful. It grows in dry soil of fields, roadsides and thickets from New Hampshire to North Carolina and west to Minnesota and Arkansas.

The tough unbranched stem grows 2-4 feet high and is very leafy to the top. The leaves are opposite and smooth above and minutely velvety beneath. The abundant milky juice flows freely when a stem or leaf is broken.

The umbels of flowers are produced from June to August in several of the upper leaf axils or at the end of the stem. The corolla is deep purple and the hoods, oblong and nearly twice as long as the anthers, are somewhat paler. The horns are broad at the base but taper to a sharp point and curve inward. The fruiting pedicels are deflexed and the downy follicles are nearly erect and 4-5 inches long.

The Common Milkweed, *Asclepias syriaca* L., is probably most familiar for it is an ever-present weed in rich fields and along roadsides. Its greenish white to dull purple flowers are less brilliant than in some of the other species; their odor is heavy and not pleasant to human beings, but they produce a

wealth of nectar for bees and butterflies. The stout stem is 3-5 feet tall and the broadly oval leaves are 4-9 inches long and minutely downy beneath. The pods are 3-5 inches long and rough with short soft processes. The flat brownish seeds bear an abundance of white silky hairs or down that has often been used for stuffing pillows.



SWAMP MILKWEED

Asclepias incarnata L.

The Swamp Milkweed is a most common species in low wet places, being found from New Brunswick to Saskatchewan, south to Tennessee, Louisiana and Colorado. It blooms from July to September and during August especially its masses of red or rose-purple flowers make a brilliant display.

The slender, nearly or entirely smooth stem, 2-4 feet high, is very leafy and branched or rarely simple. Two downy lines occur near the top and on the branches of the peduncles. Leaves are lanceolate or oblong-lanceolate, acuminate at the tip and narrowed or obscurely heart shaped at the base.



The many-flowered umbels are usually quite numerous. Pedicels of the flowers are hairy. In fruit they are erect or curved. The collars within the corollas are more than half the length of the pink or purplish hoods, and the slender incurved horns are longer. The pods are erect when mature, 2-3½ inches long and are only slightly roughened with very short hairs.

The Prairie Milkweed, *Asclepias Sullivantii* Engelm., suggests the Common Milkweed but is entirely smooth and grows instead in moist prairies. The very smooth stem is 2-4 feet tall and bears numerous oblong, nearly sessile leaves and 1 or more clusters of rose-purple flowers which have no fragrance. The pod is nearly smooth and is obscurely spiny on the beak.

WHORLED MILKWEED

Asclepias verticillata L.

The milky juice of this plant is said to be used in some southern states as a remedy for snake bites and for the bites and stings of insects.



This dainty Milkweed is characterized by the very narrow leaves which are arranged in whorls of 3-7 along the slender, minutely hairy stem. It grows 1-3 feet high in the dry soil of prairies, fields, hills and open woods nearly everywhere east of the Rockies from Canada into Mexico.

The many small, greenish white flowers are produced in numerous clusters from July to September. The white hoods are about as long as the anthers and about half as long as the incurved claw-shaped horns. The pod is smooth.

The Poke Milkweed, *Asclepias phytolaccoides* Pursh, is another of the less common species and grows in moist thickets and woods. It is not likely to be confused with other common Milkweeds because the flowers are a beautiful creamy white and hang downward. The stem is usually smooth or nearly so and grows 3-6 feet high.

The leaves are broadly egg shaped and pointed at both ends, 4-9 inches long, 2-4 inches broad and on short petioles. The greenish corolla is often stained with purple and the hoods, little shorter than the anthers, are white or slightly pinkish and 2-toothed at the top. The white horns have long projecting awl-shaped tips that curve inward. The downy follicles are 4-6 inches long. This Milkweed is found from New England to Georgia, west to Minnesota and Arkansas, and it flowers from June to August.

FLORIDA MILKWEED

Acerates floridana (Lam.) Hitchc.

Milkweeds of the genus *Acerates* are much like those of *Asclepias* except that the hoods are without horns, which is what the genus name, from the Greek, means.

The Florida Milkweed occurs on prairies and Pine barrens from Ohio to Ontario and Minnesota, south to Florida and Texas. In Illinois it is found on rather poor sandy soil throughout prairie portions.

The rather slender stem grows 1-3 feet high and is rough with short hairs. The exceedingly numerous leaves are long and narrow, mostly alternate and commonly with some hairs along the margins and on midribs.



The greenish white flowers are produced from June to September. Hoods and corolla are colored alike. The 2 ovaries and short styles are distinct but the stigmas are united to form a 5-lobed structure. The fruits are follicles containing large numbers of seeds, each with a coma.

The Green Milkweed, *Acerates viridiflora* Ell., is also found in dry sandy or rocky soil in Illinois. It may be distinguished from the Florida Milkweed by the broader leaves, which are often opposite, and by the fact that the greenish flower clusters are sessile or nearly so in the axils of the leaves.

The Woolly Milkweed, *Acerates lanuginosa* (Nutt.) Dcne., is a hairy perennial 6-18 inches high, which may be found on prairies from northern Illinois to Minnesota and Wyoming, but is rare in this state. The solitary umbel is terminal, densely many flowered and peduncled. The flowers, on slender pedicels, bloom from June to August.

WILD MORNING GLORY

Ipomoea hederacea Jacq.

Members of the Convolvulus family are largely tropical, the majority trailing or climbing vines although there are a few trees and numerous shrubs among them. Most important economically are the Sweet Potato and the Morning Glories.



The Wild Morning Glory is a tropical plant which has become naturalized farther north. It is found in cultivated fields and waste places from Maine to Florida and west to Nebraska and Mexico. In Illinois it is common throughout, especially in cornfields.

It is an annual, easily exterminated by cultivation, but likely to come up several years in succession since the seeds retain their vitality for

some time. The whole plant is hairy. The slender stems twine 2-5 feet high about any available support. The deeply 3-lobed leaves easily distinguish this plant from the cultivated Morning Glory, which has unlobed leaves.

Although considered a weed, this plant bears pretty light blue or purple flowers, 1-3 on axillary peduncles. They bloom from July until freezing weather, opening early in the morning and closing soon after the sun is out. The 5 sepals are long and narrow and often the tips are recurved. The corolla is funnel-form, the tube often nearly white and the limb light blue or purple. The 5 stamens are included in the tube. The ovary is 3-celled, the style slender and the stigma 3-lobed. The fruit is a capsule containing several seeds.

HEDGE BINDWEED

Convolvulus sepium L.

In Europe this species is said to be pollinated only by a certain moth, and in regions where the moth does not occur the Hedge Bindweed is also absent.

Although universally considered a most bothersome weed, this Bindweed rivals the rest of the Morning Glory tribe in beauty of its flowers. It is common along railroads and roadsides and in fields and thickets nearly everywhere east of the Rockies, as well as in Europe and Asia.

It is perennial by a slender underground stem, which if broken by cultivation gives rise to new plants from the pieces. The aerial stems grow very rapidly and become 3-10 feet long. They twine about any support that is available, and always turning counterclockwise.

The flowering season is June to September, the flowers opening very early in the morning and closing as the sun goes down. Sometimes on moonlight nights they remain open and are visited by certain moths. In daytime they are visited by butterflies. The corolla is rose-pink with white stripes or sometimes is all white. The 2 bracts on the peduncle are large, close to the flower and completely inclosing the calyx.

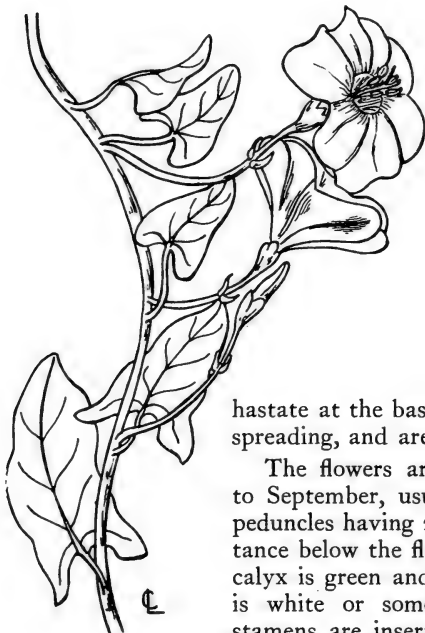
The Hairy Hedge Bindweed or Hairy Wild Morning Glory, *Convolvulus sepium* L. var. *pubescens* (Gray) Fernald, is known by botanists to be rare about the Great Lakes. It has been reported only once from Illinois, and that more than 25 years ago from Lake county. It is a smaller plant, hairy and with smaller leaves that are more oblong and have triangular tips.



FIELD BINDWEED

Convolvulus arvensis L.

The Field Bindweed seems to have come originally from Asia. It traveled first to western Europe and then across the Atlantic to this continent, where it is now common in fields and waste places nearly throughout.



The very slender stems are 1-3 feet long and smooth or nearly so. They creep or trail over the ground and low plants, and may twine to a certain extent. The ovate or oblong leaves are slender petioled, entire, either obtuse and with a small sharp tip or acutish at the apex, sagittate or somewhat

hastate at the base, the acute basal lobes spreading, and are 1-2 inches long.

The flowers are produced from May to September, usually singly on axillary peduncles having 2 small bracts some distance below the flower. The small 5-lobed calyx is green and the funnelform corolla is white or sometimes pinkish. The 5 stamens are inserted on the corolla tube and do not extend beyond it. The 2 linear stigmas topping the slender style and single ovary extend beyond the anthers. The capsule fruit has usually 4 smooth seeds.

The Low or Upright Bindweed, *Convolvulus spithameus* L., occurs locally throughout Illinois on dry sandy or rocky soil. The downy stem is upright or drooping, 6-12 inches high, but does not twine. Leaves are 1-2 inches long and from one-half inch to 1½ inches wide, short petioled or the uppermost sessile, usually obtuse at both ends or acutish at apex and subcordate at the base. The large white flowers bloom 1-3 at a time in the leaf axils.

COMMON DODDER. LOVE VINE

Cuscuta Gronovii Willd.

The Dodders, several kinds of which are in Illinois, are familiar examples of parasitic seed plants. They twine and feed on other plants and lack chlorophyll, being yellowish instead.

Their seeds germinate on soil, usually rather late in spring after other vegetation has sprouted and young shoots of host plants are thus available. The young shoot of a Dodder is a fine yellow threadlike structure whose tip rotates as it elongates. If it fails to contact a host it lives but a few weeks at most. However, if it finds a suitable host it grows vigorously, twining about the host and at the same time penetrating it with absorbing organs that really are modified roots. Soon the Dodder loses all connection with the soil and becomes purely a parasite.



Some Dodders may grow on various hosts, while others are restricted to a certain kind. In Europe they are destructive to crops such as Clover and Flax, and in America probably less so.

In the southern third of Illinois Dodders are a common pest on Clover.

The Common Dodder or Love Vine grows on various kinds of herbs and low shrubs from Nova Scotia to Manitoba and south to Florida and Texas.

It blooms in July and August. Calyx and corolla are 5-lobed and on the inside of the corolla are 5 toothed scales. There are 5 stamens and a pistil with a 2-celled ovary and 2 styles. The fruit is a small whitish capsule containing 1-4 seeds.

PRAIRIE PHLOX

Phlox pilosa L.

The Polemonium family is noted for its large proportion of beautiful flowers, many of which are cultivated in gardens and greenhouses. Its members are distributed nearly all over the

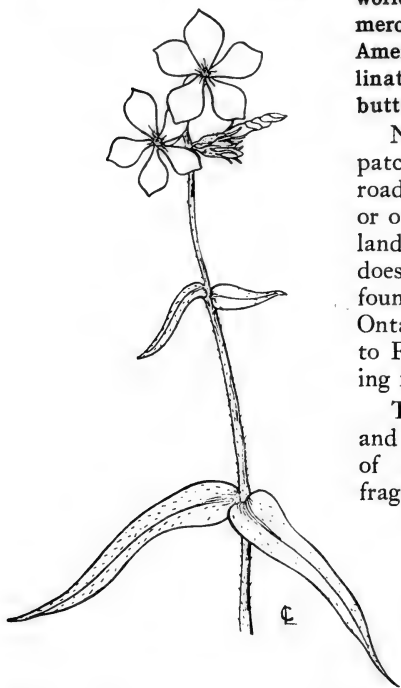
world but are especially numerous in western North America. The Phlox are pollinated largely by certain butterflies.

No plant adds color to the patches of prairie along railroads and other waste places or open grassy areas in woodland, more effectively than does the Prairie Phlox. It is found from Connecticut to Ontario and Manitoba, south to Florida and Texas, blooming from May to July.

The plant is 1-2 feet high and produces large clusters of pink or purple, faintly fragrant flowers. Stem and leaves are covered with soft hairs and the flowers are protected from unwelcome creeping insects by sticky glands which cover the calyx. The calyx lobes are longer than the tube.

Rarely specimens are found with white flowers.

The Smooth Phlox, *Phlox glaberrima* L., is quite similar but taller, 1-3 feet high, and grows in wet as well as dry places. It is smooth or nearly so throughout and has rather firm leaves that are long pointed at the tip and narrowed at the base. The calyx teeth are usually shorter than the tube. The corolla is pink or whitish and the lobes are entire or sometimes broadly notched at the end. This is an excellent species for perennial gardens.



BLUE PHLOX

Phlox divaricata L.

This is a common spring flower in woods. It blooms from April to June and is found from Quebec to Ontario and Minnesota, south to Florida and Louisiana. Throughout Illinois it is common and in northern woodlands is particularly abundant.

The slender underground stem is perennial and bears aerial shoots that are partly creeping and partly ascending up to 1 foot in height. The leafy shoots remain green all winter and begin growing very early in spring. Leaves of the sterile shoots are ordinarily less pointed than those of the flowering stem.



The narrow green teeth of the calyx are considerably longer than the tube. The pale lilac or bluish corolla consists of a narrow tube and a flat 5-lobed, very rarely 6-lobed, limb. Usually the lobes are notched at the end but sometimes are entire. The 5 short stamens are attached at different heights in the corolla tube. The pistil consists of a 3-celled ovary, a slender style and 3 stigmas. The fruit is a capsule containing usually 3 seeds.

The Wild Sweet William, *Phlox maculata* L., is a less common Phlox of northern Illinois prairies, found infrequently throughout. It is striking because of the 3-4-inch clusters of large reddish purple flowers, which sometimes have a deep purple eye, and the purple-spotted stem 1-3 feet high.

GREEK VALERIAN. JACOB'S LADDER

Polemonium reptans L.

The Greek Valerian or Jacob's Ladder is another of the very beautiful flowers for which the Polemonium family is noted, and is easily grown in gardens. It is a perennial of open hilly woods from New York to Minnesota and south to Georgia and Kansas.



The plant is smooth or nearly so throughout. The slender, much branched stems are weak and spreading, in clump usually not more than 1 foot high from a short underground stem. Leaflets of the alternate compound leaves are 5-15.

Handsome light blue flowers are produced in large numbers from April to June. The bell-shaped calyx is green and 5-lobed. The blue corolla is also bell shaped and has a spreading 5-lobed limb. The 5 stamens attached to the corolla near the base of its tube often do not extend beyond it. The filaments are somewhat hairy at the base. The pistil consists of a 3-celled ovary, a long slender style and 3 stigmas. The flowers are quite variable in size and occasionally may be pink or white. Unlike *Phlox*, the Greek Valerian depends largely on bees instead of butterflies for pollination of its flowers.

The fruit is a dry capsule. There are usually 3 or 4 ovules in each cell of the ovary but the mature capsule ordinarily contains only 3 seeds. These are wingless or narrowly winged, and somewhat mucilaginous when wet.

VIRGINIA WATERLEAF

Hydrophyllum virginianum L.

The Waterleaf family is small and of no special importance aside from the beauty of its flowers and their value as forage for honeybees. The fruit is a dry 2-valved capsule, generally 1-celled with 2 parietal placentas bearing 4 to many seeds.

The Virginia Waterleaf is quite common in woods from Quebec to Ontario and South Dakota, south to Kansas and South Carolina. It is abundant on moist soil at the foot of bluffs or in rich open woods throughout Illinois.

The rather weak and slender stems grow 1-2 1/2 feet high and bear many clusters of flowers. The whole plant is smooth or nearly so with the exception of the calyx, ovary and filaments, which are hairy. The leaves are similar to the one shown but the lower are larger, longer petioled and 5 or 7-lobed.

This species begins blooming in May, often continuing to August. The flowers are white, pale violet or purple. The narrow calyx lobes are wide spreading or even reflexed, and the corolla lobes are erect. The capsule contains 1-4 nearly spherical seeds.

The Large-leaved Waterleaf, *Hydrophyllum macrophyllum* Nutt., is somewhat more restricted in its distribution. It occurs from Virginia to Ohio and southwest to Illinois, Tennessee and Alabama. It will not likely be found in northern Illinois but is not uncommon in the southern and central parts. The whole plant is very hairy. The rather stout stems are 2-3 feet high. Lower leaves are pinnately divided into 7-13 coarsely toothed segments, and the upper are similar but smaller. The flowers, produced in May and June, are like those of the Virginia Waterleaf.



APPENDAGED WATERLEAF

Hydrophyllum appendiculatum Michx.

The Appendaged Waterleaf is a very common spring flower in woods from Ontario and New York to North Carolina, west to Minnesota and Kansas. It is perennial by a scaly under-

ground stem whose growth allows the plant to spread rapidly. The leaves remain green all winter.



The flowering stems are rather weak, considerably branched and 1-2 feet long. The lower and basal leaves are pinnately divided into 5 or 7 lobes, but most of the stem leaves are like those shown. All are more or less variegated with greenish white.

While this Waterleaf is in bloom from May to June it is often the most conspicuous herb through large areas of forest. The calyx is 5-parted nearly to the base and in each sinus there is a little reflexed lobe or appendage. The violet or purple corolla is 5-lobed and bell shaped. The 5 stamens are attached near its base and alternate with the lobes. The filaments are hairy. The pistil consists of a hairy 1-celled ovary, a long slender style and 2 stigmas. The fruit is a spherical capsule about one-eighth of an inch in diameter and containing 1-4 seeds.

With lobed but not divided leaves much on the order of this plant is the Broad-leaved Waterleaf, *Hydrophyllum canadense* L., occasionally found in patches throughout Illinois. However its calyx has minute if any appendages, the plant is less tall, and most of its leaves are basal. The stem is nearly smooth, whereas that of the Appendaged Waterleaf is hairy. In this species, too, the capsule is generally slightly larger. The Broad-leaved Waterleaf lives in woods from Massachusetts and southern New York to North Carolina and Illinois.

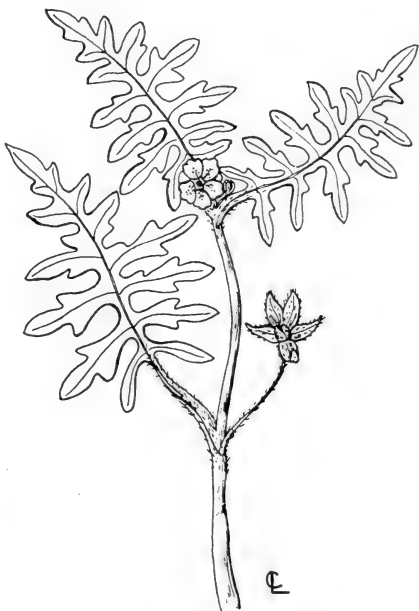
ELLISIA

Ellisia Nyctelea L.

This innocent little plant is so common in partly shaded damp places and in cultivated fields that it is often classed as a weed. It is found from New Jersey to Minnesota and Saskatchewan, south to Virginia and Kansas.

It is an annual which is very easily destroyed by cultivation. The rather weak and slender stems are usually much branched and 4-12 inches high. The petioled leaves are 2-4 inches long and similar to those shown, the lower opposite and the upper alternate.

The quite slender 1-flowered peduncles are produced opposite the leaves from April to July. The green calyx is deeply 5-lobed, about the length of the corolla until after flowering, when it enlarges and becomes wide spreading. It is about 1 inch broad when the fruit is mature. The whitish bell-shaped corolla is 5-lobed and has 5 minute appendages on the inner side. The 5 stamens are attached to its base and are included within the tube. The pistil consists of a 1-celled ovary, a short stout style and 2 stigmas. The placentas are 2-ovuled, nearly fill the ovary and are attached to it only at top and bottom. When ripe, the fruit hangs downward and the globose capsule is about one-quarter inch in diameter.



PURSH'S PHACELIA

Phacelia Purshii Buckley

Pursh's Phacelia is not very common but in favorable years is abundant locally. It grows in moist woods and thickets or in open places from Pennsylvania to Minnesota and south to North Carolina and Mississippi. It is usually much branched and grows 6-12 inches high. Leaves are similar to those shown but the lower are petioled.



The delicate light blue flowers of this plant make a pleasant addition to the annual flower garden. They bloom from April to June in quite strongly 1-sided clusters. The calyx is deeply parted into 5 narrow segments. To the base of the light blue to white corolla and alternating with its fringed lobes are attached the 5 stamens. The fruit is a capsule containing usually 4 seeds.

In the southern part of the state the Loose-flowered Phacelia, *Phacelia bipinnatifida* Michx., is not uncommon. Its home is rich shaded banks, where it may be found blooming in May and June. The flower clusters are not 1-sided and the lobes of the bright blue corolla are not fringed, but there are 5 pairs of appendages on the inner side of the corolla tube between the stamens. The filaments are bearded and the anthers extend from the flower. There are 2 ovules on each of the 2 placentas and consequently 4 seeds in the globose capsule. This Phacelia may have flowers varying to deep purple, and their abundant bloom enlivens many moist

thickets from North Carolina, Ohio and Missouri, south to Alabama.

The Small-flowered Phacelia, *Phacelia dubia* (L.) Small, is known from New York to Kansas, south to Georgia and Texas. It is a somewhat hairy, slender annual which branches from the base and is 5-12 inches high. The solitary racemes are loosely 5-15-flowered. The bluish white flowers are on threadlike pedicels that are generally longer than the oblong calyx lobes, and the barely exerted anthers are on slightly hairy filaments. It is abundant on moist shaded ground in certain parts of southern Illinois.

The Borage family consists of about 1500 species, mostly herbs, some shrubs and a few tropical trees. The family is well represented in America and its members are especially abundant in the Mediterranean regions of Europe and Africa.

The best known cultivated flowers of this family are the Heliotropes and the Forget-me-nots. The original Forget-me-nots, "that grow for happy lovers," according to Tennyson, are natives of Europe and Asia where the type species, *Myosotis scorpioides* L., has been cultivated in gardens for centuries. It was brought to America by early settlers and now has spread extensively along the Atlantic coast, inland along the Great Lakes and into Illinois. It is found here rarely as are the two or three native American species, which are, however, just as "true."

Most members of the family may be easily recognized by the 5 stamens and deeply 4-lobed ovary. In the Heliotropes, however, the ovary is not lobed but splits into 4 parts in fruit.

KEY TO GENERA

1. Ovary not lobed.....*Heliotropium* p. 260
- Ovary 4-lobed.....2
2. Ovary hairy; fruit burlike.....3
- Ovary smooth; fruit not burlike.....4
3. Flowers reddish purple.....*Cynoglossum* p. 261
- Flowers white or whitish, small.....*Lappula* p. 262
4. Stem and leaves smooth.....*Mertensia* p. 263
- Stem and leaves hairy.....5
5. Corolla funnelform, lobes spreading.....*Lithospermum* p. 264
- Corolla tubular, lobes erect.....*Onosmodium* p. 266

THE END OF SUMMER

When poppies in the garden bleed,
 And coreopsis goes to seed,
 And pansies, blossoming past their prime,
 Grow small and smaller all the time,
 When on the mown field, shrunk and dry,
 Brown dock and purple thistle lie,
 And smoke from forest fires at noon
 Can make the sun appear the moon,
 When apple seeds, all white before,
 Begin to darken in the core,
 I know that summer, scarcely here,
 Is gone until another year.

EDNA ST. VINCENT MILLAY

INDIAN HELIOTROPE

Heliotropium indicum L.

The Indian Heliotrope is an annual which was introduced into America from India and is now widely distributed in waste places in warm regions as far north as North Carolina, Kentucky,

Illinois and Missouri. The hairy stem is 1-3 feet high and more or less branched. The lower leaves are alternate but the upper sometimes appear to be opposite as shown.



The curved 1-sided spike becomes 3-6 inches long and produces flowers continuously from May to November. One may frequently find ripe fruits at the base of the spike, flowers along the middle and buds at the tip. The 5 green

calyx lobes are lanceolate and considerably shorter than the corolla tube. The corolla has a blue cylindrical tube and a spreading limb that is slightly 5-lobed. Within the tube and attached to its sides are 5 stamens with very short filaments. Unlike most members of the Borage family, the ovary is not lobed and the style is very short and falls off before the fruit is mature. The fruit becomes deeply 2-lobed as it matures and each lobe finally splits into 2 single-seeded nutlets which are ribbed on the back.

The old sweet rocket sheds its fine perfumes,

With golden stars the coreopsis flames,

And here are scores of sweet old-fashioned blooms,

Dear for the very fragrance of their names—

Poppies and gilly flowers and four-o'clocks,

Cowslips and candytuft and heliotrope and hollyhocks,

The Old-fashioned Garden—JOHN RUSSELL HAYES

COMMON HOUND'S TONGUE

Cynoglossum officinale L.

Favorite haunts of the Hound's Tongue seem to be old pastures but it occurs in other fields and waste places as well. Though sometimes a troublesome weed it can be killed if cut below the surface of the ground. It was introduced into this country from Europe and is distributed from Quebec to Manitoba and Montana, south to Kansas, Alabama and South Carolina.

This is a biennial which in the first year produces only a rosette of leaves and a strong root. In the second year a stout branched stem arises 1-3 feet high and leafy to the top. Basal and lower leaves are 6-12 inches long, 1-3 inches wide and on slender petioles.

Pretty, though not very conspicuous, and disagreeably odored flowers are produced from May to September. The green calyx is 5-lobed and becomes enlarged and spreading in fruit. The corolla is reddish purple or very rarely white. It is somewhat funnel shaped but the tube is short and its throat is closed by 5 scales, 1 opposite each of the rounded lobes. The 5 stamens with short filaments and oblong anthers are attached to the corolla and included within its tube. The ovary is deeply 4-lobed and separates into 4 single-seeded nutlets in fruit, the style arising from between them.

The nutlets are covered with short barbed prickles that cling readily to the fur or wool of animals.

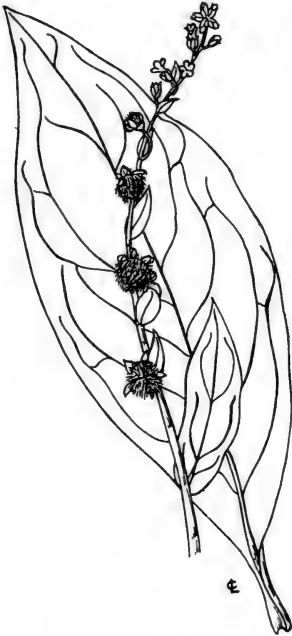
The Wild Comfrey, *Cynoglossum virginianum* L., is the other and perennial species in Illinois. This is a conspicuous woodland plant, roughish with spreading bristly hairs, whose flowering stems, 1½-2½ feet tall, bear few small leaves and 2-6 racemes of pale blue flowers on long naked peduncles. The prickly nutlets are about three-eighths of an inch long and they separate and fall off at maturity.



BEGGAR'S LICE

Lappula virginiana (L.) Greene

This biennial herb has the smallest of our common burs and by far the most tenacious. It is common in woods from New Brunswick to Ontario and Minnesota, south to Kansas, Louisiana and Georgia. It blooms from June to September and is always loaded with burs during the latter part of the season.



There appears the first year a rosette of ovate or nearly rounded leaves with heart-shaped bases and long petioles. The second year brings the upright stem, 2-4 feet high, with slender spreading branches. By flowering time the basal leaves have disappeared and the stem leaves, like those shown, remain. Leaves on the lower part of the stem are much larger than those above.

The small flowers are nearly white and constructed much like others in the family. The fruit is nearly spherical but splits into 4 nutlets which are armed on the margins and back with barbed prickles.

The Burseed, *Lappula echinata* Gilibert, is a rare annual from Europe which is found principally

along railroads. Its rough, widely branched stems are 6-24 inches high. The very small flowers are like those of the Beggar's Lice but are blue, and the leaves are narrower. The nutlets have a double row of distinct slender prickles on the margins or distributed over most of the back.

The Hairy Stickseed, *Lappula Redowskii* (Hornem.) Greene var. *occidentalis* (Wats.) Rydb., is a western plant that has been found in northern Illinois. It is very similar to the Burseed but the nutlets are armed with a single row of stout, flattened prickles that merge at the bases.

VIRGINIAN COWSLIP. BLUEBELLS

Mertensia virginica (L.) Link

The early spring flowers of this plant are visited by various kinds of insects. Among these are the female bumblebees, the only bumblebees to fly at this time of year. They have mouth parts long enough to reach the bottom of the corollas but for some reason they frequently pierce the corolla tube at its side instead of obtaining the nectar in the usual way.

The Virginian Cowslip grows in low meadows, moist woods and along streams from New York and southern Ontario to Minnesota, south to South Carolina and Kansas. It is



perennial and when once started often spreads and forms beautiful large patches unless destroyed by flower pickers. The rather stout and usually much branched stems grow 1-2 feet high and like the leaves are entirely without hairs. The oblong, oval or obovate leaves are 2-5 inches long, obtuse at apex, pinnately veined, the uppermost sessile and the lower narrowed into margined petioles.

The plants bloom during April and May. The buds are pink but the open flowers are light blue or purplish and rarely white. The calyx persists and is slightly enlarged in fruit. The corolla is so nearly bell shaped that the plant is sometimes called Bluebells. On its slightly 5-lobed but plaited tube are inserted the 5 stamens, whose slender filaments are much longer than the anthers but not long enough to project beyond the corolla. The ovary is 4-divided and the style is very slender. The fruit consists of 4 single-seeded nutlets which are rounded and somewhat roughened on the surface.

CORN GROMWELL

Lithospermum arvense L.

The Corn Gromwell is among the surprising number of weeds that are immigrants from other countries. Its home is Europe and Asia but now in many places in this country is more common than our native species. It is an annual or biennial in fields and waste places, and sometimes even on lawns, from Quebec to Ontario, south to Georgia and Kansas.

The erect and usually branched stem grows 6-20 inches high. The leaves are bright and green and the lowest sometimes have short petioles.

The tiny white flowers, blooming from May to August, are sessile or nearly so in the spikes. The green calyx is 5-cleft, the narrow lobes about equaling the corolla tube in length. The corolla is funnellform, 5-lobed at the top, with the 5 stamens inserted in its minutely hairy throat. The style is slender and the 4-divided ovary produces in fruit 4 brown and somewhat wrinkled or pitted nutlets.

The Narrow-leaved Puccoon, *Lithospermum angustifolium* Michx., is a dry prairie inhabitant, and has the longest flowers of the genus. They are 2 inches long, one-half to three-quarters of an inch across, and massed in a flattened inflorescence that elongates in fruit. Small scalloped appendages are attached to the inner side of each of the 5 pale yellow petal lobes. Late-season flowers have small or inconspicuous corollas without these appendages or crests.

The American or Wild Gromwell, *Lithospermum latifolium* Michx., is a rough-hairy perennial which, although 2-3 feet high and occurring locally on wooded slopes throughout the state, may easily be overlooked. There are many rough ovate-lanceolate leaves 2-5 inches long, from the axils of which spring small solitary funnellform flowers. The yellowish white corolla barely shows beyond the 5 linear-lanceolate calyx segments. The flowering time is May. The nutlets are white and shining, globose-ovoid and about one-sixth of an inch long.



HOARY PUCCOON. STONESEED

Lithospermum canescens (Michx.) Lehm.

This very showy spring flower grows in rather dry, usually sandy places where there is little shade. It is found from Ontario to Virginia and Alabama, west to Arizona, Utah and British Columbia, and blooms from April to June.

It is a perennial whose stems and leaves are more or less covered with very short whitish hairs, at least when young. The stems are 6-18 inches high and may be solitary or clustered and either simple or branched. The oblong to linear leaves, up to $1\frac{1}{2}$ inches long, are sessile by a narrowed base and the lowest are often mere appressed scales.

The dimorphous flowers are bright orange-yellow, sessile and usually quite numerous. The 5 narrow segments of the calyx are much shorter than the tube of the corolla. In the tube are 5 little appendages which form a crest in the throat. The 5 stamens are attached to the corolla tube. The nutlets when mature are much shorter than the calyx segments, white, smooth and shining, hence the name Stoneseed.

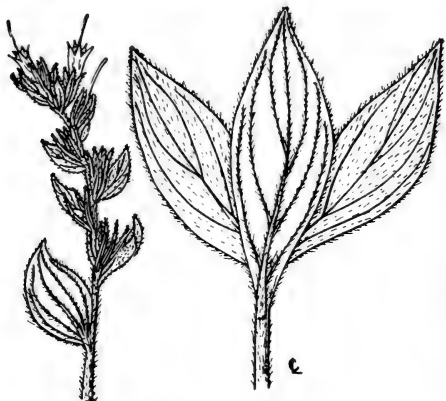
The Hairy Puccoon, *Lithospermum Gmelini* (Michx.) Hitchc., is also found in Illinois, especially in the sandy areas near Lake Michigan. It is similar to the Hoary Puccoon but may easily be distinguished by the fact that the flowers are not sessile and the much larger corolla is woolly bearded at the base inside. Gmelin's Puccoon is another name for this species, distributed from western New York to Florida and west to Minnesota, Colorado and New Mexico.



WESTERN FALSE GROMWELL

Onosmodium occidentale Mackenzie

This western species is found on prairies and rocky or gravelly banks from Illinois to North Dakota and Manitoba, south to Texas and New Mexico. It is a perennial herb 1-3 feet high and covered with fine grayish hairs.



The blooming season is May to July. The calyx is deeply parted into 5 narrow segments. The whitish corolla is tubular, 5-lobed at the top and covered outside with gray hairs. The 5 stamens have very short filaments and are attached to the tube of the corolla near the throat. The ovary is

4-parted and the style is long and slender. Sometimes all 4 parts of the ovary develop into nutlets but more often only 1 or 2 do so. The nutlets are smooth, dull white, about one-fifth of an inch long and somewhat pointed at the tip.

The Shaggy False Gromwell, *Onosmodium hispidissimum* Mackenzie, is also found in Illinois, probably more widely distributed than *O. occidentale*. It is usually found in dry fields or thickets or on rocky banks. It is quite similar to the western species but is covered with coarser, more bristly hairs. The nutlets are distinctly constricted just above the base and are not much pointed at the end. Usually they have a brownish tinge.

The Soft-hairy False Gromwell, *Onosmodium molle* Michx., and the Virginia False Gromwell, *Onosmodium virginianum* (L.) A. DC., have been reported as occurring in southern Illinois but they are very rare. The first is clothed with copious fine soft gray hairs but the latter has harsh and rigid appressed short bristles. The leaves of *O. molle* are sessile, one-half to 2 inches long and ovate-lanceolate; those of *O. virginianum* are 1-3 inches long, oblong, oval or oblong-lanceolate, obtuse and sessile or the lower are oblanceolate, acutish and narrowed into petioles. The Virginia species occurs in thickets and on hillsides and the soft-hairy plant on prairies, but both bloom from May to July.

WHITE VERVAIN

Verbena urticaefolia L.

Most members of the Vervain family are tropical and many are shrubs or even trees. The relatively few species that occur in Illinois are herbs. Only the Verbenas of our gardens are of economic importance, at least in this climate, though some tropical members, such as Teak, furnish excellent ship timber. The family is distinguished from the Mint family, which follows, chiefly on the basis of the unlobed ovary. The 100 members of the genus *Verbena* are confined to the Americas, with the possible exception of one which is also found in the Mediterranean region.

The White Vervain is widely distributed, being found in waste places from New Brunswick to

South Dakota and south to Florida and Texas. The slender 4-sided stem grows 3-5 feet high. The leaves resemble those of some of the Nettles. They are 1½-5 inches long, ovate, oblong or oblong-lanceolate, thin, cut toothed and petioled or the uppermost sessile.

Long slender spikes, erect or somewhat drooping, bear the very small white flowers, barely one-eighth inch in diameter. They bloom from June to frost and as this species hybridizes readily with others all sorts of color and size forms may be found. Usually a number of the spikes grow from axils of the upper bracts so that the inflorescence is large and spreading. The fruits are oblong, less than one-eighth inch long, and scattered along the spikes instead of overlapping.



NARROW-LEAVED VERVAIN

Verbena angustifolia Michx.

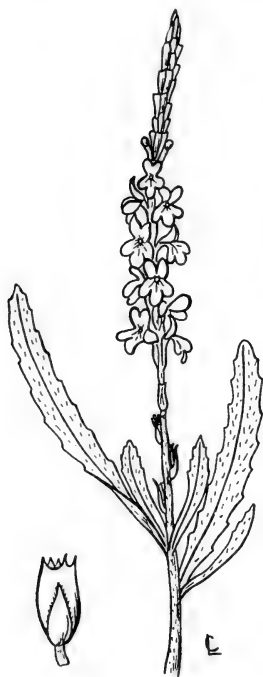
The Narrow-leaved Vervain is not as common as some of the Verbenas but is found in dry or sandy ground in open places from Massachusetts to Florida and west to Minnesota, Kansas and Arkansas. In Illinois it is found on dry barren slopes throughout but is not common.

This is a perennial with a slender 4-sided stem that grows 1-2 feet high and is slightly rough with short hairs. It may be recognized at once by the sessile leaves, which vary from extremely narrow to lanceolate but are without the prominent lobes or teeth found in other species.

The flowers bloom from June to August, beginning at the base of the spike and opening successively toward the top. The calyx is tubular and nearly equally 5-toothed. The corolla is blue or purple and distinctly 2-lipped. Four stamens inserted on the corolla tube are arranged in 2 pairs of unequal length. The pistil consists of a 4-celled ovary, a short slender style and a 2-lobed stigma. The fruit is within the persistent calyx and it finally breaks up into 4 single-seeded nutlets.

The Showy Verbena, *Verbena canadensis* (L.) Britton, is so called because

of its very large blue, purple or white flowers in short heavy spikes, which become 2-4 inches long in fruit. It is a hardy perennial, found only on the Ozark extension and frequently cultivated in the same locality. The very hairy stem is slender, branching and sprawling, not over 20 inches high. The membranous, petioled leaf is 1-3 inches long, cut lobed and divided, with wedge-shaped base and elongated petiole. The corolla is about 1 inch long and the limb one-half to three-quarters of an inch broad.



BLUE VERVAIN

Verbena hastata L.

This is the largest and commonest Vervain in Illinois. It is abundant in low open moist places throughout, and beyond our state stretches from Nova Scotia to British Columbia, south to Florida and Arizona.

The 4-sided stem grows 3-7 feet high and is slightly roughened by occasional very short hairs. The serrate leaves are lanceolate, petioled, taper pointed and 3-6 inches long. They are the source of Vervain tea, a familiar spring tonic, especially in rural districts.

Numerous spikes in a panicle bear the flowers, blooming from June to September. The flowers, crowded in the spike, are blue, white or pink, and about one-eighth inch broad.

The Hoary Vervain, *Verbena stricta* Vent., is perhaps the most showy of all Vervains that adorn prairies, fields and other open places in summer. It is native only in the central part of the continent, occurring only in

dry sandy soil from Ohio and Ontario to Minnesota, South Dakota and Wyoming, south to Tennessee, Texas and New Mexico, frequently in colonies of considerable size. The stem grows 1-3 feet high and is densely covered with soft whitish hairs. The large purplish flowers bloom from May to September in thick hairy spikes. The fruits are a little more than one-eighth inch long, crowded and overlapping on the spikes. The bracts are lanceolate-awl shaped and nearly as long as the calyx.



BRACTED VERBENA

Verbena bracteosa Michx.

All Vervains are bracted; that is, the flowers are arranged in a spike which is in the axil of a bract. But this is the only common species that has conspicuous bracts longer than the flowers and fruits.



This is the only common species that is annual instead of perennial and partly for this reason it is more weed-like than the others. It is found in waste places along roadsides and railroads and in fields from Virginia and Minnesota to British Columbia, south to Florida, Arizona and California.

The whole plant is exceedingly hairy, and the 4-angled, much branched stems are 6-15 inches long. They do not grow upright like the other Vervains but are low and more or less prostrate like the Verbenas of our gardens. The bracts are rather stiff and the lower, like all the leaves, are often sharply lobed.

The flowers, blooming from June to September, are purplish blue and in structure resemble those of the Narrow-leaved Vervain, page 268, though about two-thirds the size, or little more than one-eighth inch long.

The Small-flowered Verbena, *Verbena bipinnatifida* Nutt., is a less common, branching and sprawling perennial whose flowers resemble the garden Verbena, or Mexican species. The square stem may be 18 inches high and the whole plant may be hairy. The leaves are once or twice pinnately divided into linear or oblong segments. The dense spikes are terminal and short, lengthening in fruit. The purple or lilac corollas are one-half inch long and equally broad. The bracts are linear-awl shaped and mostly shorter than the fruit. The latter is slightly more than one-eighth inch long. This is a western species at home on dry plains and prairies from western Illinois and Nebraska to Missouri, Texas and Mexico.

FOG FRUIT

Lippia lanceolata Michx.

This plant was named in honor of a seventeenth century naturalist upon whose identity authorities are not wholly agreed. Several, however, repeat that he was Auguste Lippi, a Frenchman who traveled in Abyssinia.

The Fog Fruit is found in moist or wet soil usually near streams, from New Jersey and Ontario to Minnesota, south to Florida, Texas and Mexico. It occurs in suitable locations throughout Illinois.

This is a close relative of the Verbenas but differs from them in several respects. The shoots are bright green and usually without hairs, although they may be sparingly covered with forked hairs. The slender stems, 1-2 feet long, are generally too weak to stand erect and so lying on the ground often root at the nodes. They are simple or little branched.

The thin, oblong, ovate or oblong-lanceolate leaves are pinnately veined, acute tipped, sharply toothed to below the middle, narrowed to the somewhat wedge-shaped base, and sometimes they also have a few forked hairs on both surfaces.

The flower clusters, bearing little pale blue flowers from June to August, are nearly spherical at first and become elongated later, but even in fruit do not exceed one-half inch in length. The bracts in the head are acute. The green calyx is flattened and 2-cleft. The corolla, not much longer than the calyx, is distinctly 2-lipped with the upper lip merely notched and the lower much larger and 3-lobed. Four short stamens, 2 lower than the others, are attached to the corolla tube and do not extend beyond it. The ovary has 1 ovule in each of its 2 cells, and the style is short and slender. The fruit is nearly spherical but at length splits into 2 single-seeded nutlets.



This large and well-known family, with probably 3500 species, is represented in Illinois by many wild flowers and a smaller number of garden blooms. There are no poisonous species. The leaves, which are always opposite and simple, are in all species dotted with transparent oil sacs that mark the family's economic importance. A variety of volatile oils from these sacs are extensively used in mint candies, chewing gum and medicine.

Most members of the family are characterized by square stems and conspicuous flowers with irregular corollas, deeply 4-lobed ovaries and 2 or 4 stamens, but there are several exceptions.

KEY TO GENERA

- | | | |
|-----|---|----------------------------|
| 1. | Ovary merely 4-lobed..... | 2 |
| | Ovary deeply 4-parted..... | 3 |
| 2. | Corolla very irregular..... | <i>Teucrium</i> p. 273 |
| | Corolla nearly regular..... | <i>Isanthus</i> p. 274 |
| 3. | Calyx with a conspicuous hump on upper side..... | <i>Scutellaria</i> p. 275 |
| | Calyx without a hump on upper side..... | 4 |
| 4. | Corolla nearly regular..... | 5 |
| | Corolla 2-lipped..... | 6 |
| | Corolla with 4 equal lobes and a fifth pendant..... | <i>Collinsonia</i> p. 292 |
| 5. | Stamens 2; plants not fragrant..... | <i>Lycopus</i> p. 290 |
| | Stamens 4; plants fragrant..... | <i>Mentha</i> p. 291 |
| | Stamens 4; plants ill smelling; foliage purple..... | <i>Perilla</i> p. 292 |
| 6. | Stamens 2..... | 7 |
| | Stamens 4..... | 9 |
| 7. | Upper lip of corolla flat or nearly so..... | <i>Hedeoma</i> p. 288 |
| | Upper lip of corolla concave..... | 8 |
| 8. | Calyx nearly equally 5-toothed..... | <i>Monarda</i> p. 285 |
| | Calyx 2-lipped..... | <i>Blephilia</i> p. 287 |
| 9. | Upper lip of corolla flat or nearly so..... | <i>Pycnanthemum</i> p. 289 |
| | Upper lip of corolla concave..... | 10 |
| 10. | Calyx teeth stiff and spiny..... | <i>Leonurus</i> p. 283 |
| | Calyx teeth not spiny..... | 11 |
| 11. | Flowers greenish yellow..... | <i>Agastache</i> p. 277 |
| | Flowers not greenish yellow..... | 12 |
| 12. | Flowers about 1 inch long..... | <i>Physostegia</i> p. 281 |
| | Flowers shorter..... | 13 |
| 13. | Leaves sessile or nearly so..... | <i>Stachys</i> p. 284 |
| | Leaves petioled..... | 14 |
| 14. | Calyx nearly equally 5-toothed..... | <i>Nepeta</i> p. 278 |
| | Calyx 2-lipped..... | <i>Prunella</i> p. 280 |

AMERICAN GERMANDER. WOOD SAGE

Teucrium canadense L.

The American Germander is very common in the rich soil of fields and waysides from New England to Ontario and Minnesota, south to Florida and Texas. It is an excellent honey plant but in some places becomes a troublesome weed.

It is perennial by an underground stem which if broken by cultivation grows into a number of new plants, though persistent cultivation destroys it. The square flowering stem grows 1-2 feet tall. The leaves are smooth or nearly so above but are densely covered with white hairs beneath.



The plant blooms from June to September, the flowers being produced in a terminal spike which may become 6-12 inches long by the time fruits are ripe. The bell-shaped calyx is somewhat unequally 5-toothed. The corolla, varying from purplish to pink or sometimes cream, is very irregularly 5-lobed. Four upper lobes are small and turned forward in such a way that there seems to be no upper lip; the fifth and lower lobe is much larger. The 4 stamens extend from the deep cleft between the 2 uppermost lobes of the corolla. The ovary, 4-lobed but not deeply 4-parted, develops into 4 rather rough nutlets.

Resembling the Wood Sage but on a larger scale and appearing less hoary because the bristly hairs stand out from the stem, is the Hairy Germander, *Teucrium occidentale* Gray. It is distributed in moist soil throughout Illinois and may grow 3 feet high. The axis of the bristly spike is sprinkled with protuberant glands.

FALSE PENNYROYAL

Isanthus brachiatus (L.) BSP.

The False Pennyroyal, only species of this genus in the world, is found in dry sandy or rocky soil from Vermont and western Quebec to Minnesota, south to Georgia and Texas. It occurs throughout Illinois.

This annual herb has square slender stems 6-20 inches high, much branched and covered with very short, somewhat sticky hairs. The oblong or elliptic-lanceolate, 3-nerved leaves are 1-2 inches long, short petioled, and may be entire as shown or they may have a few sharp teeth.

The small blue flowers are produced from July to September and as in most members of the Mint family are pollinated largely by bees. The slender axillary peduncles are 1-3-flowered and are borne on the branches as well as on the main stem. The calyx is broadly bell shaped and has 5 nearly equal, sharp-pointed lobes. Four stamens, 1 pair of which is slightly longer than the other, are inserted in the throat of the corolla. The ovary is deeply 4-lobed but not 4-parted as in most Mints. The long slender style is only slightly 2-lobed at the summit. The fruit consists of 4 somewhat rough, 1-seeded nutlets.



What small leaf-fingers veined with emerald light
Lay on my heart that touch of elfin might?
What spirals of sharp perfume do they fling,
To blur my page with swift remembering?

* * *

Their coolness brings that ecstasy I knew
Down by the mint-fringed brook that wandered through
My mellow meadows set with linden trees
Loud with the summer jargon of the bees.

A Breath of Mint—GRACE HAZARD CONKLING

MARSH SKULLCAP

Scutellaria galericulata L.

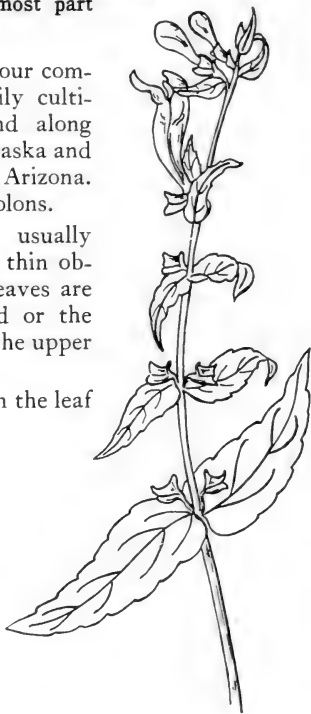
Skullcaps are readily recognized by the hump on the back of the calyx. They differ strikingly from most members of the family in that they entirely lack the characteristic Mint odor and their flowers are for the most part a beautiful blue.

The Marsh Skullcap is one of our commonest species and is quite easily cultivated. It grows in swamps and along streams from Newfoundland to Alaska and south to North Carolina, Ohio and Arizona. It is perennial by very slender stolons.

The erect stem is square, usually branched and 1-3 feet high. The thin oblong-lanceolate to ovate-oblong leaves are 1-2½ inches long, short petioled or the upper sessile, and low toothed or the upper entire.

Solitary flowers are produced in the leaf axils from June to September. The calyx is 2-lipped, both lips being entire. The blue corolla has a slender tube with a slightly enlarged throat and is 2-lipped at the end. The upper lip is arched over the 4 stamens and the lower lip is spreading and 3-lobed, the middle lobe much the largest. The ovary is deeply 4-parted and the style is unequally 2-cleft at the apex.

The Heart-leaved Skullcap, *Scutellaria versicolor* Nutt., is another species in Illinois, growing in wet shaded places. All but the uppermost leaves are heart shaped, coarsely toothed and with slender petioles. The flowers are in a terminal raceme instead of being axillary, and bloom from June to August. The corolla is about 1 inch long and covered with very short hairs, and is blue but with the under side much lighter or even white. This Skullcap frequents woods and thickets, especially along streams, from Pennsylvania to Florida and west to Minnesota and Texas.

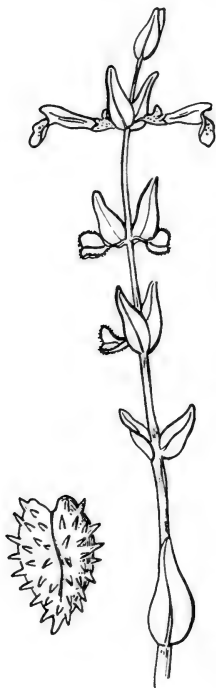


LITTLE SKULLCAP

Scutellaria parvula Michx.

The Little Skullcap is found in sandy or gravelly soil from Quebec to Ontario and South Dakota, south to Florida and Texas. It may be found in similar locations throughout Illinois.

The plant is perennial by slender underground stems which are thickened at intervals into tubers. Aerial stems are very slender, 3-12 inches high and usually branched. This species varies considerably in amount of hairiness and in leaf form. Sometimes the plant is entirely smooth and at others quite hairy; sometimes the lower leaves may be toothed and petioled instead of all being entire and sessile as shown.



The flowers, blooming from April to July, are solitary in the axils of the leaves. The corolla is violet-blue and covered outside with very short hairs. The 4 nutlets are very rough and very small.

Another species not uncommon in wet places is the Mad-dog Skullcap, *Scutellaria lateriflora* L., which was formerly thought to be useful in treating bites from mad dogs. This is a small-flowered species which is usually entirely smooth. The square slender stem is very leafy and 4-32 inches high. The thin leaves vary from ovate to oblong or lanceolate and are petioled. The flowers are borne in leafy-bracted racemes both axillary and terminal. The corollas are bluish, varying nearly to white. This species is distributed from Quebec to Minnesota, south to New Jersey, Florida and Texas.

One of the handsomest American species is the Showy Skullcap, *Scutellaria serrata* Andr., which occurs in woods from southern New York and Pennsylvania to North Carolina and west to Illinois and Kentucky. It is confined to the Ozark area here. The slender, simple or branched stem is 1-2 feet erect and nearly smooth. Large ovate-elliptic, pointed leaf blades, strongly sharp toothed, are attached by rounded or almost heart-shaped bases to slender petioles. The nearly always simple and terminal racemes are loosely flowered, the flowers paired. The blue, minutely downy corollas are 1 inch long and have the rather narrow upper lip shorter than the lower.

GIANT HYSSOP

Agastache nepetoides (L.) Ktze.

The Giant Hyssop is among our tallest common Mints, often 5 feet high and generally 2 feet or more. It is found in woods from Quebec and Vermont to Minnesota and South Dakota, south to Georgia and Kansas. In Illinois it is common throughout.

The stem is sharply 4-angled and smooth or nearly so. It grows from a perennial underground portion and is usually branched, at least near the top. The leaves are similar to those shown except that the lower are larger and definitely petioled. All are ovate, smooth, coarsely toothed and somewhat pointed.

The flowers are crowded in interrupted terminal spikes from July to September, and bloom progressively upward from the base of the spike. The calyx is slightly 2-lipped, the 3 teeth of the upper lip being slightly larger than the 2 of the lower lip. The corolla is greenish yellow and strongly 2-lipped. Its upper lip is erect and 2-lobed and the lower is spreading and 3-lobed, its middle lobe being much the larger and slightly uneven with small rounded teeth. The 4 stamens are attached in the throat of the corolla, the upper pair a little the longer. The ovary is deeply 4-parted and the slender style is 2-cleft at the end. The fruit within the persistent calyx consists of 4 smooth 1-seeded nutlets.



The Purple Giant Hyssop, *Agastache scrophulariaefolia* (Willd.) Ktze., is a yet larger plant, up to 8 feet high, and often grows along with the Giant Hyssop, from which it differs in little more than the color of its flowers, which are purple. The obtusely 4-angled stem and lower surfaces of the ovate or somewhat heart-shaped leaves are slightly soft hairy. The calyx teeth are lanceolate and acute, rather than ovate and obtuse as in the yellow-flowered species.

CATNIP. CAT MINT

Nepeta Cataria L.

Catnip tea was formerly the common remedy for a troubled and aching stomach due to indigestion, and easily taken because it was pleasant to the taste. It is universally known that cats are exceedingly fond of eating the aromatic leaves of this plant or of rolling among the fragrant stems.



Catnip or Cat Mint is an immigrant from Europe now common in waste places, especially near dwellings, from New Brunswick to Oregon, south to South Carolina, Kansas and Utah. It is a common weed throughout Illinois.

The whole plant is densely covered with short whitish hairs which give it a pale green color. The square stem is rather stout, much branched and usually 2-3 feet high. The ovate to oblong leaves are 1-3 inches long, petioled, coarsely round toothed, acute tipped and mostly heart shaped at the base, and darker green above than beneath.

The flowers bloom from July to October in terminal clusters 1-5 inches long. The bracts of the spike are small and leaflike; the bractlets are awl shaped. The tubular calyx is 15-nerved, 5-toothed and only slightly irregular. Although the calyx cannot be said to be 2-lipped, the upper of the awl-shaped teeth are longer than the lower and

about half the length of the densely minutely soft-hairy tube. The strongly 2-lipped corolla is nearly white and dotted with purple. The upper lip is slightly 2-lobed and the lower 3-lobed, the lower middle lobe being much broader than the other 2 and having shallow teeth around the margin. The 4 stamens are in pairs, of which the lower is a little shorter than the upper. The ovary is deeply 4-parted and produces 4 smooth nutlets in fruit.

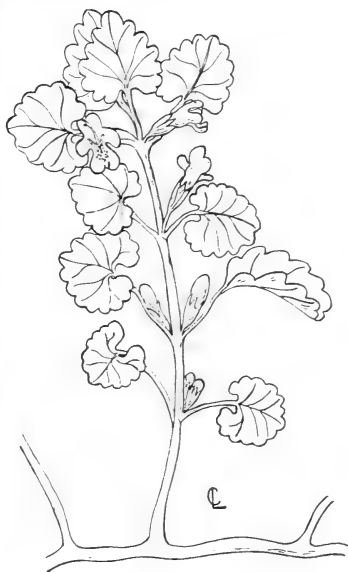
GROUND IVY

Nepeta hederacea (L.) Trevisan

This plant is easily cultivated and sometimes used for ground cover in cemeteries, but it readily crowds out lawn grass and so may become a weed. Formerly it was much used in medicine but unlike Catnip has a rather peculiar and slightly disagreeable odor and bitter taste. Most animals avoid eating it.

The Ground Ivy, also called Gill over the Ground, often forms dense mats in damp or partly shaded places. Introduced into this country from Europe, it has spread from Newfoundland to Oregon and south from Georgia to Colorado, and is not likely to be found near towns.

The 4-angled stems, often 18 inches long, are creeping and trailing, and frequently root at the joints. The branches are ascending. The leaves are nearly evergreen, petioled, round-kidney shaped, palmately veined and bordered with fairly large rounded teeth. Lower petioles are commonly longer than the leaves.



The light blue flowers are few in axillary clusters from May to July. The tubular calyx is 15-nerved and instead of being 2-lipped is somewhat unequally 5-toothed. The corolla is about 3 times as long as the calyx and distinctly 2-lipped. Its upper lip is erect and notched, and the lower is spreading and 3-lobed. The lower middle lobe is broad and notched and the 2 lateral lobes are small. The upper pair of stamens, all of which bear diverging anther sacs, is much longer than the lower. The ovary is deeply 4-parted and produces in fruit 4 smooth, ovoid seedlike nutlets.

SELF-HEAL. CARPENTERWEED

Prunella vulgaris L.

This genus name was often written *Brunella*, especially before Linnaeus' time, as it was said to be derived from the German *Bräune*, a throat disease for which this plant was used as a remedy.

This perennial is a most widely distributed Mint, sometimes known as Heal All. It is common along roadsides and in fields, woods and waste places nearly throughout North America and in Europe and Asia as well.

The plant is 2-24 inches high and very variable. The square stem, usually simple but sometimes considerably branched, is slender, sometimes too weak to stand erect and in other cases strictly upright. The ovate-oblong leaves are petioled, entire or toothed and hairy or smoothish.

The blooming season is May to October. The small



flowers, 3 in a cluster, are sessile in the axils of round bractlike floral leaves, the whole crowded in a short terminal spike or head. These spikes are sessile or short peduncled, very dense, and become 2-4 inches long in fruit. The bracts are tipped with a sharp rigid point. The tubular-bell-shaped calyx is deeply 2-lipped, usually purplish, about 10-nerved and closed in fruit. The violet, flesh color or rarely white corolla is deeply 2-lipped also, and the upper lip is entire and arched, whereas the lower is 3-lobed and spreading. The lower lateral lobes are oblong and the middle one is rounded, concave and with small rounded teeth. Two unequal pairs of stamens are under the upper lip. The filaments are 2-cleft at the apex, the lower division bearing the anther. The ovary is deeply 4-parted and the fruit consists of 4 smooth seedlike nutlets.

FALSE DRAGONHEAD

Physostegia virginiana (L.) Benth.

Not all members of this family look like Mints. Externally the False Dragonhead, for example, reminds one of the Figwort rather than the Mint family. Examination of the ovary, however, will always serve to distinguish flowers of these two families, for in Mints the ovary is always 4-lobed or 4-parted and the fruit that develops from it consists of 4 nutlets, whereas in the Figwort family the ovary is unlobed and the fruit is a capsule.

The False Dragonhead grows in wet ground from Quebec to Ontario and Minnesota, south to Florida and Texas. It blooms from June or July to September and often forms conspicuous, usually small, patches of color along railroads, since it spreads by slender underground stems. This plant is frequently cultivated in gardens.

The rather stout stem grows 1-4 feet high. The firm leaves, in varied lanceolate forms, are sharply serrate, narrowed at the base and acuminate at the apex. The upper are sessile and the lowest petioled. The bracts beneath the flowers are lanceolate and shorter than the calyx.

A dense spike terminates the stem, bearing many pale purple or rose flowers, often variegated with white. In flower the calyx is cup shaped and the ovate-acute teeth are half as long as the tube; in fruit it is oblong, not quite one-half inch long, and the teeth are much shorter than the tube. The corolla 2-lipped and 1 inch long or more.



LION'S HEART

Physostegia denticulata (Ait.) Britton

The Lion's Heart is a beautiful perennial with flowers nearly 1 inch long and well worthy of a place in any flower garden. It grows in rather moist soil from Pennsylvania to Illinois and south to Florida and Texas, and blooms from June to August.



The square stem is 1-2 feet high, rather slender and unbranched or at least but little branched. The leaves are firm but not thick; the upper are sessile and the lower have slender petioles. The leaves are the chief means of differentiating this plant from its close relative the False Dragonhead, page 281, for in the latter they are sharply notched and

toothed, and in the Lion's Heart only faintly so. They are also greatly reduced in size toward the top of the stem here, but in the False Dragonhead the stem is conspicuously leafy to the inflorescence.

The loosely flowered spike blooms from the base upward, only a few flowers being open at a time. The bracts are lanceolate and little longer than the fruiting pedicels. The oblong-bell-shaped calyx is rather thin, membranous and swollen, and remains open in fruit. It is 10-nerved and equally 5-toothed. The rose pink corolla is much longer than the calyx and the tube is gradually enlarged upward and strongly 2-lipped at the end. The upper lip is concave and entire or nearly so, whereas the lower is 3-lobed and spreading, the middle lobe usually slightly notched at the end. The 4 stamens, in pairs of unequal length, are under the upper lip of the corolla. The ovary is deeply 4-parted and forms in fruit 4 smooth ovoid-3-sided nutlets.

COMMON MOTHERWORT

Leonurus Cardiaca L.

This tall perennial herb is an immigrant from Europe which seems to prefer to grow near the habitations of man. Roadsides, spots near buildings and waste places are favorite haunts, from Nova Scotia to North Carolina, west to Montana and Utah.

The stout, commonly branched stem grows 2-5 feet high. Leaves are thin and membranous, the lower nearly round, 2-4 inches broad and 3-5 cleft, whereas the upper are as shown.

The flowers, too small to be conspicuous but really very pretty, are produced in numerous axillary



clusters from June to September. The calyx is 5-nerved and nearly equally 5-toothed. The teeth are stiff and sharp like prickles. The decidedly 2-lipped corolla varies from pink to pale purple and has a ring of white woolly hairs on the inside of the tube. The upper lip is slightly concave and densely bearded outside, and the lower is 3-lobed and mottled with dark purple spots. There are 4 stamens in pairs of unequal length. The ovary is deeply 4-parted and the style is 2-cleft at the top. The 3-sided nutlets are smooth and within the calyx.

The Horehound Motherwort or Lion's Tail, *Leonurus Marrubias-trum* L., is a tall biennial from Europe which has stout stems, leaves much like those of Catnip, page 278, and white, very markedly 2-lipped flowers in dense axillary whorls. The calyx is equally 5-toothed and hairy, its bristle-shaped, somewhat spreading teeth mostly shorter than the tube. The style is 2-cleft at the summit, the ovary 4-parted and the fruit 4 smooth 3-sided nutlets. This plant is an inhabitant of waste places and flowers from June to September.

WOUNDWORT. HEDGE NETTLE

Stachys palustris L.

The Woundwort or Hedge Nettle is a hairy herb of the Mint family that extends across the continent but does not go far to the south. It occurs south to Union county and is common in wet soil in open places in the middle and northern parts of Illinois. Moist places along railroads are favorite spots, where it may be conspicuous in large patches. Formerly it was much used in medicine.



The square stem of this perennial is 1-4 feet high, rather slender, and the hairs on its angles are longer than elsewhere and point downward. The leaves are rather firm and sometimes the lower have short petioles.

Blooming from June to September, the plant produces 6-10 purple or pale red flowers in each of a number of whorls above the uppermost foliage leaves, sometimes also in the upper axils. The calyx is bell shaped and nearly equally 5-toothed. The corolla is strongly 2-lipped; the erect upper lip is entire, concave and somewhat hairy outside, and the lower is spreading and 3-lobed. The 4 stamens, in pairs of unequal length, are under the upper lip of the corolla. The ovary is deeply 4-lobed and the style is 2-cleft at the top.

The Light-green Hedge Nettle, *Stachys cordata* Riddell, is found on rich bottomlands throughout Illinois. It is paler green in leaves and stem, 24-32 inches high and very hairy. Leaf petioles are as long as the blades, which are 6 inches in length, 3 inches wide, heart shaped, pinnately veined and serrate. The pink-purple flowers are much like those of Woundwort, but in interrupted spikes that blossom in July and August. The plant lives in woods and thickets from New York to Oregon, south to North Carolina and Illinois.

WILD BERGAMOT

Monarda fistulosa L.

This genus was named in honor of Nicholas Monardes, Spanish physician and botanist of the latter sixteenth century.

One of the most beautiful and showy of all the Mint tribe is the Wild Bergamot, which despite its name is often content within the confines of a flower garden. However, it prefers the dry soil of prairies, hills or roadsides, where it is found from Maine to Minnesota, south to Florida and Texas. Its attractive flowers are much frequented by butterflies and sometimes by hummingbirds, which feed during the middle of summer upon its abundant nectar.

This is a perennial which usually grows 2-4 feet high. The stem is 4-angled, more or less hairy and often considerably branched. The underground stems are thick and tough.

The flowers are produced in terminal clusters surrounded by whitish or purplish bracts, some large and leaflike and others long and narrow with threadlike points. The tubular calyx is 15-ribbed, 5-lobed and hairy inside. The long 2-lipped corolla is usually lilac or pink. The 2 stamens are very slender and 2-lobed at the top. The ovary is deeply 4-parted and forms 4 nutlets in fruit.

The Purple Bergamot, *Monarda fistulosa* L. var. *rubra* Gray, is so named from the conspicuous purplish bracts of the inflorescence. They surround the bright crimson flowers in a solitary terminal cluster which blossoms from June to August. The leaves are very pungent. On dry hills and in thickets this plant ranges from Maine and Ontario to Minnesota south to Florida and Louisiana.



HORSE MINT

Monarda punctata L.

The Horse Mint and its close relative the Wild Bergamot are very fragrant and yield an oil used in the manufacture of perfume. This species blooms in midsummer and continues late, sometimes after the first heavy frost, and through this long season yields a high grade of honey.



This common perennial grows in sandy open places from New York to Minnesota and south to Florida and Texas. As is the case with most sand-growing plants, it is usually covered rather densely with soft hairs. The square stem grows 2-3 feet high and is often much branched. The lanceolate or oblong leaves are sparsely serrate, 1-3 inches long and taper into the petioles. They often have smaller leaves clustered in the axils.

The numerous flower clusters are axillary as well as terminal and the bracts that surround them are yellowish or purplish and more conspicuous than the flowers. The tubular calyx is somewhat hairy inside and its 5 teeth are very short. The yellowish corolla is spotted with purple on the upper as well as the lower lip. The 2 stamens do not extend beyond the hairy upper lip. The nutlets from the deeply 4-parted ovary are ovoid and smooth.

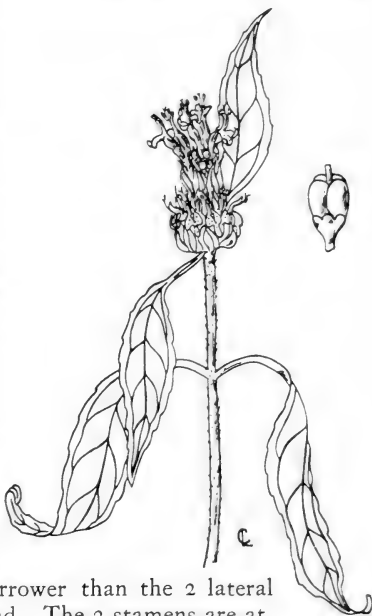
The Bradbury Monarda, *Monarda Bradburiana* Beck, is our only species with sessile leaves. The plant grows on dry hills and open woodland areas, is 1-2 feet high and blooms from May to July. The ovate leaves are serrate, long pointed and generally heart shaped at the base. The bright green calyx is smooth outside and bristly within, about one-half inch long, shaped like a vase and constricted just below the 5 long teeth at the summit. The pink or white corolla has purple spots, and its upper lip is hairy.

WOOD MINT

Blephilia hirsuta (Pursh) Benth.

One of the few flowers found blooming in damp woods from May to September is the Wood Mint, a perennial quite common from Quebec and Vermont to Minnesota, south to Georgia and Texas. Its square stem is 1-3 feet high, more or less branched and usually quite hairy. The leaves are sharply toothed and 2-4 inches long.

The flowers are in 1 to several axillary and terminal whorls which often become globose. They are pollinated mostly by bees. The calyx is plainly 2-lipped and beset with long hairs. The upper lip has 3 teeth with long awns, and the lower has 2 shorter and awnless teeth. The corolla is pale purple with conspicuous darker spots. It is distinctly 2-lipped, the upper lip being erect and unlobed and the lower 3-lobed. The middle lobe of the lower lip is narrower than the 2 lateral lobes and notched at the end. The 2 stamens are attached to the corolla tube and extend from it. The ovary is deeply 4-parted and the slender style is 2-cleft at the top. The fruit consists of 4 smooth 1-seeded nutlets.



The Downy Wood Mint, *Blephilia ciliata* (L.) Raf., usually grows in dry open places and can be distinguished by its nearly sessile and slightly toothed leaves. The stem, 1-2 feet high, is sparsely hairy or bristly above and commonly unbranched. The purple flowers, in a terminal spike and clustered in the uppermost axils, are like those of the Wood Mint except for the spots on the corolla, and are slightly longer. This plant ranges from Massachusetts to Wisconsin and south to Georgia and Missouri. It blooms from June to August.

AMERICAN PENNYROYAL

Hedeoma pulegioides (L.) Pers.

Though small and inconspicuous, the American Pennyroyal is certain to attract our attention by the delightful fragrance of its foliage. One familiar with the odor can identify the plant by it alone. Oil of Pennyroyal is often used by campers to drive away mosquitoes, and it has very powerful medicinal properties.



The plant is an annual that grows in dry open places from Quebec to Minnesota and south to Arkansas and Florida, and blooms from July to September. The slender branches stems grow 6-18 inches high and are covered with fine soft hairs. The oblong-ovate leaves are petioled, somewhat toothed and have a pleasant pungent taste.

A few bluish purple flowers are loosely arranged in each axillary cluster. The calyx is hairy and slightly 2-lipped, with the 3 upper teeth acute and the 2 lower, of equal length, awl shaped and bristling. The upper of the 2 corolla lips is flat and notched at the end, but the lower is spreading and 3-cleft. Stamens are 4 but 2 are rudimentary, without anthers. The ovary is deeply 4-parted and the style is 2-cleft at the top. The fruit consists of 4 smooth ovoid nutlets.

Likewise strongly aromatic and addicted to crowded colonies but even more insignificant singly is the Rough Pennyroyal, *Hedeoma hispida* Pursh, an inhabitant of open dry woodland knolls throughout the state. It is low and almost unbranched, with numerous narrow, stiff leaves one-half to 1 inch long and entire. Innumerable tiny bluish purple flowers are borne in dense axillary clusters. The densely hairy bracts and calyx are sharp pointed and almost burlike. This is a plant of dry plains from Louisiana and Arkansas northwest to Illinois, Colorado and beyond. It flowers from May to August.

And I beheld in a sequestered place
A slender crocus show its sun-bright face.

The Crocus Flame—CLINTON SCOLLARD

NARROW-LEAVED MOUNTAIN MINT

Pycnanthemum flexuosum (Walt.) BSP.

The Mountain Mints are not so conspicuous as some other members of the family but they are common, often abundant and have the characteristic Mint flavor and odor. The Narrow-leaved Mountain Mint, though much less fragrant than others, is the commonest species in most parts of the state and frequently covers considerable areas on dry hills, fields or in thickets that are not too shady. It grows from Maine to Florida, west to Minnesota, Kansas and Texas.

The square, slender, freely branching stems, 18-30 inches high, are rather stiff and nearly smooth throughout. The smooth firm leaves are narrow and sessile, the lowermost, sometimes on short petioles, excepted.

The blooming season is July to September. The dense flower clusters are terminal and whitish from the numerous white hairs that cover calyx and bracts. The calyx is nearly equally 5-toothed. The whitish corolla has 2 purple-dotted lips, of which the upper is merely notched and the lower 3-cleft. The 4 stamens are arranged in pairs usually of unequal length. The ovary is deeply 4-parted and the style slender. The fruit consists of 4 seedlike nutlets.

The Virginia Mountain Mint, *Pycnanthemum virginianum* (L.) Durand & Jackson, is about equally common but more likely to be found on rather moist prairies. The numerous leaves are lanceolate rather than linear but otherwise this is quite similar to the narrow-leaved species. It ranges from Maine to Georgia, west to the Dakotas, blooming from July to September.

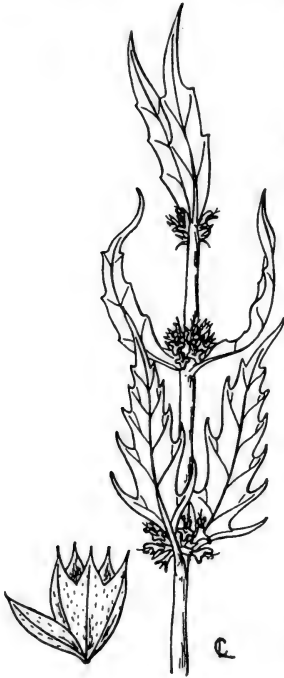


WATER HOREHOUND

Lycopus americanus Muhl.

Members of this genus are practically without odor.

The Water Horehound is common in wet soil nearly throughout the continent. It is perennial by suckers and produces stiff erect shoots that grow 1-2 feet high. The lower leaves are deeply and sharply cut and lobed, and the upper are as shown.



The small white flowers are whorled in dense axillary clusters and bloom from June to October. The bell-shaped calyx has 5 sharp stiff teeth of equal length. One of the 4 corolla lobes is broader than the others and slightly notched at the tip. Two perfect stamens extend beyond the corolla tube and 2 little rudimentary stamens are included within the tube. The ovary is deeply 4-parted and the slender style is 2-cleft at the top. The nutlets are smooth, slightly triangular and much shorter than the calyx.

The Bugle Weed, *Lycopus virginicus* L., is a not uncommon species in this state. It grows in wet woodlands from New Hampshire to Nebraska, south to Florida and Missouri. The slender stems are 6-24 inches high and give off long threadlike leafy stolons. The ovate or ovate-lanceolate leaves are merely sharply toothed. The pale purple or white flowers bloom from July to September. The calyx is usually only 4-toothed and the corolla is twice as long as the calyx or even longer. The nutlets are slightly longer than the calyx.

The Stalked Water Horehound, *Lycopus rubellus* Moench, is much like the Bugle Weed in habitat, range, and characteristics of stems and leaves. This is the taller plant, however, growing 1-3 feet high, and its blooming season lasts into October. It rarely has runners such as in *L. virginicus*; if it has they are short. The Stalked Water Horehound has long triangular sharp-pointed calyx teeth and the nutlets are much shorter than the calyx.

SPEARMINT

Mentha spicata L.

This is one of the most noted Mints, by reason of its important uses in candy, chewing gum and medicine. Its characteristic odor is one means of identification. It has been naturalized from Europe and is now common in wet places from Nova Scotia to Washington and south from Florida to California. It is widely scattered and local along roadsides throughout Illinois.

The Spearmint is a smooth perennial which spreads by leafy stolons and forms dense growths. The stems are 1-2 feet high, branched, with lanceolate, nearly sessile and sharply serrate leaves, and small purple flowers in narrow terminal spikes.

The blooming season is July to September. The calyx is more or less bristly due to the 5 awnlike equal teeth. The corolla is smooth and pale purple, twice the length of the calyx and nearly equally 4-toothed. The posterior lobe is somewhat notched at the end. There are 4 equal stamens inserted on the corolla tube. The ovary is 4-lobed, the style long and slender, and the 2 stigmas spreading.

The Corn Mint, *Mentha arvensis* L. var. *canadensis* (L.) Briquet, is sometimes called Field Mint and has been frequently confused with the type species *M. arvensis* L., which is a rarity in this state. It is perennial by suckers and its square, freely branching stems are 6-24 inches long. The lanceolate or oblong-lanceolate leaves are hairy and narrowed at the base. The white to pink or violet flowers are in axillary whorls from July to September. The calyx is 5-toothed and the corolla 4-lobed.

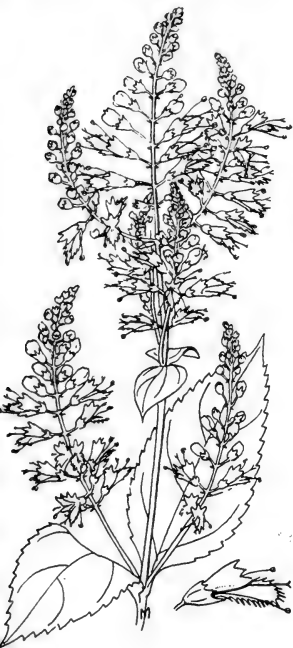
The Peppermint, *Mentha piperita* L., is a perennial by subterranean suckers which is occasional along brooks, ditches and pond margins throughout Illinois, and blooms from July to September. It is smooth, erect, branched and 1-3 feet high. It is separable from other Mints by its thick dense spikes which at first are short, and its lanceolate or oblong, acute and petioled leaves.



STONEROOT. RICHWEED

Collinsonia canadensis L.

This peculiar Mint, variously called Stoneroot, Richweed and Horse Balm, is distributed among three species, all confined to eastern North America. *Collinsonia canadensis* is the only species in Illinois, scattered in rich woodlands in the southern half of the state.



It is a tall, strongly aromatic perennial with large, petioled, ovate leaves that are coarsely toothed. The stem is nearly smooth and 1 ½-3 ½ feet high.

The flowers bloom from July to September in loosely paniced, terminal racemes. They are small, with yellow corolla and green calyx which is cup shaped, 2-lipped and 10-nerved. Stamens are 2, with sometimes 2 others rudimentary, connected at the base of the filaments by a woolly ring on the corolla tube. The ovary is deeply 4-lobed and produces 4 smooth nutlets. The fruiting calyx is enlarged and strongly ribbed.

The Beefsteak Plant, *Perilla frutescens* (L.) Britton, has been naturalized from eastern Asia, runs wild along most watercourses in the south and has made its way into southern Illinois. It is a foliage plant whose stems and large toothed leaflets constitute its chief beauty, as they are more or less purple, and often conspicuously so. The latter are 3-6 inches long and nearly as wide, broadly ovate, acuminate at the apex and narrowing into long petioles, and coarsely toothed. The many-flowered 3-6-inch racemes are terminal and axillary. The flowers are very small, purplish white and inconspicuous, often so uncommon that mountaineers insist that the plant does not bloom. The odor is very disagreeable and like that of some of the true bugs.

BITTERSWEET NIGHTSHADE

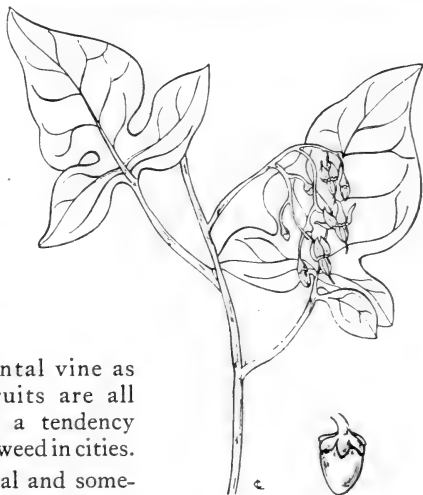
Solanum Dulcamara L.

The Nightshade family is very large, most members inhabiting the tropics and the number native of our climate not great. Of extreme economic importance are the Potato, Tomato, Eggplant, Tobacco and Petunia.

This pretty climbing plant is a native of Europe and Asia but it appears to like certain parts of America very well. It is quite common in waste places and especially abundant in swamps from Nova Scotia to Minnesota and south to New Jersey and Kansas. It makes a fine ornamental vine as foliage, flowers and fruits are all handsome, but it has a tendency to spread and become a weed in cities.

The plant is perennial and somewhat woody near the base, but most of the stem is herbaceous and dies to the ground or nearly so each winter. Having no special means for climbing, it leans upon or straggles over whatever support is available. The stems are usually 2-8 feet long. Leaves are quite variable, some being entire, others having a lobe on 1 side near the base and others having 2 such lobes.

Blue, purple or rarely white flowers are produced from May to September, and during the latter part of the season flowers and ripe fruits may be found on the same plant. The calyx, with 5 short lobes, is persistent at the base of the fruit. The corolla is deeply 5-cleft and its narrow pointed lobes are somewhat reflexed. The 5 stamens, with short filaments and long anthers, are attached to the throat of the corolla, and the anthers cling together to form a cone. There is 1 pistil. The fruit is a bright red, oval, inedible berry which may be fatally poisonous to children.



BLACK NIGHTSHADE. COMMON NIGHTSHADE

Solanum nigrum L.

The berries of this plant have been considered poisonous and it is sometimes called the Deadly Nightshade, but a number of years ago the berries of a variety that produces unusually large fruits were sold

on the market under the name Wonderberries. Also it is said that the Black Nightshade is frequently confused with Burbank's New Sunberry, and its berries sold under that name for making pie and jam. It is probable, therefore, that the berries of this Nightshade are not as poisonous as was formerly believed, at least not after cooking.



The Black Nightshade is a very common annual in waste places and cultivated soil from Nova Scotia to the far northwest and south to Florida, Texas and Mexico. It is also widely distributed as a weed in many other countries and includes numerous races or varieties which differ in minor respects. The branched stems grow 1-2 feet high.

White flowers are produced from July until the plant is killed by freezing weather. The calyx is much shorter than the corolla and persists at the base of the fruit. The filaments of the stamens are somewhat hairy and the anthers are obtuse. The ripe berries are black, smooth and nearly spherical, about three-eighths of an inch in diameter and on nodding peduncles.

HORSE NETTLE

Solanum carolinense L.

The Horse Nettle is found in fields and waste places from Vermont and southern Ontario to Florida, west to Illinois, Nebraska and Texas. It is perennial by underground stems and where well established as a weed is sometimes quite difficult to eradicate.

Usually this plant is considerably branched and grows 1-4 feet high. It is covered with fine branched hairs and is also armed with stout yellowish prickles.

The violet or rarely white flowers are produced from May to September. The calyx is 5-lobed and about half as long as the corolla, which is wheel shaped with the 5 stamens inserted on its throat. The anthers form a sort of cone around the style and open by pores at the upper end. The



fruits are inedible orange-yellow berries.

The Silver-leaved Nightshade, *Solanum elaeagnifolium* Cav., sometimes called White Horse Nettle, is a hoary perennial whose dense scurflike covering is caused by its many-rayed hairs. The 1-3-foot stems are much branched, have occasional slender prickles and bear lanceolate to linear, petioled leaves 1-4 inches long. The small 5-parted blue or violet flowers are in cymes which at first appear terminal but at length lateral. The plant is found only along railways extending into the southwest.

The Buffalo Bur, *Solanum rostratum* Dunal, is occasionally found as a weed in Illinois. It is a much branched, prickly annual 1-2 feet high, which appears whitish or yellowish from the abundant branched hairs that cover stems and leaves. The leaves are deeply lobed and sometimes almost compound. The flowers are yellow and about 1 inch broad. The fruit is closely covered by the very prickly calyx, and including the prickles is 1 inch or more in diameter.

PRAIRIE GROUND CHERRY

Physalis lanceolata Michx.

Several kinds of Ground Cherry occur in Illinois, some of which are quite difficult to distinguish. This species is found on dry prairies from South Carolina to Illinois and west to South Dakota and New Mexico, blooming from July to September.



It is perennial from a slender creeping underground stem. The branching aerial stem grows about 18 inches high and is at first erect but later spreading. It is sparsely covered with short stiff hairs. The leaves are usually entire but may have some angular teeth.

The calyx is 5-cleft and after flowering it enlarges and becomes much inflated, inclosing the fruit. The corolla is somewhat funnel shaped and slightly 5-lobed, dull yellowish with a brown center, and about five-eighths of an inch broad.

The fruit is a greenish yellow or reddish yellow berry.

The Clammy Ground Cherry, *Physalis heterophylla* Nees, is probably our commonest species. It occurs in rich soil, especially where the surface has been disturbed through cultivation or otherwise. The whole plant is quite hairy and somewhat glandular sticky. The leaves are large, the blade usually more than 2 inches long and more or less coarsely toothed. The calyx is long haired and the corolla, nearly 1 inch broad, is greenish yellow with a brown or purple center. The ripe yellow berries are sometimes used for making pies. This perennial occurs from New Brunswick to Saskatchewan, south to Florida, Colorado and Texas.

MATRIMONY VINE

Lycium halimifolium Mill.

The Matrimony Vine is another member of the Nightshade family not native but introduced from Europe as an ornamental plant. It is a climbing or trailing shrub which is often used for covering fences, stumps or other unsightly objects, and which in many places has escaped to waste lands and thickets. It is found locally from Ontario to Virginia and west to Minnesota and Kansas.

The branched, often spiny stems are 6-25 feet long. The branches are somewhat angled and the spines, when present, are slender and about one-half inch long.

The flowers are produced from May to August, either solitary or 2-5 in the axils of leaves. The bell-shaped calyx is 3-5-toothed or lobed and persists at the base of the fruit. Very often it is somewhat deformed by small insect galls on its surface. The funnel-shaped 5-lobed corolla is at first purple and fades to greenish as it gets old. The 5 stamens are attached near the upper end of the corolla tube, the filaments being somewhat hairy at the base. There is 1 pistil with a 2-celled ovary and a slender style. The fruit is a bright orange-red oval berry about one-half inch long or less, and half as thick. These very pretty berries are not edible to man but they are undoubtedly eaten by birds.



The poppy tosses here its torch,
And the tall bee-balm flaunts its fire,
And regally the larkspur lifts
The slender azure of its spire.

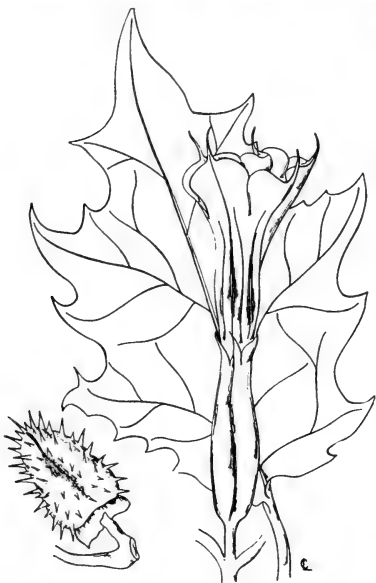
And from the phlox and mignonette
Rich attars drift on every hand;
And when star-vestured twilight comes
The pale moths weave a saraband.

A Midsummer Garden—CLINTON SCOLLARD

JIMSON WEED

Datura Stramonium L.

The juices of this plant have a rather disagreeable odor and contain a poisonous substance which is the source of a valuable narcotic medicine. Rather serious results have been produced by holding the cut stem of a flower in the mouth.



The Jimson Weed is a tropical plant which probably came originally from India but which has become naturalized in this country from Nova Scotia to Florida and west to Minnesota and Texas. It is often found growing around and effectively hiding old rubbish heaps or neglected barnyards, but it is also a frequent weed in cultivated fields. It is an annual whose stout smooth stem grows 1-5 feet high and branches considerably.

The large white flowers are produced from June to September. They open at evening and close after the sun comes out next day, being pollinated largely by night-flying hawk moths. There are 5 stamens attached near the middle of the corolla tube, and a single pistil with a slender style. The fruit is a capsule and contains a very large number of seeds.

The much more common Purple Jimson Weed, *Datura Tatula* L., is very similar except that its stem, also 1-5 feet tall, is purple, commonly more slender and usually a little more hairy. The leaves too are like those of the Jimson Weed but are darker green or with a tinge of purple. The corolla is lavender to purple or the tube may be nearly white. This plant is also an immigrant from the tropics. The fruits of both species are burlike but will not stick to anything. The longer prickles of the Purple Jimson Weed fruit are nearly equal.

This large and widely distributed family contains at least 2500 species, most of them herbs, though a few are shrubs and trees. A few plants are very poisonous, a few more are troublesome weeds, and some are used in medicine. The family also contains many species with beautiful flowers, and a large number of these are cultivated for ornamentation.

KEY TO GENERA

1. Herbs 2
Trees 11
2. Perfect stamens 2 10
Perfect stamens 4 3
Perfect stamens 5 *Verbascum* p. 300
3. Corolla spurred at the base *Linaria* p. 301
Corolla not spurred 3
4. Petals of 2 colors, blue and white *Collinsia* p. 303
Petals colored alike 5
5. A sterile stamen present 6
No sterile stamen 8
6. Sterile stamen a mere scale *Scrophularia* p. 304
Sterile stamen a filament 7
7. Sterile stamen shorter than the others *Chelone* p. 306
Sterile stamen about equaling the others *Pentstemon* p. 305
8. Flowers crowded in a spike *Pedicularis* p. 313
Flowers axillary 9
9. Corolla distinctly 2-lipped *Mimulus* p. 307
Corolla scarcely 2-lipped *Gerardia* p. 311
10. Calyx and corolla 5-lobed *Gratiola* p. 308
Calyx and corolla 4-lobed *Veronica* p. 309
11. Flowers tubular, purple, 2 inches or more in length,
panicked *Paulownia* p. 306

Sweet herbs in plenty, blue borage
And the delicious mint and sage,
Rosemary, marjoram, and rue,
And thyme to scent the winter through.

* * *

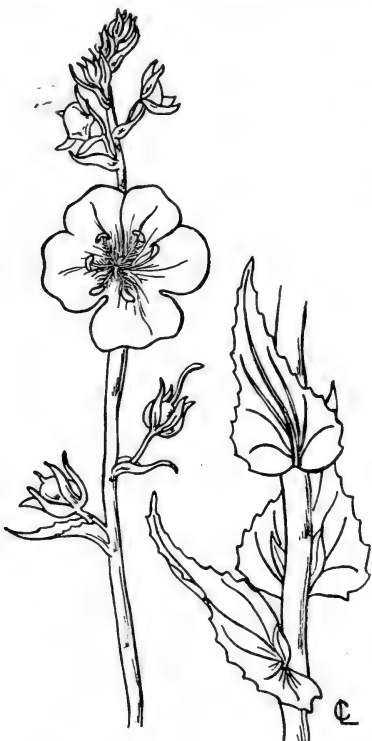
Take roses red and lilies white
A kitchen garden's my delight;
Its gillyflowers and phlox and cloves,
And its tall cote of irised doves.

The Choice—KATHARINE TYNAN

MOTH MULLEIN

Verbascum Blattaria L.

There are two varieties of Moth Mullein, one with yellow and the other with white flowers, but they are otherwise the same. This species was introduced from Europe and is now found in fields and waste places from the Atlantic to the Pacific. The stem is rather slender, smooth, unbranched and 2-6 feet high. The basal leaves are sometimes very large but they are seldom present at flowering time.



The very handsome flowers are produced from June until late autumn in a loose raceme which may be as much as 2 feet long. Each flower opens but once, for a few hours in the early part of the day, and seldom are more than 3 or 4 open at any one time. The calyx is deeply 5-parted and the corolla is yellow or white with usually some brown marks on the back, and is also slightly unequally 5-lobed. The filaments of the 5 stamens are covered with violet hairs. The capsule is nearly spherical.

The Common Mullein, *Verbascum Thapsus* L., is densely woolly all over. The unbranched stem is tall and stout and winged by the bases of the leaves that extend down on it. The yellow flowers are produced in a long and very dense spike. Usually the filaments of only the 3 upper stamens are white hairy, the 2 lower being smooth. This plant is a biennial and the rosette of woolly leaves produced the first year remains green all winter.

YELLOW TOADFLAX. BUTTER AND EGGS

Linaria vulgaris Hill

The Yellow Toadflax is another of those immigrants which have become common in this country. It is a native of Europe and Asia and really has very pretty flowers, but is usually ignored as a weed. Perennial by short underground stems, it may persist in colonies for many years. It grows in waste places from Newfoundland to Oregon and south from Virginia to New Mexico. Other names are Brideweed, Flaxweed, and Eggs and Bacon.

The smooth slender stems, 1-3 feet high, are simple or few branched and slightly downy near the inflorescence. They bear very many alternate leaves which are linear, sessile, entire and smooth, acute at both ends and up to 1½ inches long.

The plant usually begins blooming in June and continues until stopped by freezing weather. The large flowers, in dense terminal panicles, may be 1½ inches long. They are light yellow but the long awl-shaped spur at the base is a little darker and the palate that closes the throat of the corolla is orange. The oblong segments of the calyx are acutish and about one-eighth of an inch long. Pedicels are about one-quarter inch long. The 4 stamens, with thread-like filaments, are in pairs beneath the upper lip. The middle lobe of the lower lip is shorter than the other two. The 2-celled superior ovary is topped by a lengthy slender style, and it ripens into a capsule containing innumerable rough winged seeds. This plant is known practically throughout Illinois in all counties above a line from Hardin to St. Clair.



BLUE TOADFLAX

Linaria canadensis (L.) Dumont

The Blue Toadflax, unlike the yellow species, is a native of America and although very widely distributed is not nearly as common, and is not considered a weed. It is found in dry soil, especially in sandy places, from Nova Scotia to Florida, west and southwestward across the continent.

It is a smooth annual or sometimes biennial. The flowering stems are very slender, usually simple but sometimes branched, and 4-24 inches high or more. There are usually some sterile shoots, without flowers, that spread from the base of the plant and are very leafy. The narrow leaves are entire and sessile, one-quarter of an inch to more than 1 inch long, and usually those of the sterile shoots, or some of them, are opposite.

The blue flowers, one-quarter inch long or longer, are produced from May to September in long slender racemes. The 5 segments of the calyx are narrow and about as long as the mature capsule. The pedicels are up to one-quarter inch long, erect and appressed in fruit and minutely bracted at the base. The corolla is irregular, 2-lipped and spurred at the base. The threadlike spur is curved and as long as the tube or longer. The upper lip is 2-lobed and the lower 3-lobed. The palate on the lower lip which closes the throat of the corolla consists of a convex 2-ridged projection which is white. Dwarf forms in which the flowers have no corolla are frequently found. There are 4 stamens with long slender filaments. The fruit is a smooth,

globular, 2-celled capsule which opens at the end by a pair of 3-toothed valves and contains many small brown, angled and wingless seeds.



BLUE-EYED MARY

Collinsia verna Nutt.

Blue-eyed Mary is one of the most beautiful and in some places one of the most abundant of all our spring flowers. It is found in moist woods and thickets from western New York and Ontario to Wisconsin, south to Pennsylvania, Kentucky and Kansas, but occurs only locally in this state at least.

This is a biennial or annual and its rather weak, slender stems are 6-24 inches long. The leaves are thin, the lower petioled, those along the middle sessile and toothed, and the upper ones narrow and usually entire.

The long-peduncled flowers, blooming from April to June, are both axillary and terminal, about 6 in a whorl. They are about one-half inch long and more than twice exceed the bell-shaped 5-lobed calyx. The corolla has a short tube and 2 lips, of which the upper is 2-cleft and white, whereas the lower is 3-lobed and blue or rarely purple. There are 4 stamens, in pairs, and the pistil has a long threadlike style. The fruit is a globose capsule, practically one-quarter inch in diameter and shorter than the calyx lobes, which contains a relatively small number of rather large seeds. Many flowers and fruits are produced on each plant so that the total number of seeds may be very large.

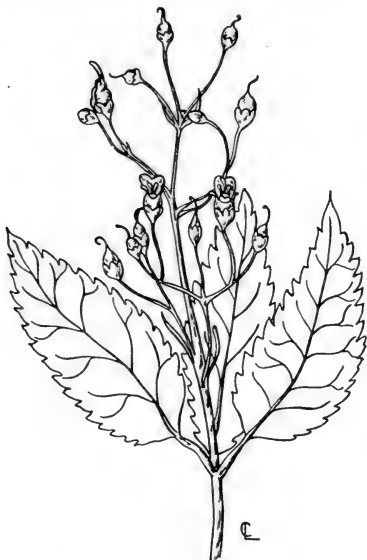
The Violet or Narrow-leaved *Collinsia*, *Collinsia violacea* Nutt., is a quite similar species found in rich soil from southern Illinois to Arkansas, Kansas and Texas. Its upper leaves are lanceolate and the corolla is violet. The globose capsule is shorter than the lanceolate acute lobes of the 5-parted bell-shaped calyx.



HARE FIGWORT

Scrophularia leporella Bicknell

The Hare Figwort grows mostly in woods from Vermont to Minnesota and south to Virginia and Kansas, and blooms from May to July. The stem is sharply 4-angled with flat sides, grows 3-8 feet high and is not much branched except in the inflorescence. It is somewhat glandular and sticky near the top. The leaves are smooth on both sides when mature.



Rather small greenish purple flowers are produced in a large and much branched inflorescence. The calyx is about equally 5-cleft. The corolla, shining outside and dull within, is 5-lobed and very irregular, the 2 upper lobes being much longer than the others and erect, the 2 lateral also erect and the lower 1 usually turned down. Four perfect stamens, in pairs, are mostly

included within the corolla tube. There is also a sterile stamen which is reduced to a greenish yellow scale on the roof of the tube. The style is slender but the stigma is somewhat enlarged. The ripe fruit is a brown, ovoid and cone-peaked capsule.

The Maryland Figwort, *Scrophularia marilandica* L., begins blooming in July at about the end of the Hare Figwort's season and continues into September. Habits and foliage of the two species are very similar. This plant's corolla is greenish and dull outside, and brownish purple and shining within, and the 2 upper lobes are not much longer than the others. The sterile stamen or scale is deep purple. This is considered a good honey plant.

HAIRY BEARDTONGUE

Pentstemon hirsutus (L.) Willd.

The Beardtongues are so called because the flowers contain a sterile stamen that extends up into the throat or mouth of the corolla like a tongue and is usually bearded with hairs.

The Hairy Beardtongue grows in rather dry soil in open places, or in not too dense woods and thickets from Maine to Ontario and Minnesota, south to Florida and Missouri. The rather slender stem is 1-3 feet high and is downy or hairy nearly to the base. The upper leaves are sessile but the basal are narrowed into the petioles.

The flowers are produced from May to July and the inflorescence is glandular hairy. The rather small calyx is 5-parted. The tubular and 2-lipped corolla is light violet or purplish. Its throat is nearly closed by long soft hairs on the palate at the base of the lower, 3-lobed lip. The upper lip is 2-lobed. There are 4 perfect stamens, in pairs, and 1 sterile that is densely bearded for about half its length. The fruit is a capsule containing a large number of slightly angled seeds.

The Funnelform Beardtongue, *Pentstemon tubiflorus* Nutt., is a smooth perennial except that the calyx and pedicels bear sticky hairs. The straight slender stem is 2-3½ feet high and leafless above. Leaves are oblong to lanceolate, entire and the upper sessile or clasping, the lower narrowed into margined petioles. The flowers, blooming from May to July, are in slender compact interrupted panicles. The white or purplish funnelform corolla is 1 inch long, with the nearly equal 5 lobes spreading.

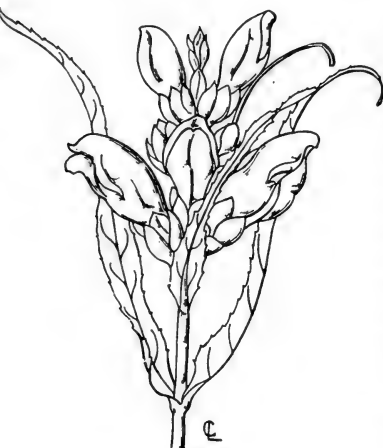
The Smooth Beardtongue, *Pentstemon laevigatus* Ait., grows in moist or rich soil. The stem is without hairs to the inflorescence and has rather firm glossy leaves. The corolla is whitish or purplish and gradually enlarged upward so that the throat is wide open. The sterile filament is rather thinly bearded for about half its length.



TURTLEHEAD. BALMONY

Chelone glabra L.

The Turtlehead blooms from July to September in low wet places throughout the eastern half of the continent. It is a perennial 1-3 feet high, which has toothed opposite leaves and a long terminal flower cluster.



The white flowers begin blooming at the base of the cluster and open progressively upward. The 2-lipped corolla is tubular, shaped like a turtle's head and nearly closed. There are 4 perfect stamens, in pairs, and 1 small and sterile. Anthers and filaments are woolly. The style is long and slender. The fruit is a capsule containing many flattened and winged seeds.

The Red Turtlehead, *Chelone obliqua* L., is less tall, being 20-32 inches high, and sometimes its branches are spreading. It is a native of

the swamps of extreme southern Illinois. The leaves are broadly lanceolate to oblong and mostly short petioled, acuminate at the tip and narrowed at the base, 2-6 inches long and with sharp teeth somewhat spreading. The plant is particularly distinguished by its rose-purple flowers in terminal and axillary spikelike racemes. The bracts surrounding the flowers are minutely fringed with short hairs. This is strictly a southern plant, known only from Virginia to southern Illinois and Florida, and blooming from July to September.

Frequently mistaken for a purple form of Catalpa is the Paulownia or Empress Tree, *Paulownia tomentosa* (Thunb.) Steud., a large tree from Japan that has become extensively naturalized along the bluffs of the Ohio in the vicinity of Golconda. The enormous leaves are almost perfectly heart shaped and are opposite on the hairy stems. The flowers, borne in large terminal panicles, are tubular and 5-parted, the deep royal purple and 5-limbed corolla slightly 2-lipped. Stamens are 4, inserted low on the corolla tube. The fruit is a large unsightly capsule which contains winged seeds and remains on the tree until spring.

MONKEY FLOWER

Mimulus ringens L.

The Monkey Flower is so called because the corolla seems to be grinning as a monkey might. It is common in swamps, along streams and in other wet places from Nova Scotia to Virginia and Tennessee, west to Manitoba, Nebraska and Texas.

It is perennial by underground stems, and the whole plant is smooth. The square aerial stems are 1-3 feet high and usually much branched. The opposite leaves are sessile and usually the upper clasp the stem at the base.

Violet flowers are produced from June to September singly in the axils of the leaves. The peduncles are at least twice as long as the 5-angled and 5-toothed calyx. The corolla, 2-lipped at the end, is tubular and has a pair of ridges within on the lower side. The upper lip consists of 2 lobes that are turned back, and the lower lip has 3 rounded lobes. The 4 stamens are inserted in pairs on the corolla tube. The style is very slender and the stigma is 2-lobed. The fruit is a many-seeded capsule.

The Wing-stemmed Monkey Flower, *Mimulus alatus* Ait., which may be found in Illinois swamps along with the Monkey Flower, has a more sharply angled and winged stem, and all the leaves are petioled. The calyx teeth are less than one-quarter the length of the calyx and the peduncles are shorter than the calyx.

The Yellow Monkey Flower, *Mimulus glabratus* HBK. var. *Jamesii* (T. & G.) Gray, likewise prefers cool brooks, ponds or springs but is very local and may be restricted to the northern half of the state. It may be recognized by the bright yellow axillary flowers, one-half inch long and with the throat of the very irregular 2-lipped corolla bearded and somewhat open. The smooth stems are prostrate, much branched and rooting at the nodes. The membranous leaves are nearly round and palmately veined, the lower petioled.



HEDGE HYSSOP

Gratiola virginiana L.

The Hedge Hyssop is an annual in wet or muddy open places from Quebec to British Columbia and south to Florida, Texas and California. It often comes up in great abundance along the border of a wet field and it may be found in bloom any time from May to October.



The plant grows 3-12 inches erect and becomes widely branched. The stem is usually glandular sticky, at least near the top, and bears sessile leaves which are narrowed at both ends, slightly toothed and smooth or nearly so.

The flowers are axillary and the peduncles are shorter, or at least not longer, than the leaves. At the end of the peduncle are 2 bracts as long as the calyx. The calyx is about half as long as the corolla and deeply 5-parted, the segments being narrow and slightly unequal. The corolla is irregular, with a

cylindrical yellowish tube and a short white, slightly 2-lipped limb. There are only 2 perfect stamens, with threadlike filaments, but sometimes rudiments of 2 others occur. The style also is threadlike and the stigma is slightly 2-lobed. The fruit is a capsule containing numerous seeds marked by a network of lines.

Much less commonly will be found the Round-fruited Hedge Hyssop, *Gratiola sphaerocarpa* Ell., which flowers in wet places from April to June. The stems are stout, thickened at the base and bearing numerous opposite leaves which are sessile, oblong-oval, toothed and strongly 3-veined. The yellowish white flowers are a trifle more than one-half inch long and have no sterile filaments. The globular capsule is one-quarter inch in diameter.

CULVER'S ROOT

Veronica virginica L.

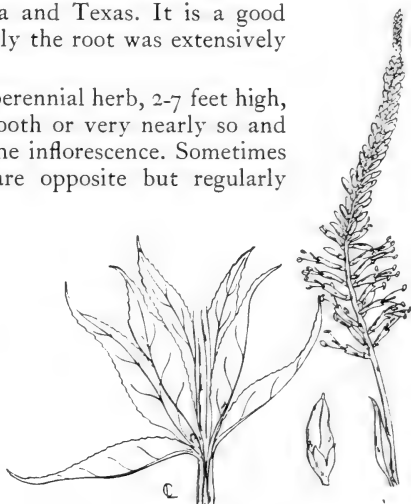
The Culver's Root is closely related to the Speedwells, page 310, which one would never suspect from its growth habits and general appearance. It grows in woods, meadows and other open places from Massachusetts to Ontario and Manitoba, south to Alabama and Texas. It is a good honey plant and formerly the root was extensively used in medicine.

This is a tall, stout, perennial herb, 2-7 feet high, with a stem that is smooth or very nearly so and unbranched except in the inflorescence. Sometimes the uppermost leaves are opposite but regularly all are in whorls of 3-7. They are short petioled, finely toothed, and may be smooth on both sides or somewhat hairy below.

Usually there are several very dense spikes of flowers blooming during July and August, the terminal spike developing first. The calyx is

4-parted and short. The white or sometimes bluish corolla is tubular, nearly regular and 4-lobed at the end. The tube is much longer than the lobes. Two long stamens are inserted low on the corolla tube and extend well out of the flower. The style is about as long as the stamens and the stigma is very small. The many-seeded capsule is oblong-ovate, not notched, 2-3 times as long as the calyx and opens by 4 teeth at the apex.

The Thyme-leaved Speedwell, *Veronica serpyllifolia* L., is a low perennial herb with dainty blue and dark-striped flowers, common in fields and open woods. The long stems come from a fibrous root, extend over the ground and turn upward a few inches from the tip. The fruits are obcordate capsules, a little shorter than the hairy calyx and tipped with the long slender style. This plant is known in Asia, South America and Europe, and its recorded spread over this continent is from Labrador to Alaska and south to Georgia and California. It blooms from April to August.



CORN SPEEDWELL

Veronica arvensis L.

The Speedwells are mostly very small and insignificant plants that are easily overlooked. They are common, however, in fields, woods and waste places, and in cultivated soil. One or more kinds are apt to be along the edge of a lawn almost any time during the summer, and in all these places are known from Nova Scotia to British Columbia, south to Florida, Texas and California. Several species are natives of this continent but the Corn Speedwell is an immigrant from Europe.



It is an annual and the whole plant is very hairy. The stem is slender and finally becomes much branched, the branches being 3-10 inches long and spreading. The lowest leaves are petioled but the upper are sessile.

The flowers are produced from March to September on very short peduncles in the leaf axils. The calyx is cleft into 4 narrow segments. The corolla is blue, sometimes very pale blue, and unequally 4-lobed. There are only 2 stamens, 1 on either side at the base of the upper corolla lobe. The ovary is 2-celled and the style slender. The capsule is flattened and 2-lobed.

The Purslane Speedwell or Neckweed, *Veronica peregrina* L., is much less hairy or nearly smooth, 4-12 inches erect, and branched. The upper leaves are narrow, entire and sessile, whereas the lower are a little broader, either sessile or very short petioled and usually slightly toothed. The flowers of this species are nearly white, almost sessile and in bloom from May to October. The heart-shaped capsule is a little shorter than the calyx and contains many flat seeds. This plant is known in moist and cultivated soil throughout the United States.

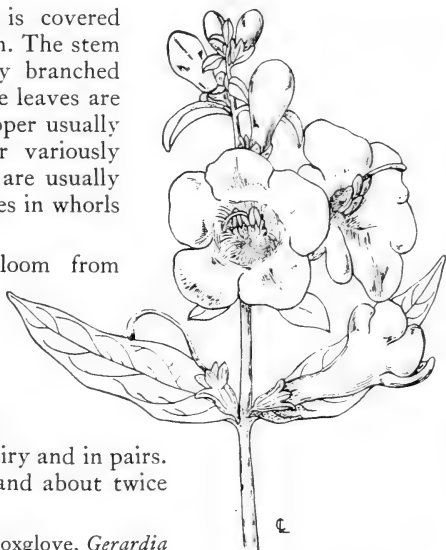
DOWNY FALSE FOXGLOVE

Gerardia flava L.

The Downy False Foxglove is found in dry openings in woods and thickets from Maine to Ontario and Wisconsin, south to Georgia and Mississippi. It is perennial and partly parasitic on the roots of other plants.

The whole plant is covered with a soft close down. The stem is simple or sparingly branched and 2-4 feet high. The leaves are quite variable, the upper usually entire and the lower variously cut and toothed. All are usually opposite but sometimes in whorls of 3.

The Foxgloves bloom from July to September. The 5 lobes of the calyx are about as long as the tube. The corolla is yellow and smooth outside. The 4 stamens are quite hairy and in pairs. The capsule is hairy and about twice as long as the calyx.



The Smooth False Foxglove, *Gerardia virginica* (L.) BSP., has flowers very much like those of the downy species except that the corolla is not so widely expanded above. The plant is somewhat larger, being 3-6 feet tall, and is not downy. The leaves are usually petioled and much more deeply cut. None are entire. The capsule is without hairs.

The Entire-leaved False Foxglove, *Gerardia laevigata* Raf., differs from the Smooth False Foxglove principally in having entire leaves, or at most the lowest obscurely toothed. The pedicels are shorter than the calyx tube and there is no bloom on the stems as commonly appears on the smooth species.

A fairy, cradled in each bloom,
To all who pass the charmed
spot
Whispers in warning: "Friend,
admire—
But touch me not!

"Leave me to blossom where I
sprung,
A joy untarnished shall I seem;
Pluck me, and you dispel the
charm
And blur the dream!"

Jewelweed—FLORENCE EARLE COATES

SLENDER GERARDIA

Gerardia tenuifolia Vahl

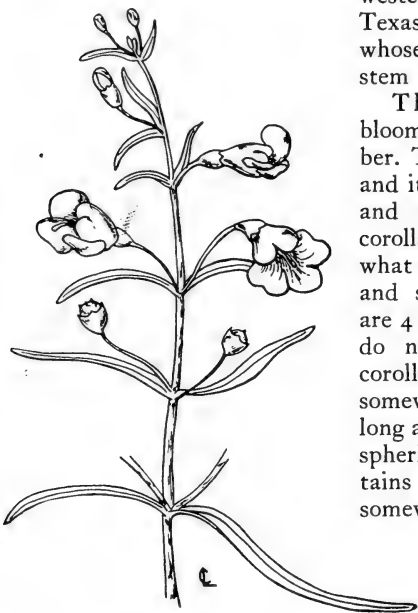
This is our commonest species of *Gerardia* and it grows in both moist and dry places, in woods that are not too dense or in open areas. It is found from Quebec to Georgia and west to western Ontario, Kansas and Texas. It is a smooth annual whose slender, much branched stem grows 6-24 inches high.

The Slender *Gerardia* blooms from August to October. The calyx is bell shaped and its 5 teeth are very short and pointed. The irregular corolla is light purple and somewhat spotted, or rarely white, and slightly 2-lipped. There are 4 stamens, in pairs, which do not extend beyond the corolla tube. The filaments are somewhat hairy. The style is long and slender. The fruit is a spherical capsule which contains a very large number of somewhat angled seeds.

The Purple *Gerardia*, *Gerardia purpurea* L., is another species found in moist fields and meadows. The vegetative parts of the

plant are very much like those of the Slender *Gerardia* except that the leaves are a little longer. The blooming season is the same but the flowers of this species are larger and somewhat different. They are about 1 inch long and equally broad. The calyx teeth are triangular and nearly half as long as the tube. The corolla is purple, very much expanded above and covered outside with short hairs.

The Auricled or Eared *Gerardia*, *Gerardia auriculata* Michx., is a rare annual, particularly of the northwest portion. Its slender, hairy stems are 1-2 feet high and simple or branched above. The abundant sessile leaves are ovate-lanceolate, acuminate, and mostly rounded and 2-lobed at the base. Purple flowers are solitary in the upper axils and the 1-inch corollas are smooth within but exceedingly downy outside. Anthers of the short stamens are the smaller.



WOOD BETONY. COMMON LOUSEWORT

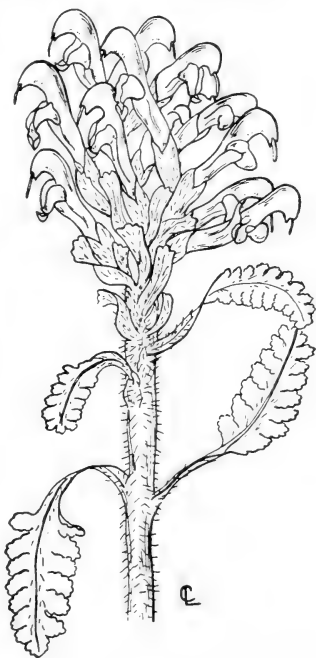
Pedicularis canadensis L.

The superstition that this plant bred lice in sheep that fed on it accounts for the name Lousewort. Wood Betony is the more correct name. It grows in dry open woods and thickets and on dry open knolls and slopes from Nova Scotia to Manitoba, south to Florida, Mississippi and northern Mexico. It is sometimes partly parasitic on the roots of other plants.

There is usually a cluster of very hairy stems which grow 6-18 inches high. The leaves are scattered and all but the uppermost are petioled. The lower are pinnately divided and the upper are variously toothed and lobed.

The blooming season is April to June. The yellow, though often reddish, flowers are produced in a short dense spike. The hairy calyx is split down the front but is otherwise almost entire, though somewhat 1-sided. The corolla is strongly 2-lipped, the upper lip arched and incurved, whereas the lower is 3-lobed. The 4 stamens are paired within the upper lip. The capsule is slightly 1-sided and about 3 times as long as the calyx.

The Swamp Betony, *Pedicularis lanceolata* Michx., grows in wet places, is nearly smooth throughout and 1-3 feet high. The leaves are doubly cut toothed and some of them are opposite. The calyx is 2-lobed and the lobes have leaflike margins. The upper lip of the pale yellow corolla is incurved, and the capsule is not much longer than the calyx. This plant occurs from Ontario to Manitoba, south to Virginia, Ohio and Nebraska, and flowers from August to October.



TRUMPET FLOWER. TRUMPET CREEPER

Tecoma radicans (L.) Juss.

The Bignonia family is composed of trees, shrubs and woody vines, most of which have large and showy flowers. Most of them are tropical plants. The familiar Catalpa trees

and the Cross Vine, which are found in the extreme southern end of the state, belong to this family. The seeds of all members are winged.



Flowers of the Trumpet Creeper are pollinated largely by hummingbirds, which obtain nectar from the bases of the long corolla tubes. Nectar glands are also found on the outside of the calyx, and these are frequented by ants.

The Trumpet Flower or Trumpet Creeper is found in moist woods and thickets or in waste places in the open from New Jersey to Illinois and Iowa, south to Florida and Texas. It is rare or

absent from extreme northern Illinois but is common in the central and southern parts. This is a woody vine which climbs 20-40 feet high or in open places grows prostrate or sometimes takes the form of a shrub. The opposite leaves are compound, with 7-11 leaflets. The latter are ovate to lanceolate, short stalked, sharply toothed, net veined, smooth or slightly hairy on the veins beneath, acute or acuminate at the tip and narrowing at the base, and are 1½-3 inches long.

The large scarlet flowers are produced in August and September in clusters of 2-9. The calyx is bell shaped and 5-toothed. The long tubular corolla is slightly 2-lipped and 5-lobed at the end. The 4 stamens are arranged in pairs beneath the upper lip of the corolla and do not extend out of the flower. The pistil consists of a 2-celled ovary, a slender style and a 2-lobed stigma. The fruit is a podlike capsule 4-6 inches long, containing a large number of flat, winged seeds.

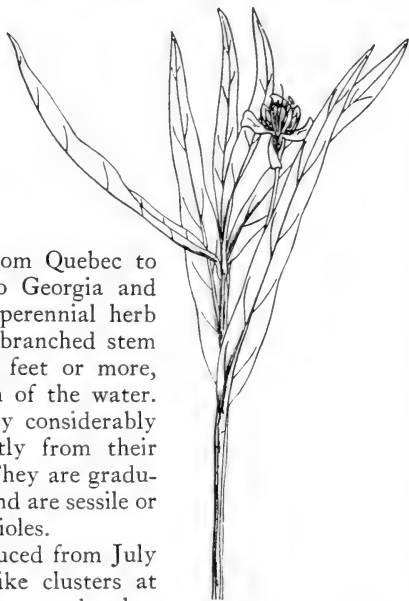
WATER WILLOW

Dianthera americana L.

The family is chiefly tropical with only a few representatives in our state. The Water Willow is so called because its leaves resemble those of some Willows, but it is totally unrelated to the *Salicaceae* or Willow family. It could almost as appropriately be called Water Orchid because of the resemblance its flowers have to some Orchids.

The plant grows in the water of shallow slow-running streams from Quebec to Wisconsin and south to Georgia and Texas. It is a smooth perennial herb with a slender, usually branched stem that grows upright 1-3 feet or more, depending on the depth of the water. The opposite leaves vary considerably in size, but only slightly from their linear-lanceolate form. They are gradually acuminate, entire, and are sessile or narrowed into short petioles.

The flowers are produced from July to September in spikelike clusters at the ends of slender axillary peduncles. The calyx is deeply 5-parted. The purplish corolla is very irregular, with a slender tube and a distinctly 2-lipped limb. The upper lip is somewhat concave and notched at the tip, and the lower is 3-cleft and rough on the inner surface. The 2 stamens are inserted on the throat of the corolla. There is 1 pistil. The fruit is a capsule about one-half inch long, exceeding the calyx, its stalk about the length of the compressed body, which contains 4 flat seeds.



The larkspur lifts on high its azure spires,
 And up the arbor's lattices are rolled
 The quaint nasturtium's many-colored fires;
 The tall carnation's breast of faded gold
 Is striped with many a faintly flushing streak,
The Old-fashioned Garden—JOHN RUSSELL HAYES

SMOOTH RUELLIA

Ruellia strepens L.

Unlike the Water Willow, the Smooth Ruellia grows in dry places and rich soil in woods, along roadsides or other open places from Pennsylvania to Wisconsin and south to Florida and Texas. It is a nearly smooth perennial herb. The slender stem is 4-sided, 1-4 feet high and usually branched. The leaves are 3-6 inches long and petioled.



Either solitary flowers or several together in the axils of leaves are produced from June to September. Sometimes some of the flowers are very small and do not open but are self-pollinated in the bud and produce seeds. The calyx of the ordinary flower is 5-parted; the corolla is blue and slightly irregular. Four stamens are attached to the corolla tube. The capsule is club shaped and contains 6-20 seeds with mucilaginous coats.

The Hairy Ruellia, *Ruellia ciliosa* Pursh, is covered with soft whitish hairs. The oval or oblong leaves are nearly sessile and smaller than in the smooth species. The corolla tube is fully twice the length of the calyx lobes and the throat is rather short. Sometimes the 2 species are cross-pollinated and hybrids result.

The record for this genus in Illinois is completed by the Stalked Ruellia, *Ruellia pedunculata* Torr., which occurs in dry rocky hills of the extreme south. It grows up to 2½ feet, is much branched and bearing generally long-pointed, ovate or ovate-lanceolate leaves. The axillary inflorescence of 1-3 flowers is supported by a long slender peduncle at whose summit are 2 leaflike bracts subtending the 1 or more similarly bracted pedicels.

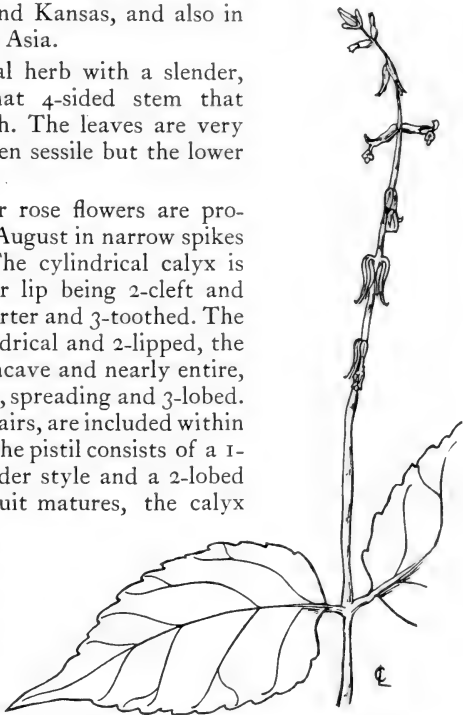
LOPSEED

Phryma Leptostachya L.

The Lopseed has no relatives, it alone constituting the family. However, it always has an abundance of neighbors for it mingles with many other kinds of plants in forest communities. It is found from New Brunswick to Manitoba, south to Florida and Kansas, and also in eastern and central Asia.

It is a perennial herb with a slender, branched, somewhat 4-sided stem that grows 1-3 feet high. The leaves are very thin, the upper often sessile but the lower distinctly petioled.

The purplish or rose flowers are produced in July and August in narrow spikes 3-6 inches long. The cylindrical calyx is 2-lipped, the upper lip being 2-cleft and the lower much shorter and 3-toothed. The corolla is also cylindrical and 2-lipped, the upper lip erect, concave and nearly entire, and the lower larger, spreading and 3-lobed. The 4 stamens, in pairs, are included within the corolla tube. The pistil consists of a 1-celled ovary, a slender style and a 2-lobed stigma. As the fruit matures, the calyx which encloses the akene is reflexed downward against the stem. It is because of this character that the plant is called Lopseed.



From shapeless roots and ugly bulbous things,
 What gorgeous beauty springs!
 Such infinite variety appears,
 A hundred artists in a hundred years
 Could never copy from a floral world
 The marvels that in leaf and bud lie curled.

My Flower Room—ELLA WHEELER WILCOX

PARTRIDGE BERRY

Mitchella repens L.

The Madder family is very large and noteworthy, with most of its members tropical. Most important economically are the Coffee and Quinine plants. A number of species are cultivated



for their beautiful flowers. Certain tropical members have on their leaves little tubercles inhabited by bacteria which have the ability to utilize nitrogen of the atmosphere in much the same way that bacteria in root tubercles of the Pulse family do.

This very pretty trailing herb is found

in dry woods from Nova Scotia to Minnesota and south to Florida and Texas, creeping about the bases of trees. Not common in most parts of Illinois, it is found locally throughout, particularly in rocky woods.

The branching stems, 6-12 inches long, root at the nodes. The leaves are often variegated with whitish lines. Generally they are ovate-circular, obtuse at the apex and round or slightly heart shaped at the base, opposite, petioled and entire or wavy margined.

The dimorphous flowers are white and fragrant. They are produced from April to June in pairs on a common peduncle, with their 2 ovaries united. The calyx is tubular and 4-toothed. The corolla is tubular, 4-lobed at the end and densely bearded inside, with 4 stamens inserted in the throat. The style is slender and there are 4 stigmas. The bright red and edible, though nearly tasteless, fruit is a sort of double berry with 2 "blow ends" which mark the former positions of the flowers. These berries persist through the winter.

BUTTONBUSH

Cephalanthus occidentalis L.

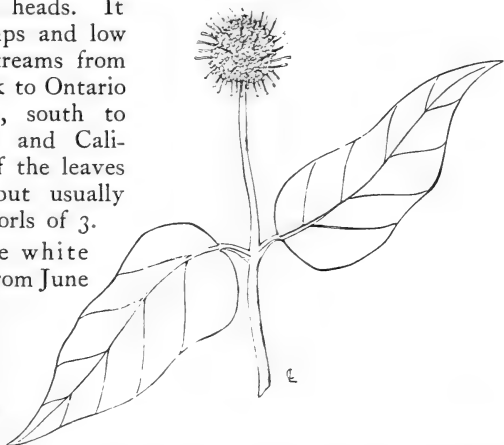
[The Buttonbush is a shrub 3-12 feet high, or sometimes a tree up to 20 feet. It is an excellent honey plant, often called Honey Balls because its fragrant nectar-producing flowers are borne in dense spherical heads. It grows in swamps and low places along streams from New Brunswick to Ontario and Wisconsin, south to Florida, Texas and California. Most of the leaves are opposite but usually some are in whorls of 3.

The sessile white flowers bloom from June to September. Calyx and corolla, the latter much the longer, are tubular and 4-lobed.

The 4 stamens are inserted on the throat of the corolla and have very short filaments. The style is very slender and about twice the length of the corolla. The fruit is dry and 1 or 2-seeded.

Another group of common plants belonging to the Madder family is that of Bedstraw or *Galium*. Of the many kinds, perhaps the commonest is Cleavers or Goose Grass, *Galium Aparine* L., abundant in rich woods. The square stem is weak and sprawling, and on the angles has prickles that curve downward. The flowers are very small and white, and the fruits are densely covered with hooked bristles to form burs. The oblanceolate leaves are in sixes or eights.

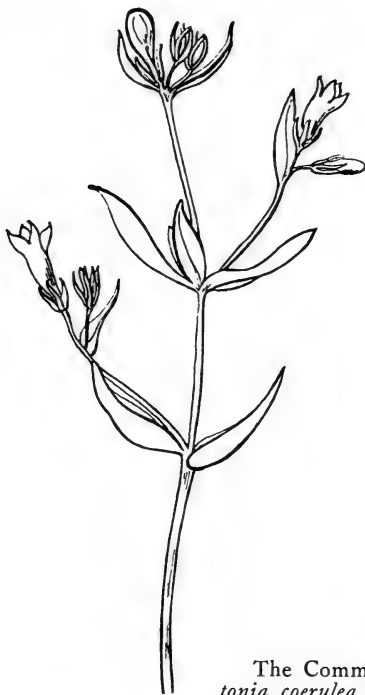
Two other Illinois members of this genus are the Marsh Bedstraw, *Galium palustre* L., and the Shining Bedstraw, *Galium concinnum* T. & G. The first lives in wet meadows and swales, the second in dry open woods. The 16-inch stem of Marsh Bedstraw is little branched and slightly rough on the angles, that of the wood plant is low, much branched, even matting, and minutely but distinctly rough on the angles. The linear-elliptic, blunt-tipped and smoothish-margined leaves of *G. palustre* are grouped by twos to sixes at the nodes, but usually by fours, whereas the always linear leaves of *G. concinnum* are in whorls of 6 and their edges are rough. The large corolla of Marsh Bedstraw is always white but the minute one of Shining Bedstraw varies to rose tinged.



LONG-LEAVED BLUETS

Houstonia longifolia Gaertn.

Several kinds of Bluets occur in Illinois. This one, whose leaves are really no longer than those of some others, grows in dry open places from Maine to Saskatchewan and south to Georgia and Missouri. It is a small, usually tufted perennial with nearly smooth stems that grow 5-10 inches high. The basal leaves are linear, 1-nerved and sessile.



The little pale purple or nearly white flowers are produced from May to September in loose clusters at the ends of the branches. The calyx is tubular and has 4 narrow lobes. The corolla is funnel shaped and also 4-lobed. Four short stamens are inserted on the throat of the corolla. The pistil consists of a 2-celled ovary, a slender style and 2 narrow stigmas. The fruit is a slightly compressed globose-ovoid capsule about one-twelfth of an inch in diameter and only partly enclosed by the calyx.

The Common Bluets or Innocence, *Houstonia coerulea* L., is usually the commonest species in most grassy places or on wet rocks.

It grows 3-7 inches high and spreads by slender underground stems, forming dense tufts or mats. The leaves, one-half inch long, are similar to those of the Long-leaved Bluets. The delicate little flowers are produced from early spring until midsummer and are light blue, pale lilac or nearly white with a yellowish center, up to one-half inch broad and with the slender tube approximately the length of the lobes. This perennial is found from Nova Scotia to Ontario and Wisconsin, south through Georgia to Alabama.

SMOOTH-LEAF HONEYSUCKLE

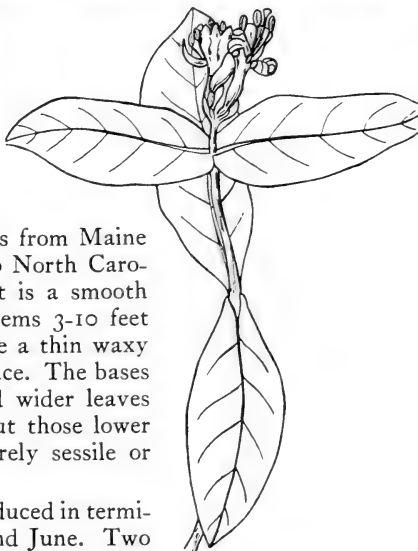
Lonicera dioica L.

The Honeysuckle family contains some of our most highly prized ornamental shrubs and vines but otherwise is not of much economic importance. Climbing Honeysuckles are extensively used for covering trellises and for other ornamental purposes, and in most cases foreign species are preferred to the native.

The Smooth-leaf Honeysuckle is found in moist and dry woods and in bogs from Maine to Manitoba, south to North Carolina and Missouri. It is a smooth twining shrub with stems 3-10 feet long. The leaves have a thin waxy coat on the lower surface. The bases of the uppermost and wider leaves are grown together but those lower and narrower are merely sessile or short petioled.

The flowers are produced in terminal clusters in May and June. Two color forms are recognized; one is yellowish green usually tinged with purple, and the other, much more common in Illinois, is red. The calyx is short, tubular and slightly 5-toothed. The tubular corolla, with 5 inserted stamens is swollen on 1 side at the base, and at the other end 2-lipped and 5-lobed. The pistil consists of a 2 or 3-celled ovary, a slender style and an unlobed stigma. Stamens, style and the inner surface of the corolla tube are hairy. The fruit is a red few-seeded berry.

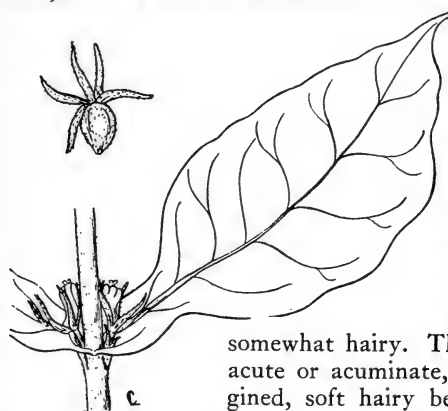
Resembling the Smooth-leaf Honeysuckle but covered with whitish bloom and having larger flowers is Sullivant's Honeysuckle *Lonicera Sullivantii* Gray, which may be found blooming from April to September in low grounds or on hillsides. The tube of the pale yellow flowers is about one-half inch long, slightly exceeding the limb and the yellow fruit is one-quarter inch in diameter.



HORSE GENTIAN.. WILD COFFEE

Triosteum perfoliatum L.

This interesting plant has various other names, such as Feverwort and Tinker's Weed. Formerly it was much used in medicine, and it is said that Indians made a beverage from the fruits.



It is found in rich, low open woods from Massachusetts to Illinois and Nebraska, south to Alabama and Missouri.

The stout stem is 2-4 feet high and covered with fine glandular hairs. Leaves, calyx, corolla and the filaments are also

somewhat hairy. The 4-9-inch leaves are acute or acuminate, entire or wavy margined, soft hairy beneath and somewhat hairy above, and are abruptly or gradually narrowed into clasping bases that join around the stem.

The plant blooms in May and June and the fruits ripen in August and September. Perfect, sessile and 2-bracted flowers are solitary or clustered in the leaf axils. The corolla is purplish brown. The berries are orange-yellow, densely covered with fine hairs, about one-half inch long, flat globular, and contain usually 3 single-seeded nutlets.

The Scarlet-fruited Horse Gentian, *Triosteum aurantiacum* Bicknell, is a tall, coarse, open woodland perennial that flowers 2-3 weeks earlier and is to be found locally. The lower of the large broad leaves are sessile by narrowly winged bases that do not clasp the stem. The corolla is dull red with more spreading lobes than in the Horse Gentian, and the half-inch fruit is a bright orange-red ellipsoid drupe.

Another shrub of the Honeysuckle family is the Indian Currant or Coralberry, *Symphoricarpos orbiculatus* Moench, uncommon or absent in the extreme northern part of the state but abundant in open woodland pastures and along roadsides farther south. It is 2-5 feet high, the branches light brown and soft hairy, and has opposite, oval or ovate, entire leaves 1-2 inches long and very short petioled. Pinkish flowers are produced in dense axillary spikes in July. In fall the twigs are loaded with the purplish red berries, which hang on and retain their color until late winter.

SOUTHERN BLACK HAW

Viburnum rufidulum Raf.

The Southern Black Haw is a shrub or small tree of woods and thickets from New Jersey to Illinois and Kansas, south to Florida and Texas. It does not occur in northern Illinois but is not uncommon in central and southern parts. The young branches are covered with soft rusty-colored hairs.

Large clusters of white flowers appear in June. The calyx is 5 toothed and the wheel-shaped corolla is equally 5-lobed with 5 stamens inserted on its tube and extending beyond. The style is short and 3-lobed. The fruit is a small, nearly black drupe which ripens in October and is edible. The seed is flat and nearly round.



The Nannyberry or Sweet Viburnum, *Viburnum Lentago* L. is found throughout the state, usually in low or boggy places. It is a shrub or small tree 3-18 feet high, excellent for ornamental planting. The leaves are slender petioled, ovate, rather long pointed and closely and sharply toothed along the margin. Usually some of them have winged petioles. The large clusters of white flowers appear in May and June and are very fragrant. The black, usually oblong and edible fruits mature in September and October. The seed is flat and oblong. Winter buds are smooth and acuminate.

The Black Haw or Stag Bush, *Viburnum prunifolium* L., is a tall erect and rapid-growing shrub similar to the Nannyberry, with a tendency to crowd in moist thickets. The winter buds, however, are smaller, blunted and often with reddish hairs. The ovate leaves are slightly or not pointed, finely toothed and with lower surfaces and slender petioles smooth. The white 5-petalled flowers are in small sessile cymes. The oval bluish black drupe is hoary, flattened and one-half inch long.

COMMON ELDER

Sambucus canadensis L.

Horticultural varieties of Elder which may be purchased are no more desirable for ornamental planting than this common form. The berries are excellent for jellies and pies; mixed

with apples and stewed they make an excellent sauce which is sometimes used on shortcake in place of strawberries. Leaves, bark and flowers have been used in medicine for a number of ailments.

The Common Elder is a handsome shrub growing 4-10 feet high. It prefers moist soil and full sunlight, and is found from Nova Scotia to Manitoba, south to Florida and Texas.

The stems are smooth, soft and woody, and contain a large white pith. Individually they live usually 3-5 years but new shoots sprout from the from dying out. Leaflets are 5-11, usually 7, ovate or oval, acute to acuminate, 2-5 inches long,



sharply serrate and smooth above but sometimes slightly hairy on the veins beneath.

Numerous large flat clusters of white flowers appear in June and July, and the dark purple berries ripen in September. The flowers are very fragrant and so visited by many pollinating insects, and the fruits are greedily eaten by birds. There are usually 5 lobes to the corolla, 5 stamens and 3 stigmas. The deep purple or black drupes are one-quarter inch in diameter and contain 3-5 roughened 1-seeded nutlets.

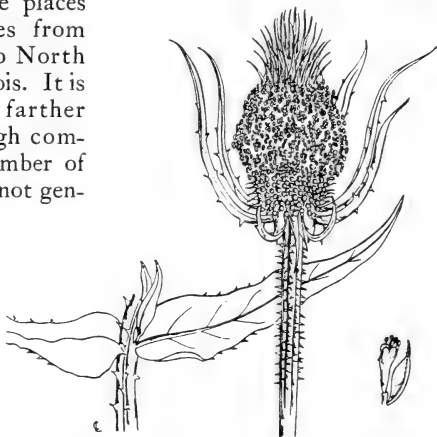
WILD TEASEL

Dipsacus sylvestris Huds.

The Teasel family is small, and all its members are natives of the Old world.

Wild Teasel was introduced into this country from Europe and is found in waste places and along roadsides from Maine and Ontario to North Carolina, west to Illinois. It is gradually spreading farther west and south. Though common locally in a number of places in Illinois, it is not general throughout.

This is a biennial herb, producing the first year only a rosette of leaves that remain green all winter, and the second year a stout stem 3-6 feet high. Stems, peduncles,



midribs of the leaves and the involucre below the inflorescence are armed with numerous prickles. The opposite leaves are sessile and usually the upper have their bases grown together to form a sort of cup which is often filled with water after rains. The upper leaves are also acuminate and generally entire but the lower, often 1 foot long, are obtuse, round toothed or sometimes pinnately cleft at the base.

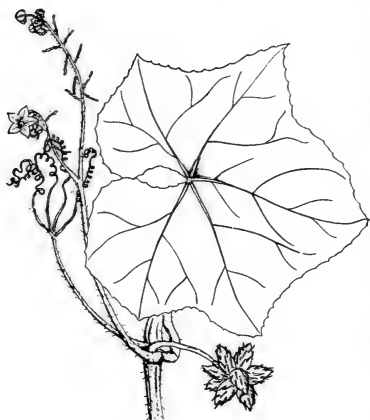
The flowers bloom from July to September, progressively upward from the base of the inflorescence. The heads are at first ovoid, become cylindric, and at length are 3-4 inches long. The linear leaves of the involucre are curved upward and as long as the head or longer. Each flower is accompanied by a chaffy bract and also a 4-leaved calyxlike involucre, and both of these structures are spiny pointed. The calyx itself is grown fast to the ovary and is cup shaped above. The blue or lilac corolla, attached above the ovary, is tubular, 2-lipped and 4-lobed. Four stamens are attached to the tube. The fruit is an akene.

ONE-SEEDED BUR CUCUMBER

Sicyos angulatus L.

The Gourd family consists mostly of annual climbing herbs with branched tendrils, and is largely tropical or subtropical. Many of its members are cultivated here, among which are

Squash, Summer Squash, Pumpkin, Cucumber, Watermelon, Muskmelon, Citron and Gourd. The three members native in Illinois are given here.



This vine is found in moist places, especially along river banks, from Quebec to Ontario and South Dakota, south to Florida and Texas. Sometimes it is called Nimble Kate, probably because of its agility in climbing over other plants.

The stem is angled and somewhat sticky with glandular hairs. It climbs to a height of 15-25 feet, or is sometimes low trailing. The leaves, sometimes as much as 10 inches across, are rather thin and rough above and below.

The blooming season is April to September. The flowers are imperfect and the plants monoecious. The staminate flowers are produced in a loose raceme on a long peduncle in the axil of a leaf. The calyx is cup shaped and 5-toothed. The white or greenish white corolla is wheel shaped and 5-parted nearly to the base. The 3 stamens have their filaments united into a short tube and the anthers are also somewhat united.

The pistillate flowers are borne, several together, in a headlike cluster at the end of a peduncle, often in the same axil as the staminate cluster. The flower parts are above the ovary. The style is short and slender, and there are usually 3 stigmas. The 1-seeded fruit is dry, yellowish, somewhat hairy and covered with slender rough spines which are easily detached.

WILD CUCUMBER. WILD BALSAM APPLE

Echinocystis lobata (Michx.) T. & G.

The Wild Cucumber or Wild Balsam Apple is found along rivers and in waste places from New Brunswick to Manitoba and south to Virginia and Texas. It is often used as an ornamental plant for covering unsightly objects. The flowers are very fragrant at night.

The stem is nearly smooth but angular and grooved. It is much branched and climbs to a height of 15-25 feet. The leaves are rough on both sides.

The flowers, produced from July to September, are imperfect, with both forms on the same plant. The staminate flowers are greenish white and very numerous in axillary compound racemes.

The pistillate are usually solitary in the same axils. Each staminate flower has 3 stamens. The fruit is at first fleshy but finally becomes dry and is thickly covered with weak prickles. It usually contains 4 large flat seeds.

The Missouri or Fetid Wild Gourd, *Cucurbita foetidissima* HBK., is a trailing plant whose large, rough, angled stems extend 5-25 feet and bear few very large, alternate leaves that are long petioled, triangular-ovate and heart shaped at the base. It is perennial by an enormous root, sometimes 6 inches in diameter, which descends to unusual depths in search of moisture. The imperfect flowers are very large, yellow and solitary in the axils from May to September. Stamens are 3, pistil 1, and the globose ovary develops into a large yellow, thick-rinded berry called a pepo.



VENUS' LOOKING GLASS

Specularia perfoliata (L.) A. DC.

This is a small flower that grows mostly in dry open places from Maine to British Columbia and south to Florida and Mexico. It also occurs in some of the islands of the West Indies.

It is an annual plant with a slender, rather weak stem 6-24 inches high, more or less hairy and densely leafy. It is usually simple but sometimes branches near the base. Leaves are 6-24 inches long and one-quarter inch to 1 inch wide, and round toothed or sometimes entire. The upper are strongly clasping about the stem but the lower may be merely sessile.

The flowers, which may be produced any time between May and September, are 1-3 sessile in the axils of the leaves. Early flowers are produced in the lower axils and have a 3 or 4-lobed calyx and a shorter, rudimentary corolla, but are dwarfed and do not open. Later flowers are borne higher on the stem and have a 4 or 5-lobed calyx and a beautiful blue or violet wheel-shaped corolla nearly 1 inch broad. There are 5 stamens with flat, membranous, hairy filaments that are shorter than the anthers. The 3-celled ovary is below the other floral parts and there is 1 style with 3 stigmas. The capsule is oblong or narrowly top shaped and it finally opens at about the middle by 3 little valves. The many small seeds have the shape of a double convex lens.



And Sunday flowers were here as well—
 Adam and Eve within their hood,
 The stately Canterbury bell,
 And, oft in churches breathing fragrance,
 The sweet and pungent southernwood.

A Puritan Lady's Garden—SARAH N. CLEGHORN

TALL BELLFLOWER

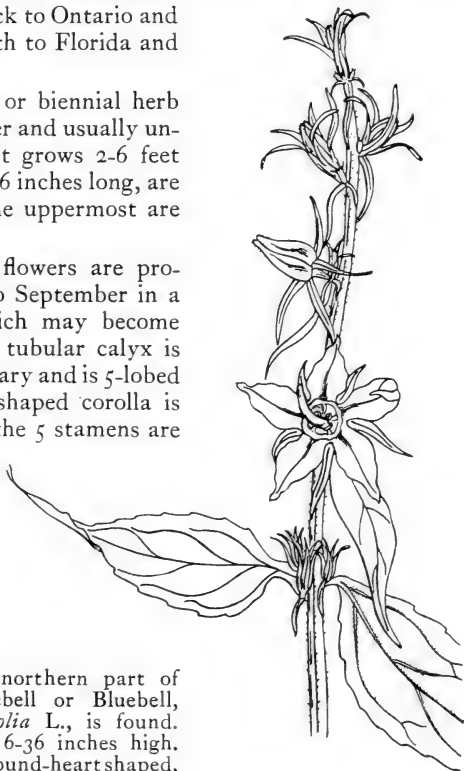
Campanula americana L.

Among the plants of this economically unimportant family which are cultivated for their beautiful flowers are the Canterbury Bells, the Bluebells and the Bellflowers. The Tall Bellflower is found in moist woods and thickets from New Brunswick to Ontario and South Dakota, south to Florida and Kansas.

It is an annual or biennial herb with a rather slender and usually unbranched stem that grows 2-6 feet high. The leaves, 3-6 inches long, are thin and all but the uppermost are petioled.

The light blue flowers are produced from July to September in a terminal spike which may become 1-2 feet long. The tubular calyx is grown fast to the ovary and is 5-lobed above. The wheel-shaped corolla is deeply 5-cleft and the 5 stamens are attached at its base. The style is curved upward and the stigma is 3-lobed. The fruit is a capsule which opens near the top by 3 small holes.

In the extreme northern part of the state the Harebell or Bluebell, *Campanula rotundifolia* L., is found. This is a perennial 6-36 inches high. The basal leaves are round-heart shaped, slender petioled, toothed or entire and often absent at flowering time, but the stem leaves are narrow, mostly entire and sessile. The beautiful blue flowers are distinctly bell shaped, nearly 1 inch long, and drooping or spreading on slender pedicels in a racemose inflorescence. The spreading awl-shaped calyx lobes are much longer than the short-top-shaped tube. The pendulous ribbed capsule opens by pores at the base.



CARDINAL FLOWER

Lobelia cardinalis L.

The members of the Lobelia family are widely distributed over the earth. Some of them contain a milky juice that is very poisonous. Quite a few are cultivated for the beauty of their flowers.



Bees cannot pollinate the Cardinal Flower, consequently it is one of the few native plants depending for pollination upon humming-birds, which alone can reach the nectar at the base of the long corolla tubes.

This is one of our most brilliant flowers of late summer and early fall. It grows in low places, especially along streams, throughout the state as well as in all other states east of the Mississippi, and westward into Texas.

The plant has a perennial underground stem which, together with the brilliant flowers, makes it very desirable in a wild-flower garden. The stems are usually 2 feet tall or taller, and the flowers are produced in a rather 1-sided cluster at the top. Usually they are intensely red but rare specimens of rose or even white occur.

The ovary is below the other parts of the flower with the calyx tube grown fast to it. The tubular corolla is split down the upper side. The style slowly pushes up through the 5 stamens united in a tube around it and the stigma opens only after their pollen has been shed, to insure cross-pollination. The fruit that ripens in autumn consists of a 2-celled capsule which opens at the top to expose innumerable seeds, undoubtedly the smallest of any Illinois wild flower.

And the red pennons of the cardinal flowers
Hang motionless upon their upright staves.

Among the Hills—JOHN GREENLEAF WHITTIER

GREAT LOBELIA

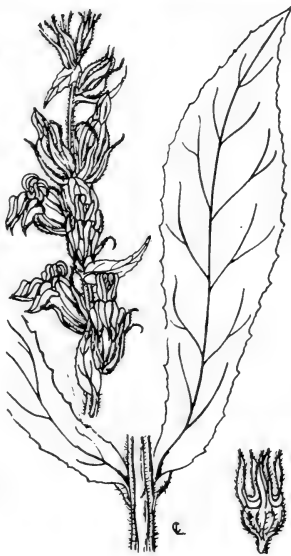
Lobelia siphilitica L.

The Great Lobelia is common in low grounds from Maine and Ontario to South Dakota and south to Georgia, Louisiana and Colorado. It is perennial by short offsets and blooms from July to October.

The stem is somewhat hairy, rather stout and very leafy. It is usually unbranched and grows 1-3 feet high. The leaves are nearly smooth and 2-6 inches long. The lower usually have short petioles, and the upper are sessile.

Deep blue or very rarely white flowers are densely arranged in a spikelike raceme. The flower parts are attached above the ovary. The calyx is quite hairy and has 5 narrow lobes, and in the sinuses between them are large earlike, deflexed appendages. The blue corolla is split down 1 side and 2-lipped at the end. There are 5 stamens with their anthers united in a ring around the style. Three of the anthers are larger than the other 2, which have a tuft of hairs at the tip. The ovary is 2-celled and the stigma 2-lobed. The fruit is a capsule containing hundreds of minute brown seeds.

Much daintier, with smaller blue flowers, is the Downy Lobelia, *Lobelia puberula* Michx., frequent in moist sandy places throughout the southern third of the state. The downy stems are very slender and unbranched. Leaves are sessile, oblong-lanceolate, densely short haired and very minutely toothed. The flowers are in bracted long spikelike racemes. The calyx has 5 elongated hairy lobes and the corolla is distinctly 2-lipped with the 3 broader lobes beneath. The larger anthers are minutely bearded. The fruit is a many-seeded capsule. This perennial is found from southern New Jersey to Florida, west to Illinois, Kansas and Texas, and blooms from August to October.



SPIKED LOBELIA

Lobelia spicata Lam.

This species is common on gravelly or sandy soil in open places or on prairies from New Jersey to Florida and west to Iowa and Texas, blooming from June to August. The stem is slender and grows 1-4 feet high. The many leaves are rather thick and pale green, the lower up to 3 inches in length and the upper much smaller, becoming bractlike.

The flowers are pale blue and less than one-half inch long. The spikelike raceme may become 2 feet long. The bracts that subtend the flowers are narrow and entire, and the ascending pedicels are very short. The calyx tube is usually smooth, top shaped and shorter than its somewhat hairy awl-shaped lobes. There are no appendages in the sinuses.

The Indian Tobacco, *Lobelia inflata* L., usually grows in dry soil in fields and thickets, and blooms from July to late fall. It is very acrid to the taste and quite poisonous, and has been noted as a quack medicine. It is an annual which is quite hairy. The stem is leafy, usually branched and 1-3 feet high. The thin, oval or oblong leaves are 1-2 inches long, the upper sessile but the lower usually on short petioles. The flowers are light blue and about one-quarter inch long. The calyx is smooth or nearly so. The capsule is much inflated or smaller when mature, and less than one-half inch long.

The Brook or Water Lobelia, *Lobelia Kalmii* L., is a low perennial by offsets which is found only in sands of the northeastern lake region. Its few leaves are nearly linear and the pale blue flowers, in loose-panicked racemes, are less than one-half inch long. The threadlike pedicels are about equal the length of the linear or hairlike bracts, and have 2 minute bractlets or glands above the middle. There are no appendages in the sinuses of the calyx. The bell-shaped capsule is



wholly inferior and less than one-quarter inch long.

This is the largest family of flowering plants, likewise the highest as it ranks above all others in complexity of structure and physiological processes, in relationship to insects and in method of seed dispersal. Some of its members are pernicious weeds, many are used as garden and greenhouse flowers, but otherwise surprisingly few are of economic importance.

The individual flowers in this family are small and produced in dense clusters called heads. What is commonly called a Dandelion flower, for example, is really a head composed of a large number of individual flowers. In the case of the Dandelion all the flowers have flat straplike corollas. In a plant like the Sunflower, on the other hand, the outermost flowers of the head, called ray flowers or more commonly rays, have strap-shaped corollas; the others, in the center and called disk flowers, have tubular corollas. A third type of head, such as in the White Snakeroot, has the corollas of all its flowers tubular.

The calyx, always above the ovary, is very much modified in these flowers and is called a pappus. In some cases it is composed of hairlike bristles and in others of awns or scales, and in a few genera it is lacking. The style of the sterile flower is always 2-cleft.

The head is in all cases surrounded by an involucre of more or less leaflike bracts. In many species there are bracts or scales on the receptacle among the flowers, spoken of as chaff. When they are absent the receptacle is said to be naked.

Cross-pollination is the rule among the Composites. In all species described in this book the anthers are grown together around the style and the pollen sacs open on the inward side. As the flower opens, the style, with its stigmas closed, pushes up through the united anthers, scraping pollen from them. The pollen mass remains partly adherent to the anthers and falls over onto their upper ends, instead of being carried along, as the style grows past. Only after the style has grown beyond the anthers do the stigmas open to receive the pollen which insects will bring from other flowers.

It will often require close observation to distinguish the different kinds of Composites but there should not be much difficulty in recognizing the ones included in this book. Many not included here are likely to be found, however, and for them more comprehensive manuals should be used.

KEY TO GENERA

1. All corollas strap shaped.....2
 All corollas tubular.....9
 Both strap-shaped and tubular corollas present.....17
2. All or nearly all leaves basal.....3
 Some of the leaves on upright stems.....4
3. Pappus composed of scales and bristles.....*Krigia* p. 386
 Pappus composed entirely of bristles.....*Taraxacum* p. 387
4. Pappus of scales; flowers mostly blue.....*Cichorium* p. 385
 Pappus of bristles.....5
5. Pappus white.....6
 Pappus creamy or yellowish.....8
6. Pappus like a feather.....*Tragopogon* p. 385
 Pappus hairlike.....7
7. Fifty or more flowers in each head.....*Sonchus* p. 388
 Not more than 30 flowers in each head.....*Lactuca* p. 389
8. Flowers yellow.....*Hieracium* p. 392
 Flowers whitish or purplish.....*Prenanthes* p. 391
9. Leaves and involucre very prickly.....*Cirsium* p. 383
 Leaves not prickly.....10
10. Involucre forming burs in fruit.....*Arctium* p. 382
 Involucre not forming burs.....11
11. Plants woolly.....12
 Plants not woolly.....13
12. Plants strongly odored.....*Gnaphalium* p. 357
 Plants not strongly odored.....*Antennaria* p. 356
13. Pappus of bristles.....14
 Pappus lacking; heads very small.....*Artemisia* p. 379
14. Involucre composed of 5 bracts.....*Cacalia* p. 380
 Involucre of more than 5 bracts.....15
15. Leaves opposite or whorled.....*Eupatorium* p. 337
 Leaves alternate.....16
16. Heads arranged in a spike.....*Liatris* p. 343
 Heads not in a spike.....*Vernonia* p. 336
17. Upper part of plant sticky or gumlike.....*Grindelia* p. 345
 Plant not sticky or gumlike.....18
18. Plants strongly odored.....19
 Plants not strongly odored.....21
19. Leaves finely divided.....20
 Leaves not finely divided.....*Polymnia* p. 358
20. Disk flowers yellow.....*Anthemis* p. 377
 Disk flowers white.....*Achillea* p. 376
21. Pappus composed of bristles.....22
 Pappus not composed of bristles.....26

22. Ray flowers yellow 24
 Ray flowers not yellow 23
23. Bracts of involucre equal in length *Erigeron* p. 354
 Bracts of involucre not equal in length *Aster* p. 350
24. Bracts of involucre equal in length *Senecio* p. 381
 Bracts of involucre not equal in length 25
25. Heads large *Chrysopsis* p. 346
 Heads small *Solidago* p. 347
26. Ray flowers yellow 29
 Ray flowers white 27
 Ray flowers purple *Brauneria* p. 366
27. Ray flowers about 20 or more *Chrysanthemum* p. 378
 Ray flowers 3, 4 or 5 28
28. Disk flowers yellow; stem winged *Verbesina* p. 370
 Disk flowers yellow; stem not winged *Galinsoga* p. 373
 Disk flowers white *Parthenium* p. 361
29. Leaf bases forming wings on stem 30
 Leaf bases not forming wings on stem 31
30. Corollas of ray flowers 3-lobed *Helenium* p. 374
 Corollas of ray flowers not lobed *Actinomeris* p. 370
31. Ray flowers producing akenes 32
 Ray flowers not producing akenes 33
32. Disk flowers producing akenes *Heliopsis* p. 362
 Disk flowers not producing akenes *Silphium* p. 359
33. Pappus of 2 or more awns 35
 Pappus essentially none 34
34. Akenes 4-sided *Rudbeckia* p. 363
 Akenes flat *Lepachys* p. 367
35. Pappus awns persistent 36
 Pappus awns easily falling off *Helianthus* p. 368
36. Pappus awns barbed *Bidens* p. 372
 Pappus awns not barbed *Coreopsis* p. 371

Dear common flower, that grow'st beside the way,
 Fringing the dusty road with harmless gold!

First pledge of blithesome May,
 Which children pluck, and, full of pride, uphold—
 High-hearted buccaneers, o'erjoyed that they
 An Eldorado in the grass have found,

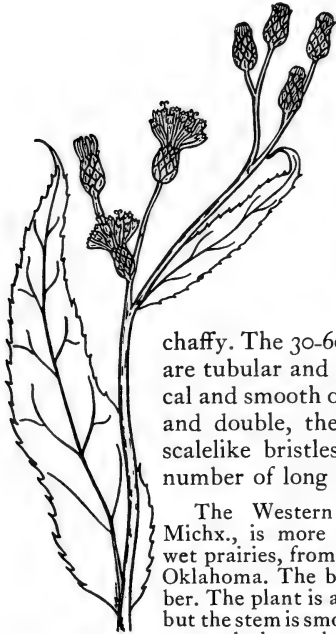
Which not the rich earth's ample round
 May match in wealth!—thou art more dear to me
 Than all the prouder summer blooms may be.

To the Dandelion—JAMES RUSSELL LOWELL

ILLINOIS IRONWEED

Vernonia illinoensis Gleason

The Illinois Ironweed is common on prairies and in other open places from Ontario to Illinois, Kentucky and Texas. It is perennial and has a stout, densely hairy stem that grows 3-6 feet high and is quite leafy. The leaves are quite similar and densely hairy on the lower surface.



This plant blooms in brilliant display from August to October. The inflorescence is usually quite compact as the heads have short peduncles. The involucre is rather short, cylindrical and its bracts are more or less hairy, purplish and arranged in several series. The receptacle is flat and not

chaffy. The 30-60 red-purple flowers of each head are tubular and perfect. The akenes are cylindrical and smooth or nearly so. The pappus is purple and double, the outer part consisting of small scalelike bristles and the inner part of a large number of long threadlike bristles.

The Western Ironweed, *Vernonia fasciculata* Michx., is more often found on low grounds and wet prairies, from Ohio to Minnesota, Nebraska and Oklahoma. The blooming season is July to September. The plant is about the same size as *V. illinoensis* but the stem is smooth or nearly so. The leaves are very narrowly lanceolate and are smooth or nearly so on both sides. They are 3-6 inches long and are usually less than one-half inch wide. The heads are smaller than in the Illinois Ironweed, being only 20-30-flowered, but otherwise they are similar.

The New York Ironweed or Flat Top, *Vernonia noveboracensis* Willd., has somewhat hairy to smoothish stems that rise 3-9 feet from the moist soil of wooded bluffs in the Illinois river system. The 3-10-inch leaves are lanceolate or narrowly oblong, fine toothed, more or less hairy beneath and narrowed into petioles. The peduncled heads are mostly 30-40-flowered, deep purple or rarely white. Bracts of the hemispheric involucre are brownish purple or greenish and have spreading awl-shaped tips usually 2-3 times their own length. The pappus is purplish or rarely green.

JOE PYE WEED

Eupatorium purpureum L.

The Joe Pye Weed is said to have received its name from the fact that an Indian named Joe Pye used it a great deal in medicine. It is common in moist soil from New Brunswick to Manitoba, south to Florida and Texas. The blooming season is August and September.

The stem grows 3-10 feet high, is usually unbranched except in the inflorescence, and is green or purple or sometimes spotted with the two colors. It is sometimes entirely smooth but often more or less hairy. The leaves are in whorls of 3-6. They are smooth or somewhat hairy on the lower surface along the veins.

The heads are very numerous in a compound panicle. Below them is a cylindrical involucre whose bracts are pinkish or purple and arranged in 4 or 5 series of unequal length, the outer being shorter. The receptacle is flat and naked. There are 3-15 flowers in each head, each having a 5-toothed tubular corolla which varies from pale pink to purple or occasionally whitish. The akenes are 5-angled and the pappus consists of a single row of slightly roughened, slender bristles. This species is probably pollinated mostly by butterflies, although it is visited also by various kinds of bees.



Names—they blossom into colored hills;

Hills whose rousing beauty flows to me . . .

And with all its soundless, purple trumpets,

Lo, the Joe Pye Weed still blows to me!

Joe Pye Weed—LOUIS UNTERMAYER

LATE-BLOOMING THOROUGHWORT

Eupatorium serotinum Michx.

The Late-blooming Thoroughwort is most frequently mistaken for the very poisonous White Snakeroot, page 341; therefore the differences between them should be carefully noted. This species



usually does not begin blooming until September and continues until killed by frost. Sometimes it grows in woods but is more often found in open places and in moist soil, such as river bottomland, from Delaware to Minnesota and south to Florida and Texas.

The stem is much branched and densely covered with fine hairs, much more so than White Snakeroot ever is. Also, it is taller, growing 4-8 feet high. All the leaves are slender petioled, lanceolate or ovate lanceolate, sharply toothed and 3-6 inches long, but on the average are narrower than those of the White Snakeroot, being from one-half inch to 2 inches wide.

They are 3-nerved but have a tendency to be 5-nerved at the base. Furthermore, although most of them are opposite, the upper ones are alternate and this is never true of White Snakeroot.

The heads are very numerous, the inflorescence being broadly cymose and about one-quarter inch high. The involucre is bell shaped and its narrowly oblong and hairy bracts are arranged in 2 or 3 series of very unequal length. There are 7-15 flowers in each head, and they are white but not pure white as are those of White Snakeroot.

TALL THOROUGHWORT

Eupatorium altissimum L.

The Tall Thoroughwort is also sometimes mistaken for White Snakeroot, page 341. It is less common than some of the other species and grows in dry open places from Pennsylvania and Minnesota, south to North Carolina and Texas.

This Thoroughwort resembles the late-blooming species on page 338, in that the stems of both are densely covered with fine hairs, and the blooming season, September to frost, is the same for both. The Tall Thoroughwort grows 4-8 feet high and is much branched near the top. Leaves, however, as well as the height of the plant, should serve to distinguish it from White Snakeroot; they are strongly 3-ribbed, lanceolate, gradually tapering below into a short petiole, rather thick and rough, toothed only above the middle or possibly entire. The lower leaves are opposite but the uppermost are alternate.



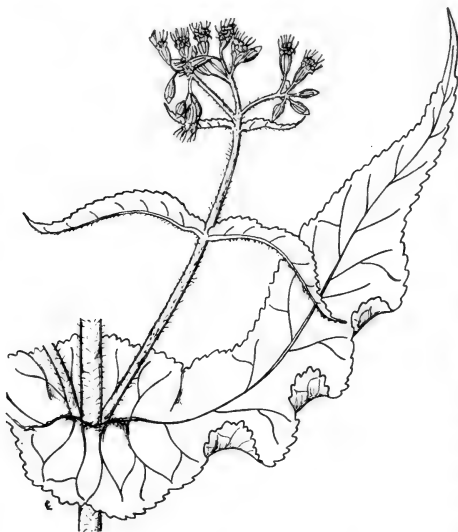
The heads are crowded in the large inflorescence but each head has only about 5 white flowers. The involucre is bell shaped and its bracts are oblong, rounded or blunt and densely hairy. They are arranged in about 3 series with the outer shortest. The akenes are 5-angled and the pappus is composed of slightly roughened, slender bristles.

The Upland Boneset, *Eupatorium sessilifolium* L., has a tall, smooth, branching stem which bears many ovate-lanceolate, serrate leaves that are rounded at the base and always opposite and sessile. The heads and inflorescence are much like those of Tall Thoroughwort, the former about three-quarters of an inch high, and the bracts linear-oblong. The plant is found in dry woods from Massachusetts and Pennsylvania to Alabama and Illinois. It blooms a few weeks earlier than the Tall Thoroughwort and lasts as long.

COMMON BONESET

Eupatorium perfoliatum L.

This is still another species often mistaken for White Snake-root, page 341, although it is really very different. It is a very common plant in wet places from Nova Scotia to Manitoba and south to Florida and Texas. It was formerly a common practice among country folk to steep the leaves of this plant to make "Boneset tea," which was used as a spring tonic and for various ailments.



The stem is stout and very hairy, growing 2-5 feet tall and branching near the top. The leaves are opposite or very rarely in threes, and their bases are grown together around the stem. This character alone is sufficient to

distinguish the plant from White Snakeroot. Further, they are rather rough and hairy on the lower surface, usually more or less wrinkled and very veiny.

The numerous heads are rather crowded in the large compound flat-topped inflorescence. Ten to 16 tubular and whitish or bluish flowers bloom in each head from July to September. The involucre is bell shaped and its lanceolate bracts are hairy. They are arranged in 2 or 3 series, the outer shorter. The akenes are 5-angled and the pappus is a single row of slender bristles.

Grandmother's gathering boneset today;
 In the garret she'll dry and hang it away.
 Next winter I'll "need" some boneset tea—
 I wish she wouldn't think always of me!

Grandmother's Gathering Boneset—EDITH M. THOMAS

WHITE SNAKEROOT

Eupatorium urticaefolium Reichard

White Snakeroot is the plant that causes "milk sickness." When cows eat this plant they become ill and produce poisonous milk which will sicken or kill persons who drink it. Horses and other animals have also suffered illness or death from eating this plant. It is often confused with some of the close relatives described on preceding pages, but it should be readily identified by its flowers and leaves.



The White Snakeroot usually grows in open woods or on partly wooded slopes and banks from New Brunswick to Nebraska, south to Florida and Louisiana. It grows 1-4 feet high and is commonly smooth, but the usually much branched stem is occasionally more or less covered with short soft hairs. The 3-nerved and veiny leaves are broadly ovate, 3-6 inches long, acuminate at the apex, and

coarsely and rather sharply toothed; all are opposite and thin and all except the very small ones at the top are petioled.

The blooming season is July to late autumn. The inflorescence is loose and consists of many heads with 10-30 tubular and pure white flowers in each. The receptacle is flat. The bracts of the involucre are narrow, usually about the same length and are ranged in 1 row, but sometimes a few on the outside are shorter.

MIST FLOWER

Eupatorium coelestinum L.

The Mist Flower grows in rich soil in partly exposed places from New Jersey to Michigan, Kansas and southwest. In Illinois it is found only along streams and in wet places of the south, but

it is often cultivated elsewhere. This plant blooms in August and September and in gardens blends well with *Phlox* and other hardy native plants lacking blue colors. It can be propagated by seeds, or readily by dividing the roots in fall or spring.



This is a branching perennial herb 6-36 inches high. The stems are more or less hairy, tinged red to brown and bearing opposite round-toothed leaves on short petioles. Below each of the many-flowered heads, which are arranged in rather compact clusters, is a broadly bell-shaped involucre of linear-lanceolate, acuminate bracts that are green at the bases and brownish at the tips, equal or nearly so and in 1 or 2 series.

The smaller figure shown is a single flower. The pappus is composed of soft white hairs. The 5 lobes of the corolla are intensely blue or violet. The stamens are

inconspicuous but the 2 long stigmas are colored like the corolla and give a misty appearance to the flower cluster. The single-seeded 5-sided fruits are well adapted to wind dissemination. The receptacle in this species is distinctly conic, a difference from other species of *Eupatorium*.

Dreaming of light till our dream became

Aureate bells and beakers of flame—

Splashed with the splendor of wine of flame.

Columbines—ARTHUR GUITERMAN

CYLINDRIC BLAZING STAR

Liatris cylindracea Michx.

The Blazing Stars or Button Snakeroots are among our most handsome late-summer and autumn wild flowers. They bloom mostly in August and September, and some of them are easily grown in gardens, where they make excellent ornamental plants.

The Cylindric Blazing Star grows in dry open places and is rather limited in its distribution, occurring from western Ontario to Minnesota and south to Illinois and Missouri. It is smooth or nearly so and only 1-2 feet high, sometimes branching near the top. The leaves are narrowly linear, 3-7 inches long and rather rigid.

The heads are several or numerous, peduncled and with 15-60 purple and tubular flowers. The receptacle is nearly flat and not chaffy. The pappus is composed of 15-40 very feathery bristles. The broadly oval bracts of the involucre overlap appressed in 5 or 6 series and are abruptly acuminate at the apex. The akenes are slender, 10-ribbed and somewhat hairy.

The Large Blazing Star, *Liatris scariosa* Willd., also grows in dry places. The stem is somewhat hairy, at least above, and 1-6 feet high. The leaves are narrowly lanceolate, the lowest sometimes 1 foot long and petioled, the upper much smaller. The heads are hemispherical and one-half to 1 inch broad. They are 15-45-flowered and borne on stout peduncles or are sometimes sessile. The bracts of the involucre are in 5 or 6 series and their tips and margins are often colored. The flowers are bluish purple or very rarely white and they bloom in August and September.



PRAIRIE BLAZING STAR

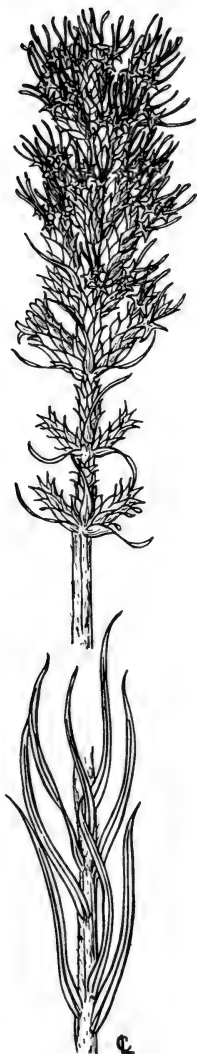
Liatris pycnostachya Michx.

This is perhaps the most handsome and in many places the commonest Blazing Star. It occurs from Indiana to Minnesota and south to Louisiana and Texas.

The stem is usually hairy near the top but smooth below. It grows 2-5 feet high and has abundant, very narrow leaves, of which even the lowest are usually not more than one-half inch wide, though they may be 1 foot long. The upper are much smaller, linear to awl-shaped and rigid.

The blooming season is August and September. The spikes are 6-18 inches long and very dense. There are 3-6 purple flowers in each head. The involucre is oblong or cylindrical and its oblong bracts are hairy and have spreading purple tips. The bristles of the pappus are rough but not feathery.

The Marsh Blazing Star or Gay Feather, *Liatris spicata* (L.) Willd., grows in moist places. It has probably been used in medicine more than any other *Liatris*. It is smooth or nearly so and grows 2-6 feet high. The lower leaves are narrowly lanceolate, sometimes 1 foot long and about one-half inch broad; the upper are much shorter and very narrow. The spike is 4-15 inches long and usually dense. The heads are usually sessile, short oblong or cylindrical and 5-13-flowered. The oblong bracts of the cylindrical bell-shaped involucre have slight margins, are in 4-6 series and are not spreading. They are sometimes resinous and very smooth. The flowers are bluish purple or occasionally white and the pappus bristles are rough or barbed. The akenes may be covered with downy hairs, or smoothish. This species ranges from Massachusetts to Minnesota and south to Florida, Louisiana and Arkansas.



GUM PLANT. TARWEED

Grindelia squarrosa (Pursh) Dunal

The Gum Plant or Tarweed grows on dry banks and prairies from Illinois to Minnesota and Manitoba, south to Texas and Mexico. It is only occasionally found east of Illinois, and even in this state is quite rare and local.

The involucre and upper portions of the stem are exceptionally sticky, giving the plant its common name. The stem is considerably branched, smooth except for the stickiness and usually 1-2 feet high. Leaves are alternate, oblong to spatulate, blunt tipped and more or less clasping at the base. They are rather rigid and the sharp teeth are inclined to be almost spiny.

The Gum Plant blooms from June to September. The large sticky heads contain both ray and disk flowers, which are yellow, the variety with ray flowers lacking not having been reported in Illinois. The disk flowers are perfect and the rays, which vary in length up to 1 inch, are pistillate. The bracts of the hemispherical involucre are linear-lanceolate, arranged in several series, and their green awl-shaped tips are strongly recurved, which is what the specific name means. The receptacle is nearly flat and not chaffy. Both kinds of flowers produce the smooth, short and thick akene fruits, which in the outer flowers are usually thicker. The pappus is composed of 2 or 3 awns.



The pappus is composed

Their gardens, banked with roses and with lilies—
 Those sweet aristocrats of all the flowers—
 Where Springtime mints her gold in daffodillies,
 And Autumn coins her marigolds in showers,
 And all the hours are toilless as the lilies.

Old Homes—MADISON CAWEIN

GOLDEN ASTER

Chrysopsis villosa Nutt.

The Golden Aster is a hairy perennial of dry places from Illinois to British Columbia and south to Alabama and New Mexico. It is locally quite abundant in some sand areas of this

state and absent from others. The rough-hairy, rigid stem is 1-2 feet high and its lower leaves are narrowed into petioles, whereas the upper are sessile.



The blooming season is July and August. The rather few heads terminating the short branches contain both ray and disk flowers. The oblong to linear ray flowers are golden and the disk flowers, of which the outermost bloom first, are a shade darker yellow. The bracts of the involucre are narrow and hairy, the outer

shorter. The receptacle is flat. The pappus is double, the outer bristles small and scalelike, and the inner long and threadlike. Both kinds of flowers produce hairy, flattened and rather oblong akenes.

The Maryland Golden Aster, *Chrysopsis mariana* (L.) Nutt., has broader leaves, sometimes 1 inch wide, and numerous golden yellow heads. The 1-2½-foot stem is covered with long silky hairs or is smoothish when old. The upper leaves are oblong to lanceolate, 1-2 inches long and sessile; the lower are oblanceolate or spatulate, 2-4 inches long and narrowed into a petiole. This plant frequents the same soils as Golden Aster and is usually found with it, but blooms generally a month later and on the whole is uncommon in Illinois.

EARLY GOLDENROD

Solidago juncea Ait.

The Goldenrods are a very large genus, some species of which are very difficult to distinguish. Only the more common of the 33 species known to live in Illinois can be allowed space here.

The Early Goldenrod frequently begins blooming in the latter part of June and continues until September or later. It grows in either dry or moist places from New Brunswick to Saskatchewan and south to North Carolina and Missouri.

The stem is 1-4 feet high, smooth throughout and rather stout and rigid. The leaves are lanceolate or oval-lanceolate, firm, smooth, toothed or nearly entire. The lower ones are large, sometimes 1 foot long and 2 inches wide, and long petioled. The upper are much smaller, sessile and entire.



The heads are small and numerous mostly on the upper sides of the short recurved branches of the ample spreading panicle. The 7-12 yellow rays are small and the perfect disk flowers have tubular corollas. The bracts of the involucre are oblong and not at all spreading. The akenes are smooth or nearly so.

The Broad-leaved Goldenrod, *Solidago latifolia* L., grows in rich woods and on wooded banks and blooms from late July to September. The smooth stem is somewhat angled and zigzag and grows 1-3 feet high. The leaves are broadly ovate, very strongly and sharply toothed and pointed at both ends. All are thin and usually all are petioled, with the petioles of the lower leaves winged. The heads are in short clusters in the leaf axils and sometimes also in longer terminal clusters. The bracts of the involucre are obtuse to acutish and appressed. There are only 3 or 4 yellow ray flowers, and the akenes are hairy.

TALL GOLDENROD

Solidago altissima L.

The Tall Goldenrod grows in rich soil in open places from Maine to western Ontario and south to Georgia and Texas, and blooms from August to October. The hairy stem is 2-8 feet tall.



The lower leaves are sharply toothed, petioled and 3-6 inches long; the upper are smaller, often entire and sessile; and all are 3-nerved, roughish above and hairy beneath.

The small heads contain 9-15 rays and several disk flowers, both kinds being yellow and both producing akenes. The receptacle is small and not chaffy. Bracts of the involucre are linear, blunt or ac-

tish. The pappus consists of numerous slender bristles.

The Hill Goldenrod, *Solidago nemoralis* Ait., is a handsome species common in dry places and on hillsides. The slender stem grows 6-24 inches high, is densely covered with fine gray hairs and bears many oblanceolate leaves mostly clustered toward the base. The lower leaves are petioled, 3-6 inches long, toothed and indistinctly 3-nerved; the upper are entire and become smaller gradually. The heads, about one-quarter inch high, are on the spreading or curved branches of a terminal, usually 1-sided panicle. The bracts of the involucre are narrowly oblong, the ray flowers are 5-9 and the akenes are hairy.

The Grass-leaved Goldenrod, *Solidago graminifolia* (L.) Salisb., is so called because of the many linear grasslike leaves, which are sessile, slightly rough margined and 3-nerved, borne the length of the 2-4-foot stem. The plant prefers moist soil, blooms from August to October and is very abundant in low sandy fields.

STIFF GOLDENROD

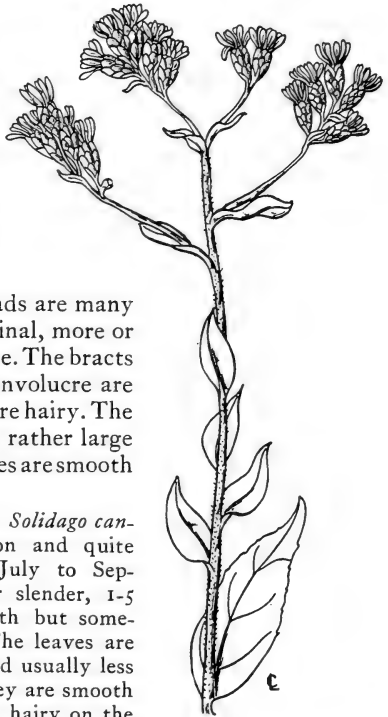
Solidago rigida L.

This beautiful and striking species is common on prairies and in dry gravelly or rocky soil from Massachusetts to Saskatchewan and south to Georgia, Texas and Colorado. It blooms from August to October.

The stem is stout, 1-5 feet high and densely covered with fine whitish hairs. The leaves are thick, flat and rigid, and usually rather rough on both sides. The lowest leaves are petioled and may be 1 foot long and 3 inches wide.

The relatively large heads are many flowered and are in a terminal, more or less flat-topped inflorescence. The bracts of the broadly bell-shaped involucre are oblong and the outer ones are hairy. The 6-10 yellow ray flowers are rather large and conspicuous. The akenes are smooth and 10-15-nerved.

The Common Goldenrod, *Solidago canadensis* L., is very common and quite variable. It blooms from July to September. The stem is rather slender, 1-5 feet high and mostly smooth but somewhat hairy near the top. The leaves are narrowly lanceolate, thin and usually less than one-half inch wide. They are smooth above, commonly somewhat hairy on the veins below, and usually are sharply toothed though sometimes entire. The tiny heads are crowded on the spreading branches of a large panicle. There are 4-6 very small yellow rays. The greenish straw-colored bracts of the involucre are very thin and narrow.



Along the roadside, like the flowers of gold
That tawny Incas for their gardens wrought,
Heavy with sunshine droops the goldenrod,
Among the Hills—JOHN GREENLEAF WHITTIER

NEW ENGLAND ASTER

Aster novae-angliae L.

Britton & Brown's "Illustrated Flora" describes 75 species of Aster in northern United States and Canada, and records exist of 57 that occur in Illinois. Ten of the most common are given here.



This, one of the largest and most beautiful of the wild Asters, is often cultivated. Introduced into Europe as a garden flower, it has escaped and become established there in the wilds of some places. It grows here in moist grounds from Quebec to Saskatchewan and south to Alabama, Kansas and Colorado.

The stout hairy stem is 2-8 feet high, branched near the top and very leafy. The leaves are lanceolate, entire, rather thin and hairy. They are 2-5 inches long, about 1 inch wide, and the broad base clasps the stem.

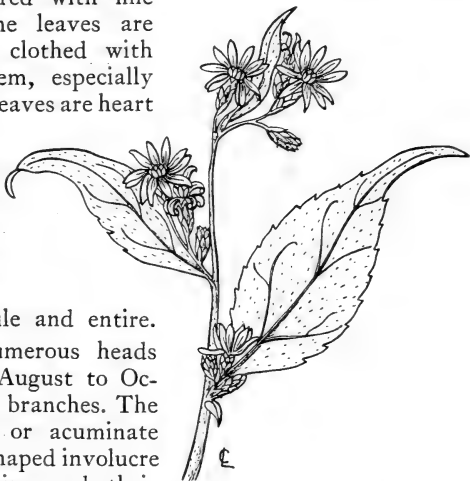
The large heads are numerous, 1-2 inches broad and more or less clustered at the ends of the branches. They bloom from August to October. The linear-awl-shaped bracts of the involucre are green, hairy, more or less glandular and sticky, and loosely spreading. There are 40-50 narrow rays which are violet-purple, or rarely pink, red or white. The pappus is reddish white and the akenes are hairy.

The Sky-blue Aster, *Aster azureus* Lindl., is found on prairies and along the borders of woods. The stem is slender but stiff and 1-4 feet high. The leaves are thick, entire and rough on both sides. The lower leaves are heart shaped, oblong or lanceolate, and have long, often hairy petioles; the upper are narrow and sessile. The heads are numerous and about one-half inch high. The smooth, linear-oblong bracts of the top-shaped involucre overlap in several series with their green tips appressed. There are 10-20 bright blue ray flowers, and the pappus is yellowish. This aster is known from western New York to Minnesota, south to Georgia, Missouri and Texas.

DRUMMOND'S ASTER

Aster Drummondii Lindl.

This is one of the blue Asters that grow in dry soil in woodland borders and on prairies from Ohio and Kentucky to Minnesota and Texas. The stem is usually stout, branched, 2-5 feet high and densely covered with fine whitish hairs. The leaves are mostly thin and clothed with hairs like the stem, especially below. The lowest leaves are heart shaped, sharply toothed and with slender naked petioles; higher ones have margined or winged petioles, and leaves on the branches are sessile and entire.



The rather numerous heads bloom from late August to October on racemose branches. The linear and acute or acuminate bracts of the top-shaped involucre are somewhat hairy and their green tips are not spreading. There are 8-15 blue ray flowers, and the pappus is whitish.

The Arrow-leaved Aster, *Aster sagittifolius* Wedemeyer, is very similar to Drummond's Aster, the principal distinction being that stem and leaves are essentially smooth.

The Heart-leaved Aster, *Aster cordifolius* L., usually grows in woods or thickets. The stem, 1-5 feet high, is smooth or nearly so and much branched and bushy. The sharply toothed leaves are long pointed, thin and rough and more or less covered with scattered hairs above and on the veins beneath. The lower ones are broadly heart shaped, slender petioled and 2-5 inches long; the upper are short petioled or sessile and smaller. The heads are usually very numerous and small but handsome. The bracts of the involucre are green tipped but not spreading. The 10-20 ray flowers are violet, blue or sometimes nearly white, and the pappus is whitish. This species occurs from New Brunswick to Minnesota, south to Georgia and Missouri, and blooms from September to December.

SMOOTH ASTER

Aster laevis L.

This very ornamental blue Aster is often cultivated in gardens. It is common in dry open places from Maine to Saskatchewan and south to Alabama, Louisiana and Colorado.



The stem is usually stout, smooth, more or less branched and 2-4 feet high. The leaves are thick and either entire or toothed. The upper ones are sessile and usually clasp the stem, and the lower are gradually narrowed into winged petioles. Those of the branches are often small and bractlike.

The heads, blooming in September and October, are usually numerous and about 1 inch broad. The rigid, acute bracts of the bell-shaped involucre are green tipped and overlap in several series but are not spreading. There are 15-30 blue or violet rays. The pappus is yellowish and the akenes are smooth or nearly so.

Short's Aster, *Aster Shortii* Lindl., is a late-blooming blue species usually found on wooded banks or along edges of woods. The stem is rather slender and spreading, nearly smooth and 2-4 feet high. The leaves are thick, smooth above but minutely hairy beneath, ovate or lanceolate and tapering to a sharp point. They are entire or only slightly toothed and all but the uppermost have slender naked petioles. None of them are clasping but those of the branches may be small and bractlike. The others are 2-6 inches long and 1-2 inches wide. The bracts of the involucre have green tips and are not spreading. There are 10-15 narrow violet-blue ray flowers.

The purple asters bloom in crowds
in every shady nook,
And ladies' eardrops deck the banks
of many a babbling brook.

Autumn—E. G. EASTMAN

HEATH ASTER

Aster ericoides L.

The Heath Aster is a common white flower in dry open places from Maine to Minnesota, south to Florida and Missouri, blooming from August to October. It is usually quite bushy, 1-3 feet high and smooth throughout. The lowest leaves are oblong and sometimes toothed, but all are narrow and rigid.

The small heads are usually very numerous and about one-half inch broad. The leathery, linear to lanceolate bracts of the hemispherical or bell-shaped involucre have green tips. The 15-25 ray flowers are white or rarely rose to purplish and the pappus is composed of white bristles.

The Many-flowered Aster, *Aster multiflorus* Ait., is also very common, especially in sandy places and on prairies. The stem is much branched, bushy and usually somewhat hairy, and 1-3 feet high. The innumerable linear leaves are rigid, crowded, sessile and rough or hairy along the margins. Those of the main stem are one-half to 1½ inches long, but those on the branches are very small. The heads are small, densely crowded and nearly sessile. There are 10-20 white ray flowers. The pappus is brownish white. At least some of the bracts of the involucre are bristly hairy, which is not true of the Heath Aster.

The Red-stemmed Aster, *Aster puniceus* L., is a very tall branched species which grows in swamps. It is stout and rough hairy throughout or in lines along the 6-8-foot red stem. The oblong, sessile and clasping leaves are very rough above and slightly hairy or smooth beneath. The 20-40 rays are very showy, violet-purple and one-half inch long or more. The pappus is white and the akenes are yellowish because of their hairy cover.



COMMON FLEABANE

Erigeron philadelphicus L.

The Common Fleabane is perennial and usually grows in rather moist open places throughout the United States. It begins blooming in early spring, usually April, and continues until August.



The stem is hairy, rather slender, mostly branched near the top and is 1-3 feet high. It bears obovate, sessile and mostly entire leaves of which the lowest are often toothed and taper into short petioles, whereas the upper are clasping and frequently somewhat heart shaped at the base.

The several to many heads are less than 1 inch broad. The bracts of the involucre are narrow and approximately equal in length. The rays are rose-purple to pinkish, very narrow and numerous, usually more than 100. They and the yellow disk flowers produce minutely hairy akenes. The pappus is a single row of white bristles. The akenes are covered with very short hairs.

Robin's Plantain, *Erigeron pulchellus* Michx., is a soft-haired species perennial by stolons. It grows on dry hills and banks from Nova Scotia to Ontario and Minnesota, south to Florida and Louisiana, and blooms from April to June. The stem is hairy, unbranched and 1-2 feet high. Most of the leaves are at the base, 1-3 inches long, 1-2 inches wide and occasionally somewhat toothed. The stem leaves are few and far apart, sessile, partly clasping and mostly entire. The heads are few and large, usually more than 1 inch broad. There are usually about 50 light blue-purple rays one-half inch or more in length. The disk flowers are yellow and the akenes nearly smooth. The pappus is a single row of bristles.

HORSEWEED. BUTTERWEED

Erigeron canadensis L.

There is no doubt about this plant being a weed. It is common everywhere in fields and waste places throughout North America except in the extreme north, and is widely distributed also in the Old world, in the West Indies and in South America.

The Horseweed is annual and usually somewhat bristly and hairy. It grows 3-10 feet high and the larger plants are much branched. The basal and lower stem leaves are petioled and cut lobed but the rest are mostly linear and entire.

The small heads are usually very numerous from June to killing frost. The bracts of the bell-shaped involucre are narrow and smooth, the outer shorter. The rays are white and numerous but very short and inconspicuous. The disk flowers are yellowish. The akenes are somewhat flattened and the pappus is composed of numerous white bristles.

The White Top or Sweet Scabious, *Erigeron annuus* (L.) Pers., is another annual species common especially in old meadows and orchards. The stem is branched, covered with spreading hairs and usually 1-4 feet high. The leaves are coarsely and sharply toothed. The lowest are ovate and taper into a short petiole, or are lanceolate and sessile. There are 40-70 white or purple-tinged ray flowers which are about twice the length of the involucre. In this species the involucre is double, the inner part composed of slender bristles and the outer of scales. Rather numerous heads, somewhat more than one-half inch broad, are produced from May to late autumn.



You bold thing! thrusting 'neath the very nose
Of her fastidious majesty, the rose,
Even in the best ordained garden bed,
Unauthorized, your smiling little head!

To A Weed—GERTRUDE HALL

PLANTAIN-LEAVED EVERLASTING

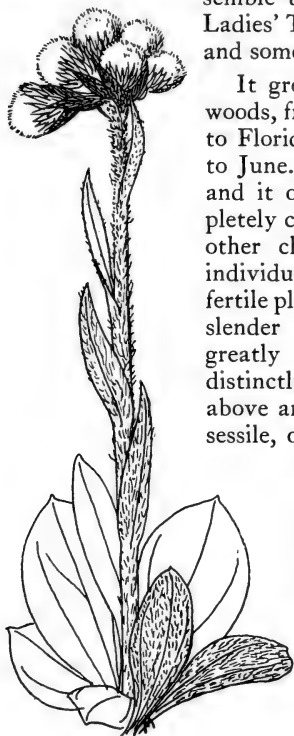
Antennaria plantaginifolia (L.) Richards.

Several species of Everlasting occur in Illinois and some of them are quite difficult to distinguish. This is probably the commonest and gets its name from the fact that the basal leaves resemble those of Plantain. It is also called Ladies' Tobacco, White Plantain, Pussytoes, and sometimes Dogtoes.

It grows in dry soil, especially in open woods, from Quebec to Minnesota and south to Florida and Texas, blooming from April to June. The whole plant is densely woolly and it often grows in patches which completely cover the ground. Size, leaf form and other characteristics vary greatly among individual plants. The flowering stems of fertile plants are 4-20 inches high and may be slender or stout. The basal leaves vary greatly in size and shape but are usually distinctly 3-ribbed, petioled, dull dark green above and silvery beneath. Stem leaves are sessile, oblong to lanceolate, and the upper are small and widely separated.

The heads are one-quarter of an inch high and in convex racemose clusters. The involucre is composed of narrow greenish white bracts, acute or acutish. The corollas are tubular and distinctly 5-toothed. The white bristle pappus is abundant and the akenes are minutely glandular.

The sterile or staminate plants seem to be less common than the pistillate. They are smaller, 3-8 inches high, and have somewhat smaller basal leaves. The stem leaves are mostly linear and the bracts of the involucre are oblong and blunt. Heads are smaller, corollas scarcely toothed and the white bristle pappus scanty.



COMMON EVERLASTING

Gnaphalium polycephalum Michx.

This very fragrant herb can easily be determined by odor alone after one is familiar with it. The plant is common in rather dry fields and waste places from Nova Scotia to Manitoba and south to Florida and Texas. It is an annual, or more commonly winter annual, and blooms in August and September.

The whole plant is more or less covered with white woolly hairs. It produces an upright stem 1-3 feet high, branching near the top. At the base is a rosette of oblong leaves that taper into short petioles. The leaves of the stem are sessile, densely white woolly beneath but nearly smooth and dark green above.

The numerous heads are produced in clusters of 5 or less. The bracts of the involucre are white or sometimes tinged with brown. They are oblong and thin and the outer are woolly at the base. The receptacle is nearly flat and not chaffy. There are no ray flowers but several outer rows of disk flowers are pistillate only and have very narrow corollas

minutely 3 or 4-toothed. The few central flowers are perfect and their whitish or yellowish corollas are 5-lobed. The pappus is 1 series of threadlike bristles. The oblong akenes are smooth.

The Purple Cudweed or Everlasting, *Gnaphalium purpureum* L., is less common on sandy or gravelly soils but will be found blooming from May to September. The slender 2-20-inch stem is covered with silvery white hairs. The many leaves are small, spatulate, entire and green above but silvery beneath. The tubular whitish flowers are in small heads sessile in upper axils and also in a terminal, sometimes leafy spike. Bracts of the involucre are tawny to purplish and the outer are woolly at the base.



LEAFCUP

Polymnia canadensis L.

The Leafcup is quite common in rich woods and moist shaded ravines from Vermont to Minnesota and south to North Carolina and Arkansas. It has a very strong and rather unpleasant odor.

The blooming season is June to September.

The stem is hairy and sticky, 2-5 feet high and usually branched. The thin, deeply angulate-lobed leaves, 4-10 inches long, are mostly opposite but with some alternate.

The heads, either sessile or short peduncled, are few in terminal clusters. The more or less hemispherical involucre is composed usually of 5 rather large outer bracts and a greater number of small and thin inner ones. The receptacle is flat and chaffy with thin membranous bracts.

Five white or yellowish ray flowers, which are pistillate and produce thick 3-angled and 3-ribbed akenes, occur, but they are very variable. Usually they are very small, shorter than the involucre and wedge shaped. Sometimes they are nearly one-half inch long and 3-lobed; in other cases they are lacking. The disk flowers are light yellow and perfect, but do not produce akenes. There is no pappus.

The Yellow Leafcup, *Polymnia uvedalia* L., is a very large plant, up to 10 feet high, found only in rich low woods of southern counties. The variably lobed leaves may often be 1 foot long and equally wide, and are generally clasping. The paniced inflorescence contains many heads 1-3 inches in diameter, having 10-15 bright yellow rays 3-toothed at the end, and numerous yellowish brown disk flowers which are tubular and perfect.



ROSWINEED. COMPASS PLANT

Silphium laciniatum L.

All disk flowers of the plants in this genus are sterile. The Compass Plant gets its name from the fact that its leaves have a tendency to become twisted into a vertical plane with their edges pointing north and south.

The Rosinweed or Compass Plant is common on prairies from Ohio to South Dakota and south to Alabama and Texas, blooming from July to September.

The stem is stout and leafy and grows 6-12 feet high. It and the leaves are rough hairy. Basal leaves are pinnatifid with oblong or lanceolate lobes, long petioled and often 1 foot or more in length. Stem leaves are alternate and mostly sessile, gradually smaller and less divided.

The several to many heads of yellow flowers are sometimes 5 inches broad. The peduncles are bracted at the base. Only the 20-30 ray flowers fruit. The akenes are oval, broadly winged, about one-half inch long and notched at the end. The bracts of the involucre are large, rigid and spreading at the tip.

The Prairie Dock, *Silphium terebinthinaceum* Jacq., is also common on dry prairies. The stem is smooth or nearly so, 4-10 feet high and leafless except at the base. The leaves, nearly all basal, are very rigid and rough, ovate, mostly long petioled, pointed at the tip and heart shaped at the base. They are often 1 foot long and 6 inches wide. The heads are numerous, 2-3 inches broad and borne on smooth peduncles. There are 12-20 ray flowers and both kinds of flowers are yellow. The bracts of the hemispherical involucre are ovate-oblong, erect and smooth or minutely hairy. The akenes are narrowly winged, slightly notched at the end and 2-toothed.



ENTIRE-LEAVED ROSINWEED

Silphium integrifolium Michx.

The Entire-leaved Rosinweed is common on prairies from Ohio to Minnesota and south to Louisiana and Texas. The abundant resinous juices of this and related species are often used by children for chewing gum.



The plant is perennial and has a stout stem that is sometimes smooth and sometimes rough hairy. It grows 2-5 feet high and branches near the top. The leaves, usually entire but sometimes slightly toothed, are opposite, and because they are thick and rigid the plant is also called Stiff Rosinweed. Their form is ovate to ovate-lanceolate, and they are rough above and hairy or smooth beneath. Those of the stem are closely sessile and often half-clasping by the rounded base.

The heads of yellow flowers are quite numerous in August and September. The ray flowers are 15-25, pistillate and akene bearing. All but the inner bracts of the involucre are broad and have spreading leaflike tips. The receptacle is flat and chaffy. The akenes are flat oval or obovate, broadly winged and deeply notched at the top. There is no pappus.

The Cup Plant, *Silphium perfoliatum* L., grows in low moist places. The stem is square, stout and smooth and 4-8 feet high. The leaves are opposite, ovate and coarsely toothed, and the larger are 6-12 inches long and 4-8 inches wide. The upper leaves are grown together by their bases, forming cup-shaped receptacles which are often partly filled with water and drowned insects. The heads are quite numerous and 2-3 inches broad. The 20-30 ray flowers are about 1 inch long. The akenes are winged and sometimes 2-toothed.

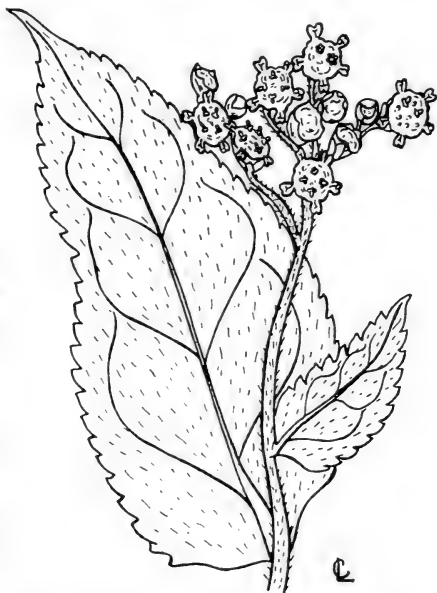
AMERICAN FEVERFEW

Parthenium integrifolium L.

This plant grows in dry open places on prairies and especially along prairie borders in wooded regions. It is found from Maryland to Minnesota and south to Georgia and Arkansas, and its blooming season is May to September. It was formerly used in medicine and in some places is called Wild Quinine, as well as Prairie Dock and Cutting Almond.

It is perennial by tuberous underground stems. The flowering stem is 1-4 feet high, rather stout and covered with fine hairs near the branching top but usually smooth below. The leaves are ovate or ovate-oblong, acute or acuminate at the apex, round-toothed, rough on both sides and firm; the lower are petioled and often 1 foot long and 5 inches wide, whereas the upper are much smaller, sessile and partly clasping.

The heads are numerous in a dense flat-topped inflorescence. The involucre is hemispherical and its firm bracts are arranged in 2 series, the outer oblong and very hairy, and the inner broader and nearly smooth. The receptacle is cone shaped and covered with very thin chaff. Very short white corollas characterize the 5 ray flowers, which are pistillate and fertile. The disk flowers are staminate with imperfect pistils. The akenes are slightly flattened, margined and crowned by the persistent rays.



ROUGH OXEYE

Heliopsis scabra Dunal

The Rough Oxeye grows in dry or not too low open places from Maine to Manitoba and south to New Jersey, Arkansas and New Mexico. This is a perennial which is said to be rather rare in the east, but it is common in Illinois.



The stem, 2-4 feet high, is either branched or not and is rough, at least toward the top. The leaves are ovate or ovate-lanceolate, 2-5 inches long, sharply toothed, acute or acuminate, firm, abruptly narrowed at the base into short petioles, and are rough on both sides.

The blooming season is June to September. The heads are few and sometimes there is only 1. The oblong bracts of the involucre are arranged in 2 or 3 series, are unequal in length and covered with short whitish hairs. The receptacle is somewhat cone shaped and its chaff envelopes the disk flowers. Both the pistillate rays and the

perfect disk flowers produce akenes, and both are yellow. The akenes are thick, 3 or 4-angled and somewhat hairy on the margins, at least when young. The pappus consists of 1 or more short teeth.

The Oxeye or False Sunflower, *Heliopsis helianthoides* (L.) Sweet, is found in open places throughout Illinois although it is not as common as the Rough Oxeye. The two are quite similar but the stem of the False Sunflower is smooth and the leaves are thin and smooth or nearly so. Very rarely the leaves occur in threes instead of being opposite. The akenes are smooth and their tips are cut off nearly straight. The pappus is 2-4 short teeth or may be absent. The flowering time is July to September.

THIN-LEAVED CONEFLOWER

Rudbeckia triloba L.

This biennial herb blooms in July and August along with many of its relatives in the family. Unlike a goodly number of them, however, it prefers rich moist woodlands. Occasionally it may be found in cleared fields, though it seldom becomes a weed. It is distributed through most states east of Kansas, except New England.

A rosette of basal leaves appears the first year to manufacture food which is stored in the roots for use the next year. In the second year a hairy branching stem arises 2-5 feet and bears many showy heads. In shade the heads are fewer and the plant less branching than when it grows in the open. The lower leaves are distinctly petioled and deeply 3-lobed, whereas the upper are shorter stalked or nearly or wholly entire.



The heads are racemously clustered and nearly 2 inches broad. The 8-12 ray flowers are yellow and sterile, having neither stamens nor pistils. Each dark purple disk flower is perfect and subtended by a sharp-pointed bract or chaff. The linear acute bracts of the involucre are hairy and soon reflexed. The 1-seeded fruits are smooth and 4-angled, with the pappus a minute crown.

The Sweet or Prairie Coneflower, *Rudbeckia subtomentosa* Pursh, is an uncommon perennial of prairies and low ground in Illinois. The much branched stem is 1-5 feet high and densely covered with rough gray hairs. The 15-20 sterile ray flowers are yellow with a darker base, and the perfect disk flowers are purplish brown. The chaff is blunt and finely hairy or sometimes glandular at the apex. Bracts of the involucre are linear-lanceolate with acuminate tips reflexed, and are sweet scented.

BLACK-EYED SUSAN. YELLOW DAISY

Rudbeckia hirta L.

The Black-eyed Susan is exceedingly common in dry or moist open places from Quebec to Manitoba and south to Florida, Texas and Colorado. Other names are Brown-eyed Susan, English Bull's Eye, Niggerhead and Yellow Oxeye Daisy. It is very variable and in some places is considered a rather troublesome weed, especially in meadows since cattle do not eat it. The Black-eyed Susan is visited by a great variety of insects and probably is a good honey plant.



It is very hairy throughout. The stem is simple or somewhat branched and 1-3 feet high. The leaves are thick, toothed or entire; and the lower are petioled, whereas the upper are sessile.

The heads, blooming from May to September, are commonly few and sometimes there is only 1. The involucre is somewhat hemispherical and its very hairy bracts are arranged in 2-4 series. The receptacle is cone shaped and chaffy with concave scales that envelop the perfect disk flowers, whose 5-lobed purple-brown corollas are the source of nearly all the common names. Only the disk flowers produce the smooth 4-angled akenes.

There are 10-20 orange-yellow ray flowers, each notched at the end. The chaff is hairy at the tip and there is no pappus.

The Brilliant Coneflower, *Rudbeckia fulgida* Ait., is a branched perennial 1-3 feet high, found in dry soil only in southern counties. The leaves are entire or toothed; the basal have margined petioles, are oblong-spatulate and 3-nerved, and upper stem leaves are usually sessile and somewhat clasping. The naked summits of the branches produce single large heads with 10-12 bright yellow rays that have oranges bases. The globose disk is purple-brown and the chaff is nearly smooth and blunt. The pappus is a short crown.

TALL CONEFLOWER

Rudbeckia laciniata L.

Cultivation of this plant dates back at least to 1640 when it was grown in the gardens of Charles I of England. A double form, said to have been found among specimens of the normal form, was introduced to cultivation about 1894. This is the Golden Glow of yards and gardens everywhere, useful as a cut flower but in its natural setting no improvement upon the wild form. The Tall Coneflower and Golden Glow alike are subject to attack by a red aphid that covers the upper parts of the stems and ruins the appearance of the plants.

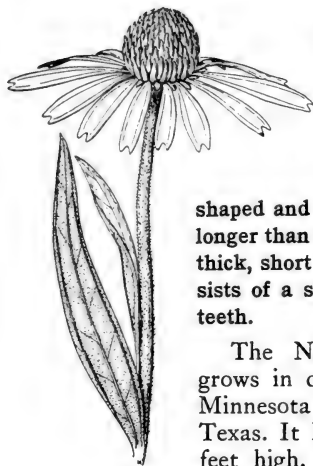
The Tall Coneflower is a branching perennial herb that will grow in almost any soil but is most vigorous and tall in moist thickets, often reaching 10 feet there. It ranges from Quebec to Manitoba, Idaho and Colorado, south to Florida and Arizona.

The lower leaves are long petioled and pinnately divided into 3-7 parts which are again divided into lobes; the upper are more nearly as shown. All are rather thin and minutely hairy on the margins of the upper surface.

The several to many heads are 2½-4 inches broad and bloom from July to September. The 6-10 drooping ray flowers are yellow and do not fruit. Bracts of the involucre are of unequal lengths. The chaff of the receptacle appears cut off nearly straight at the top and is marked with fine gray hairs. The greenish yellow disk flowers at the base bloom first and the higher ones follow until at length the disk is oblong and at least twice as long as thick. Each disk flower produces a brown 4-sided and 1-seeded fruit. The pappus is a short crown.



NARROW-LEAVED PURPLE CONEFLOWER

Brauneria angustifolia (DC.) Heller

Three Purple Coneflowers occur in Illinois and since they are often confused their differences may well be noted. All are handsome perennials with thick black roots and stout stems which are naked near the top and bear a single large head of many flowers. Usually ray and disk flowers are purple and only the disk flowers produce akenes. The bracts of the involucre are lanceolate and somewhat spreading. The receptacle is cone shaped and the chaff on it spiny tipped and longer than the disk flowers. The akenes are thick, short and 4-sided, and the pappus consists of a short border or crown with small teeth.

The Narrow-leaved Purple Coneflower grows in dry prairie and open places from Minnesota to Saskatchewan and Illinois to Texas. It has a very rough, hairy stem 1-2 feet high. The leaves are entire, narrowly lanceolate and hairy. They are strongly 3-nerved; the lower are slender petioled whereas the upper may be sessile.

The heads, blooming from June to October, contain 12-20 purplish to white rays which are sterile, and very many reddish purple perfect disk flowers. The ray flowers are usually not more than 1 inch long and do not droop much.

Most commonly confused with the narrow-leaved species is the Pale Purple Coneflower, *Brauneria pallida* (Nutt.) Britton, probably the commonest of the three in Illinois. It is very similar but often taller, sometimes 3 feet high, and the commonly paler ray flowers are narrow and longer, up to 3 inches, and strongly drooping.

The third species is the Purple Coneflower, *Brauneria purpurea* (DC.) Britton, which has a smooth stem 2-5 feet high, and broader lower and basal leaves that are usually 5-nerved, toothed and either narrowed or somewhat heart shaped at the base. Petioles of the lower leaves are mostly winged at the summit. The uppermost leaves are 3-nerved, sessile or nearly so and often entire. The heads are very similar to those of the pale species, but the 12-20 rays are deeper purple, 1½-3 inches long and spreading.

YELLOW CONEFLOWER

Lepachys pinnata (Vent.) T. & G.

The Yellow or Gray-headed Coneflower frequents dry open places from Ontario and New York to Nebraska, south to Florida, Louisiana and Kansas. Often it is with the Purple Coneflower, and especially abundant along railroads, where it makes a brilliant display from June to September. It is a fine ornamental plant for the perennial garden.

Stems and leaves are rough hairy. The stem is 3-5 feet high and simple or branched. The alternate leaves are pinnately divided into 3-7 lanceolate, more or less toothed or cleft lobes. The lower leaves are petioled and sometimes 10 inches long, whereas the upper are sessile or nearly so and may be small and entire.

There are only a few, long-peduncled heads. The 4-10 long, yellow and drooping ray flowers do not produce akenes. The perfect disk flowers are gray and later become brown. The bracts of the involucre, few and small, are reflexed and arranged in 2 or 3 series. The receptacle is oblong and its chaffy bracts, somewhat thickened and hairy at the tip, partly envelop the akene fruits. These are flattened and rather sharply winged or margined, with 1 margin prolonged into a short tooth, representing all there is of a pappus.

The Long-headed Coneflower, *Lepachys columnaris* (Sims) T. & G., is 1-2½ feet tall, branching from the base, with terminal heads of yellow flowers, or in the variety *pulcherrima* T. & G., with rays yellow and purple-brown at the base. The thick leaves are pinnately divided into linear or linear-oblong, toothed or cleft segments. Bracts of the involucre are short, linear-lanceolate or awl shaped, and reflexed. The broad rays are 4-10, drooping and notched at the end. The disk is up to 1 inch long, and covered with perfect flowers and grayish hairy-tipped chaff. This species grows on dry prairies northwest of the Ohio river to Minnesota and south to Texas and Arizona. The blooming period is May to August.



PRAIRIE SUNFLOWER

Helianthus grosseserratus Martens

In many places this is our commonest wild sunflower. It grows on dry or moist prairies and in other open places from western Maine to South Dakota, south through Pennsylvania to Kansas and Texas, blooming from August to October. It is perennial by fleshy roots and slender underground stems.



The 6-10-foot stem is mostly smooth and usually covered with a waxy bloom. The branches are usually somewhat hairy and the leaves are rough above and densely short hairy beneath. The lower leaves are opposite and sharply toothed, whereas the upper are alternate and often nearly entire.

There are usually several and sometimes many heads. The bracts of the involucre have spreading green tips and are hairy. The 10-20 rays are deep yellow and the disk flowers are also yellowish. The akenes are nearly smooth and the pappus consists of 2 short awns which readily fall away.

The Common Sunflower, *Helianthus annuus* L., also common on prairies, along roadsides and in other open places, is often cultivated. Its flowers, blooming from July to September, yield honey and a yellow dye, its leaves may be used for fodder, its seeds yield an oil or they may be fed to chickens, and its stems contain fibers that may be used in making twine. In the wild state it grows 3-10 feet high. The lowest leaves may be opposite but most of them are alternate. They are broadly ovate, 3-nerved, petioled and toothed. The heads are 3-6 inches broad, the ray flowers being yellow and the disk flowers purple or brown.

My tall sunflowers love the sun,
Love the burning August noons
When the locust tunes its viol,
And the cricket croons.
Sunflowers—CLINTON SCOLLARD

JERUSALEM ARTICHOKE

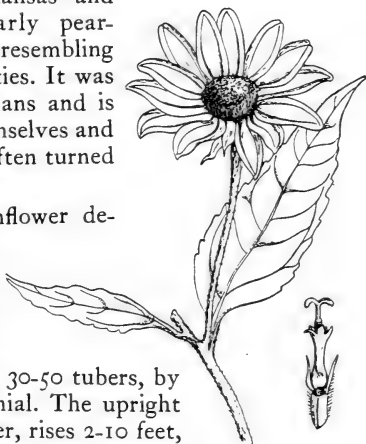
Helianthus tuberosus L.

This plant gets its name by corruption of the Italian "Girasole Articcoco," meaning sunflower artichoke.

This Sunflower, which grows from Nova Scotia to Manitoba and from Georgia to Arkansas and Kansas, produces irregularly pear-shaped edible tubers closely resembling potatoes in their food qualities. It was formerly cultivated by Indians and is grown by white men for themselves and as food for pigs, which are often turned into the field.

This and the Pale Sunflower described below are found together on moist soil and along roadsides and other waste places, and bloom from September to frosts.

A single plant may produce 30-50 tubers, by means of which it is perennial. The upright stem, growing from the tuber, rises 2-10 feet, usually branching near the top and bearing several heads of yellow flowers. The lower leaves are sometimes 12 inches long but they become smaller toward the upper part of the stem.



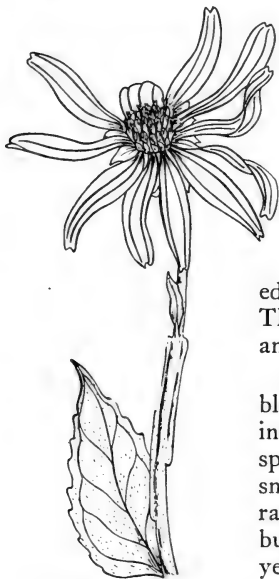
The 12-20 ray flowers possess neither stamens nor pistils and so do not produce fruits, but the yellow disk flowers, one of which is shown, are perfect and produce 1-seeded fruits. Each disk flower is accompanied on the receptacle by a chaffy scale, and the 2 scales at the top of the ovary, which represent the pappus, soon fall off.

The Pale Sunflower, *Helianthus decapetalus* L., resembles the Jerusalem Artichoke but does not produce tubers, has a less hairy stem and only about 10 pale yellow ray flowers. The leaves are thin or membranous and but 3-8 inches long. The lower are opposite and slender petioled. The upper are commonly alternate, usually sharply toothed, roughish above and sparingly fine haired beneath, and with the round or squarish bases extending down the petioles.

WINGSTEM

Actinomeris alternifolia (L.) DC.

Not many members of this family have winged stems, consequently this plant may usually be recognized by them, plus the unlobed ray flowers.



This perennial grows in rich soil, especially along streams and railroads, from New Jersey to Iowa and south to Florida, Louisiana and Kansas. The leafy stem, either unbranched or branched near the top, grows 4-9 feet high and usually has narrow wings formed by the bases of the alternate leaves which extend down upon it. The leaves are 4-12 inches long, sessile or short petiolated, and rather rough on both sides. The lower ones are sometimes opposite and have narrow petioles.

Numerous many-flowered heads bloom in August and September. The involucre is composed of a few narrow spreading bracts, and the receptacle is small and chaffy. There are 2-10 yellow ray flowers, slightly toothed at the end but not lobed. The disk flowers are also yellow. The pappus consists of 2 smooth awns.

The White Wingstem or Crownbeard, *Verbesina virginica* L., is a similar plant, differing mainly in its broader and rougher leaves, its less fully winged stems and in its 3-5 white pistillate ray flowers. The akenes are minutely hairy and winged or wingless.

The Sunflower Crownbeard, *Verbesina helianthoides* Michx., has a 2-4-foot stem, hairy and widely 4-winged by the sessile alternate leaves which are toothed, rough above and soft hairy beneath. The heads are solitary or few and broader than in the above species, being 2-3 inches across. The 8-15 yellow linear-oblong rays are pistillate or neutral. The akenes are rough, broadly winged and topped by a pappus of 2 fragile awns. This species frequents dry prairies and thickets from Ohio to Georgia, west to Iowa, Missouri and Texas. The flowering time is a little earlier than for both preceding species, being June and July.

PRAIRIE TICKSEED. STIFF TICKSEED

Coreopsis palmata Nutt.

The Prairie or Stiff Tickseed is a typical prairie perennial, abundant on dry areas, along railroads and in other open places from Indiana to Louisiana, Manitoba, Minnesota, Nebraska and Texas. It blooms in June and July.

The stem, which is rigid, smooth, but little branched and very leafy, grows 1-3 feet high. The leaves are very characteristic and help to identify the plant. All are 2-3 inches long, sessile, thick and rigid; all but the uppermost are broadly wedge shaped and palmately 3-lobed to about the middle. These lobes are linear-oblong, blunt and entire or with 1-3 lateral rough-margined lobes.

The heads are few, sometimes solitary, are short peduncled and 1-2 inches broad. The hemispherical involucre is composed of 2 distinct series of bracts, the outer ones being narrower and a little shorter than the inner. The receptacle, chaffy and nearly flat, bears 6-10 bright yellow, oblong or obovate ray flowers mostly 3-toothed, and the numerous disk flowers which are also yellow. The akenes, produced in all plants of this genus by the disk flowers, are flat, oblong, narrowly winged and slightly curved, and the pappus consists of 2 short teeth or may be absent.

The Tall Tickseed, *Coreopsis tripteris* L., grows in moist woods and thickets and blooms from July to October. Its smooth stem is 4-8 feet high and much branched near the top. The leaves are petioled, smooth or nearly so, and the lower ones are divided into 3-5 lanceolate, entire rough-margined segments, which are 2-5 inches long and pinnately veined. The upper leaves are lanceolate and entire. The outer bracts of the involucre are much narrower and somewhat shorter than the inner. The 6-10 ray flowers are yellow and not toothed, and the disk flowers are also yellow. The akenes are oblong to obovate and narrowly winged, but there is no pappus.



TICKSEED SUNFLOWER. SWAMP MARIGOLD

Bidens trichosperma (Michx.) Britton

Thirteen species of *Bidens* are known to occur in Illinois and some of them are very similar and equally difficult to distinguish. The genus is always identified by the persistent pappus of 2 or more awns either upwardly or downwardly barbed, but only extremely detailed study will disclose the differences between species within groups of similar-appearing flowers.



They go by various names, such as Sticktight, Spanish Needles, Devil's Pitchforks, Beggar Ticks, Tickseed and Bur Marigold. In some species the ray flowers are very inconspicuous or absent, whereas in others, like the one illustrated, the rays are very showy. All bloom during the latter part of the season, from July or August to late autumn.

The Tickseed Sunflower is one of the commonest and most showy *Bidens*. Often in September great areas of wet land, marshes and low meadows from Massachusetts to Georgia, Kentucky, Illinois and Michigan are solid sheets of golden bloom of this or a closely related species.

The stem is 2-5 feet high, much branched and smooth. The bracts of the involucre are in 2 series, the outer ones narrower than the inner. The receptacle is flat and chaffy. Ray and disk flowers are yellow. The pappus is 2 upwardly barbed awns.

The Southern Tickseed Sunflower, *Bidens coronata* (L.) Fisch., and the Western Tickseed Sunflower, *Bidens aristosa* (Michx.) Britton, are considerably alike but the most noticeable difference is the hairy stems of the latter. The leaves of *B. coronata* are 3-divided, the terminal division much larger and toothed or lobed. Those of the western plant are 5-7 divided and the segments are toothed, cut lobed or deeply divided. The upper leaves of both are small and may be undivided or merely lobed. The heads of yellow flowers are 1-2 inches in diameter in both species but in the southern the outer bracts of the involucre are longer than the inner, whereas in the western sunflower they are not. The pappus of *B. aristosa* is 2, rarely 4, slender upwardly or downwardly barbed awns sometimes as long as the marginally fringed akene. In *B. coronata* it is 2 blunt and spreading teeth on the sparingly hairy but not fringed akene.

GALINSOGA

Galinsoga parviflora Cav.

This weed is becoming quite prevalent throughout Illinois, overrunning gardens everywhere. It is a native of tropical America which frequents dooryards and waste places nearly throughout the United States. *Galinsoga* is the only name it has, and that comes from Dr. Mariano Martinez de Galinsoga, a Spanish botanist.

An annual branching herb, *Galinsoga* grows 1-3 feet high and blooms from June to November. The lower of the thin and 3-nerved, opposite leaves are usually toothed and have slender petioles, whereas the upper are sometimes nearly entire and are short petioled or sessile.

Numerous heads, each with 4 or 5 white ray flowers and many yellow disk flowers, are borne on slender peduncles. The involucre is broadly bell shaped and its smooth ovate bracts are arranged in 2 series, the outer slightly shorter. The somewhat cone-shaped receptacle has thin chaff among the disk flowers, which are perfect and have 5-toothed corollas. The pappus consists of 4-16 oblong, bristle-tipped or cut-fringed scales. The pistillate rays are short and with a few-bristled pappus or none. The akenes are somewhat angled or flattened and covered with fine hairs.



The morning glories ripple o'er the hedge

And fleck its greenness with their tinted foam ;

Sweet wildling things, up to the garden's edge

They love to wander from their meadow home,

To take what little pleasure here they may

Ere all their silken trumpets close before the warm midday.

The Old-fashioned Garden—JOHN RUSSELL HAYES

PURPLE-HEAD SNEEZEWEED

Helenium nudiflorum Nutt.

This southern plant is uncommon in northern Illinois but very common below Marion county. It is native from Missouri and Illinois to Texas, east to North Carolina and Florida. Often cultivated, in some places in the east it has escaped from gardens and become established locally.



The rather slender stem of this perennial grows 1-3 feet high and branches near the top. It is more or less covered, at least near the top, with very short hairs, and is narrowly winged by the bases of the leaves. The lower leaves are more or less toothed and tapering into margined petioles, but the upper are sessile and often entire.

The Purple-head Sneezeweed blooms from June to October. The 10-15 sterile ray flowers are drooping and either wholly yellow, wholly brown or yellow with a brown base. They are deeply notched or even lobed. Occasionally they are lacking. The disk flowers are brown or purple and perfect. The oblong receptacle is not chaffy. The akenes are hairy and the pappus consists of about 5 scales with awnlike points. With the Common Sneezeweed, page 375, this species often forms hybrids whose characteristics are apt to be intermediate.

The Five-leaved Sneezeweed, *Helenium tenuifolium* Nutt., is a smooth annual, easily recognized by its many very narrow leaves which do not extend down the stem. It grows 1-2 feet tall on prairies and along roadsides from Virginia to Kansas and Florida to Texas. The fertile rays are yellow, drooping and fewer than in the Purple-head Sneezeweed.

COMMON SNEEZEWEED. SWAMP SUNFLOWER

Helenium autumnale L.

The flower heads of this plant are powdered and used in medicine to induce sneezing, and pollen inhaled from the plant in the field will do the same. Stems, leaves and especially flowers are poisonous and bitter. Stock may eat much of the plant and die; milk from cows which have eaten only a little is acrid.

The Common Sneezeweed, Swamp or False Sunflower, is very common in swamps and wet meadows from Quebec to Manitoba and Oregon, south to Florida and Arizona. It is perennial and the rather stout stem, 2-6 feet tall, is nearly smooth but winged by the bases of the alternate leaves which run down on it. The bright green leaves are rather firm, 2-5 inches long, oblong, lanceolate or ovate-lanceolate, acute or acuminate at the apex and narrowed to the sessile base, toothed or entire, pinnately few veined and smooth to slightly hairy.

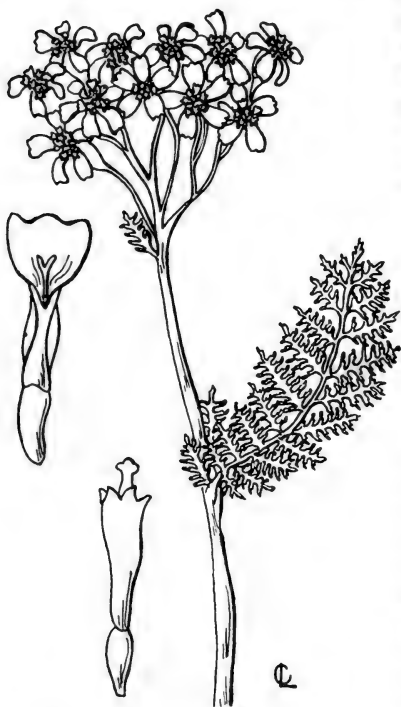
The heads, blooming from August to October, are numerous, often 2 inches broad, and borne on long peduncles covered with short hairs. The involucre is rather flattish and its bracts are densely covered with short whitish hairs. The 10-18 pistillate ray flowers are drooping, bright yellow, of equal length or longer than the globose disk, and 3-cleft at the end. The disk flowers are also yellow and perfect. Both produce akenes, which are hairy on the angles and have a pappus of 5-8 awned and chaffy ovate scales.



COMMON YARROW. MILFOIL

Achillea Millefolium L.

Bruise or crush a leaf of this plant and smell it. The pleasant odor is very characteristic and capable of identifying the plant. The taste of it is bitter, and though cattle avoid the Common Yarrow when green, they may eat it in dry fodder and so spoil the milk. Whether another of its names, Nosebleed Weed, is a true indicator or not, the plant is still sold for medicinal purposes.



The Milfoil is common in dry soil in open places throughout eastern North America. By means of horizontal rootstocks it is a hardy perennial weed, especially in pastures.

The nearly smooth flowering stem grows 1-2 feet high. The basal leaves and those on the numerous short flowerless shoots are mostly petioled and sometimes 10 inches long, whereas those on the flowering stem are smaller and sessile. All are finely divided into many narrow segments.

The heads, about one-quarter inch broad and blooming from June to November, are numerous in a nearly flat-topped inflorescence. The involucre is composed of small oblong bracts which are somewhat hairy. The 4-10 ray flowers are usually white but occasionally pink or purple. The disk flowers are yellow, their tubular corollas 5-lobed. Both kinds of flowers produce the oblong and only slightly flattened akenes having no pappus.

MAYWEED. DOG FENNEL

Anthemis Cotula L.

The flowers of this weed, variously known as Mayweed, Dog Fennel, Pig Daisy, Chiggerweed and Fetid Chamomile, are very conspicuous, and as the foliage is also pretty the plant might be used for ornamental purposes but for its disagreeable odor. It is a native of Europe but is now common in waste places, along roads and about barnyards all over North America except in the extreme north, and is also widely distributed in Asia, Africa and Australia.

This is an annual, nearly smooth and much branched herb, 1-2 feet high. The leaves are alternate, 1-2 inches long, sessile and 2 or 3 times pinnately divided into very narrow lobes. Repeated contact with this glandular foliage scalds the skin.

The blooming season is June to late autumn. The heads are commonly numerous and about 1 inch broad. The bracts of the involucre are oblong and somewhat hairy. There are 10-18 white ray flowers, mostly 3-toothed, at length reflexed, and commonly sterile. The receptacle is convex but becomes oblong, and its bristly chaff subtends the central flowers. The disk flowers are yellow and 5-lobed at the top. The akenes are 10-ribbed, rather rough and without a pappus.

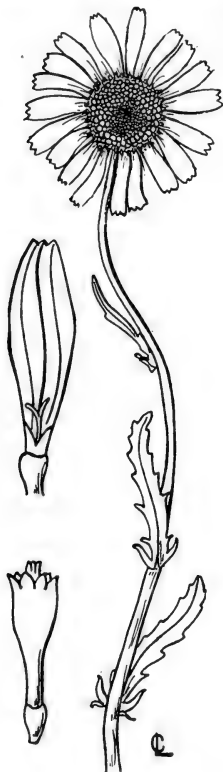
The Field Chamomile, *Anthemis arvensis* L., resembles the Mayweed but is neither fetid nor acrid and is sometimes biennial. It is also from Europe and the leaves are also pinnately divided but more coarsely so. The oblong bracts of the involucre are blunt and usually somewhat hairy. As in the Mayweed, the heads are commonly numerous but usually a little broader. The 10-18 white pistillate rays are 2-toothed and spreading. The scales of the convex receptacle are lanceolate and acuminate. The oblong akenes are bluntly 4-angled and their pappus is a mere border. The flowering season is earlier and shorter, being May to August.



OXEYE DAISY. MARGUERITE

Chrysanthemum Leucanthemum L.

Perhaps no plant is more properly thought of as both wild flower and weed than the Oxeye Daisy. This most beautiful field plant is known from Newfoundland and eastern Quebec to New Jersey and thereafter more rarely toward the southwest, and is often cultivated as a garden flower, usually under the name Marguerite. In some places it is justly considered a most pernicious weed, for where extremely abundant in hay fields it seriously injures the quality of the hay. It is perennial and when established may spread rapidly.



The stems are smooth, slightly branched and 1-3 feet high. The obovate, oblong or spatulate basal leaves, in a mat, are long petioled and coarsely toothed or lobed; the stem leaves are narrowly oblong, mostly sessile and partly clasping, 1-3 inches long, and pinnately cut or toothed though the uppermost are very small and almost entire.

The heads are few or solitary and 1-2 inches broad on long naked peduncles, from June to August. The mostly smooth bracts of the involucre are narrow and marked by brown lines along the dry, thin margins. There are 20-30 spreading white ray flowers, slightly 2 or 3-toothed. The disk flowers are bright yellow. Both kinds of flowers produce akenes having no pappus, and both are visited by many kinds of bees and butterflies.

The Costmary, or Mint Geranium, *Chrysanthemum Balsamita* L. var. *tanacetoides* Boiss., is a very fragrant-leaved immigrant perennial which has no ray flowers. The toothed oblong leaves often have a pair of lateral lobes at the base, and contain the plant's aromatic principle. The upper leaves are sessile. The Costmary blooms through the summer, principally along roadsides near old dwellings, and occasionally in colonies.

TALL WORMWOOD

Artemisia caudata Michx.

Several kinds of Wormwood occur in Illinois, mostly in sandy soil, and some of them are very difficult to distinguish. The Wormwoods and Sagebrush of the west are *Artemisias*. A flowering plant called Broom Rape, which has no green tissue, often grows as a root parasite on Wormwood.

The Tall Wormwood grows only in sandy soil from Quebec, Ontario and Manitoba to Indiana, Nebraska and Texas, and is especially common along Lake Michigan. It is one of the few plants that can grow on dune sand, where there is extremely little organic food matter. The slender stems are much branched, very leafy and 1-6 feet high.

The lower and basal leaves, as well as those of the sterile shoots, are 3-6 inches long, slender petioled and 2-3 times pinnately divided into very narrow linear lobes. The upper leaves are sessile or nearly so and pinnately divided or the topmost entire.

The blooming season is July to September. The numerous heads are very small, very short peduncled, mostly nodding, and only the outer flowers of each head produce akenes, the inner ones being sterile. The involucre is composed of ovate bracts and is smooth. There are neither ray flowers nor pappus.

The Biennial Wormwood, *Artemisia biennis* Willd., is widely distributed nearly throughout the state as a weed. It is not, however, strictly biennial, but annual or winter annual, and a better name is False Tansy or Bitterweed. It is smooth and the stem is very leafy, usually branched and 1-4 feet high. The leaves are 1-3 inches long and once or twice pinnately divided into narrow, toothed lobes. The very small heads are exceedingly numerous in crowded axillary clusters. The flowers are greenish yellow and all produce akenes.



TUBEROUS INDIAN PLANTAIN

Cacalia tuberosa Nutt.

The Tuberous Indian Plantain grows on wet prairies and in marshes from Ohio to Minnesota and south to Alabama and Texas. It is often very abundant and may cover acres of grassland from June to August with a white blanket of flowers.



The plant is smooth and green throughout. The stem is angled and grooved and grows 2-6 feet high from a thick tuberous root. The leaves are thick and strongly 5-9 veined. The lower are 4-8 inches long, 1-3 inches wide, and have long petioles, but the upper leaves are much smaller and have short-margined petioles.

Most of the numerous heads have 5 flowers, which are tubular and whitish. The involucre is one-quarter of an inch high or slightly more and its linear-oblong bracts are blunt and with a thin dried margin. The receptacle is flat and not chaffy but it has a fleshy projection from the center. The akenes are oblong and smooth and the pappus is composed of an abundance of white bristles.

The Pale Indian Plantain, *Cacalia atriplicifolia* L., grows in woods from New Jersey to Indiana and Minnesota, south to Florida, Tennessee and Kansas. It blooms from July to September. The stem is round, smooth and covered with a waxy bloom. The leaves are thin, angular lobed and palmately veined, with the whitish waxy material on the lower surface. The lower leaves are somewhat triangular, kidney form or slightly heart shaped, and the upper are more or less wedge shaped and toothed. The heads are numerous and similar to those of the tuberous species.

GOLDEN RAGWORT. SQUAW WEED

Senecio aureus L.

This is probably the largest genus of plants, having at least 1200 species widely distributed throughout the north temperate zone. At least three or four species besides the Squaw Weed occur in Illinois. The genus name *Senecio* comes from the Latin *senex* meaning an old man.

The Golden Ragwort is found in swamps, wet meadows and moist thickets throughout Illinois, northeastern United States and southeastern Canada. It blooms from May to August.

It is a perennial that produces at the base a cluster of simple rounded leaves with long petioles. The slender stem grows 1-3 feet high, branching near the top to produce a number of heads of golden flowers. The leaves toward the base of the stem have short petioles and are somewhat lobed, whereas the higher and sessile stem leaves are variously cut and toothed.

Each head consists of 8-15 pistillate ray flowers and a number of perfect disk flowers. The involucre consists of a single row of erect bracts with usually a few minute scales at the base. The pappus, of many delicate smooth white hairs, persists and well adapts the smooth akene fruits to wind dissemination.

An immigrant annual of this genus, the Common Groundsel, *Senecio vulgaris* L., is a weed on waste grounds. The hollow stem is nearly without hairs, usually much branched, and 6-15 inches high. The leaves are 2-6 inches long, pinnately cleft, the lower petioled and the upper sessile or clasping at the base. It blooms from April to October but does not produce ray flowers, so that the inflorescence is much less conspicuous than that of the Golden Ragwort. Involucral bracts are linear, with a few or several outer ones having black awl-shaped tips. The akenes have a coating of fine gray hairs and a white pappus.



COMMON BURDOCK

Arctium minus Bernh.

This commonest inhabitant of vacant lots and farm woods is best known for its burs. The bur is the entire head and its bur nature is due to the fact that the stiff bracts of the involucre



have hooked tips. These burs get onto the tails of cattle and become so entangled that it is almost impossible to get them out. They get into wool of sheep and the only way to get them out is to cut or tear off some of the wool. They also get into the fur of rabbits and

other animals and onto the clothing of man. In all these cases, as the burs are carried about, the fruits are widely scattered. Roots and leaves of this plant have been used in medicine.

The Burdock is another immigrant from Europe which has liked this country well enough to spread all over it. Indeed, it is so common that most people pass by without ever stopping to notice how pretty its flowers are.

The plant usually grows 2-5 feet high and is much branched. The lower leaves are sometimes 1 foot long, nearly as broad, and are very veiny. They are usually heart shaped at the base, dark green and smooth above, lighter and wholly hairy beneath, and with stout hollow petioles that are not grooved.

The flowers, blooming from July to November, have tubular corollas some shade of purple, the color varying considerably in different plants. Bracts of the involucre are smooth or slightly cottony, the spines of the outer ones spreading but those of the inner erect and shorter than the flowers. The akenes are oblong and somewhat flattened, and the pappus consists of numerous short bristles.

PASTURE THISTLE

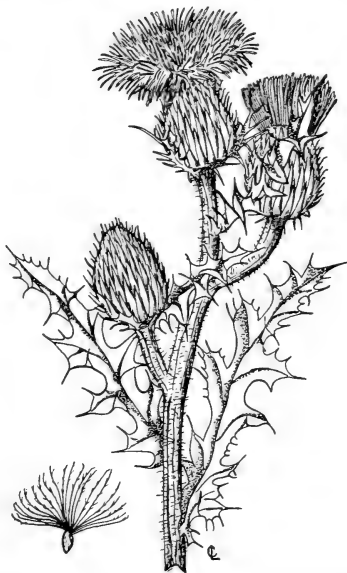
Cirsium pumilum (Nutt.) Spreng.

This native biennial is one of the most handsome as well as the most fragrant of our common Thistles. It is to be found in fields from Maine and Minnesota, south to Pennsylvania, Delaware and Iowa, blooming from July to September.

The stem is stout, simple or somewhat branched and quite leafy. It grows 1-3 feet high from a thick, solid branching root. The leaves, green above and below, are 3-7 inches long, and the lower are petioled.

The large heads of purple, lilac or whitish flowers are 2-3 inches broad and about 2 inches high. The pappus is composed of numerous silky white bristles. Country boys like to pull the florets from the receptacle and chew the nectaries.

The Common or Bull Thistle, *Cirsium lanceolatum* (L.) Hill, is another immigrant from Europe common in pastures and along roadsides. It is biennial and the stout branched stem grows 3-5 feet high and is leafy to the top. The leaves are dark green, lanceolate and deeply lobed. They are 3-6 inches long, the lowest at times even larger, and their bases extend down on the stem. The lobes are tipped with stout prickles and the margins and bases are bristly. The heads, 2 inches high and equally broad, are mostly solitary at the ends of branches. The bracts of the involucre are covered with cottony hairs and tipped with slender prickles. The flowers are dark purple.



Ha, prickle-armèd knight,
How oft the world hath cursed
thee,
Thou pestilence of Earth,
The beldame who hath nursed
thee!

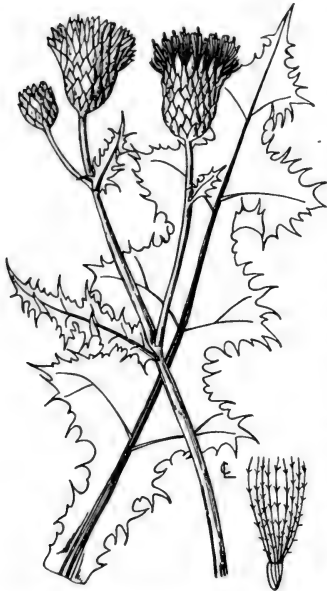
Thou like a maiden art
Who best can find protection
Employed at needlework
From idleness' infection.

The Thistle—MILES M. DAWSON

CANADA THISTLE

Cirsium arvense (L.) Scop.

This is another immigrant from Europe which has become a pernicious weed in this country from Newfoundland to Virginia, Utah, Nebraska and British Columbia. It is probably the most hated of all Thistles if not of all weeds.



The plant is readily identified by its jointed horizontal rootstocks, which other Thistles do not have. It is perennial by these extensively creeping underground stems, which make it very difficult to exterminate. It grows 1-3 feet high and the sessile, slightly clasping leaves are very prickly. The 5-8-inch basal leaves are sometimes petioled.

A patch of these Thistles, in full bloom from June to September, is a colorful display. The heads are numerous and the tubular flowers are purple or rarely whitish. They are imperfect and the staminate and pistillate heads are on separate plants. This has led some farmers to believe that the Canada Thistle produces no seed, but on the contrary there are smooth oblong akenes with a conspicuous fine white pappus. Outer bracts of the head are ovate or ovate lanceolate, appressed and with short prickly points. Inner bracts of the pistillate heads are linear and long.

The Tall Thistle, *Cirsium altissimum* (L.) Spreng., is common along the borders of woods and thickets. It grows 3-10 feet tall. The leaves are densely clothed on the lower surface with white wool. They may be entire, toothed or lobed, and are armed with rather weak prickles. The outer bracts of the involucre are marked by a dark line on the back and are tipped by a prickle, but the inner bracts are unarmed. The flowers are light purple.

COMMON CHICORY. BLUE SAILORS

Cichorium Intybus L.

The Common Chicory or Blue Sailors is yearly becoming more common along roadsides and railroads and in other waste places. It is an immigrant from Europe and in this country ranges from Newfoundland to Minnesota and southwest. Its pulverized root has been extensively used as a substitute for or an adulterant of coffee.

It is perennial from a long deep taproot, and its stem is stiff, with some stiff bristly hairs, much branched and 1-3 feet high. The lower leaves are 3-6 inches long, variously toothed or lobed and narrowed into long petioles. Those of the stem are much smaller, lanceolate or oblong, lobed or entire, and have clasping bases.

The heads, 1-4 together in sessile clusters on the nearly naked branches, are numerous and very showy. They bloom from July to October, opening in the morning and closing usually by noon. The flowers are strap shaped and usually bright blue, though occasionally pink or white ones are found. Inner bracts of the involucre are about 8. The akenes are 5-angled and 5-ribbed, and the pappus is composed of numerous small chaffy scales.

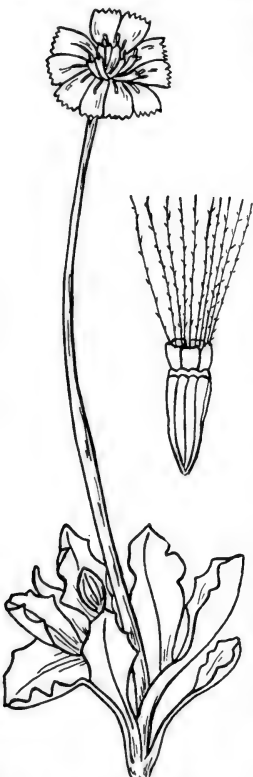
Another immigrant with purple flowers that is becoming common along roadsides and railroads is the Salsify, *Tragopogon porrifolius* L., which has escaped from vegetable gardens, where its root is known as the familiar Oyster Plant. It has a smooth branching stem 2-4½ feet high, and grasslike clasping leaves. The large solitary heads are very showy, on peduncles that are very much thickened and hollow for 1-3 inches below them. The bracts of the involucre are usually longer than the flowers. The pappus is composed of many long feathery bristles, and the akenes are often more than 1 inch long, the outer covered with scalelike tubercles.



DWARF DANDELION

Krigia virginica (L.) Willd.

The Dwarf Dandelion grows in sandy soil from Maine to Minnesota and south to Florida and Texas. It is annual and does not produce an upright stem. It has a rosette of leaves like a Dandelion, and usually several smooth, slender peduncles 1-15 inches long, each of which bears 1 head of yellow strap-shaped flowers.



The blooming season is April to August. The involucre is made up of 9-18 bracts arranged in 2 series of nearly equal length. When the fruits are mature these bracts are turned down. The receptacle is flat and naked. The akenes are somewhat 5-angled and 15-20-ribbed. The pappus is in 2 parts, the outer composed of 5 thin rounded scales and the inner of 10 or more slender bristles.

The Cynthia, *Krigia amplexicaulis* Nutt., is found in moist open places and blooms from May to October. It is perennial and in addition to a rosette of basal leaves produces a stem 1-2 feet high, which bears 1-3 oblong and nearly entire leaves produces a stem 1-2 feet high, which bears 1-3 oblong and nearly entire leaves with clasping bases, and 1-6 long-peduncled heads of orange flowers, about 1½ inches broad. The basal leaves are 1-7 inches long and are narrowed into bordered petioles. The pappus is composed of 10-15 small oblong scales and about the same number of bristles.

Another Dwarf Dandelion or the Goatsbeard, *Krigia Dandelion* (L.) Nutt., is a small perennial having much the appearance of a diminutive dandelion. A rosette of oblong-spatulate to linear-lanceolate leaves arises from a cluster of slender tuber-bearing roots. The scape is 6-18 inches high and bears generally a single head about 1 inch broad and composed entirely of yellow strap-shaped corollas. The akenes are nearly oblong and crowned by a pappus of about 12 small scales. This is a more southern species, living on moist soil from Maryland and Florida, west to Illinois, Kansas and Texas, and blooming from April to June.

COMMON DANDELION

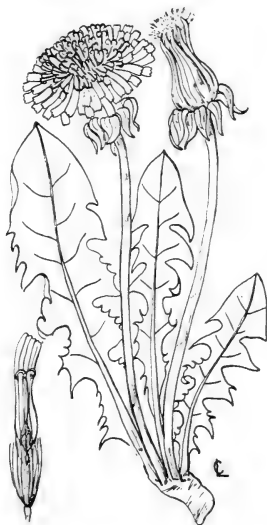
Taraxacum officinale Weber

Everyone knows the Dandelion, which persists in growing in so many places where it is not wanted. It ranges all over the world except in arctic regions. Nearly everyone has at some time broken off the hollow flower stalk and used it as a whistle, and many people are very fond of the young leaves as greens. Few, however, stop to admire the flowers of this plant. It is too common; but if it were not so we would have it in our gardens and prize it highly for its beautiful yellow heads. The blooming season may be the year around, but usually is April to September.

The Dandelion is perennial and sends its root down into the soil sometimes 4-5 feet. The stem is very short at the surface and bears the rosette of leaves. Every year this stem grows upward a little but at the same time the root contracts and pulls the stem down a little into the soil so that although the plant may live for many years it never becomes any taller.

The Dandelion is admirably fitted for wind dissemination of its fruits. After the 150-200 flowers on each head have bloomed, the inner part of the involucre closes and remains closed while the fruits ripen. As the akenes mature, their beaks elongate and so raise the pappus some distance. At the same time the peduncle grows upward until the head is well above surrounding vegetation. Then the involucre opens again and turns down out of the way so that the parachutelike fruits are fully exposed to the wind.

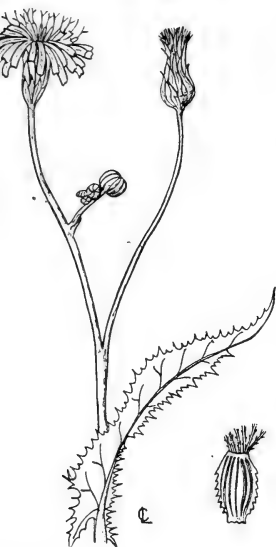
The Red-seeded Dandelion, *Taraxacum erythrospermum* Andrz., has more deeply lobed leaves and smaller heads. The 70-90-flowered heads are rarely more than 1 inch broad. The flowers are sulfur yellow instead of bright yellow, the outer rays purplish outside, and the akenes are bright or brownish red with a dirty white pappus.



SPINY-LEAVED SOW THISTLE

Sonchus asper (L.) Hill

This plant is a native of Europe but it is widely distributed nearly all cultivated parts of the earth. Although it must be passed as a weed, it is a very showy and beautiful one when the pale yellow flowers are in bloom from May to late autumn. Like many other members of the Composite family this species has flowers which open only when the sun shines.



It is an annual with fibrous roots. The stem is 1-10 feet high and not much branched. It is leafy toward the base but much less so toward the top. The leaves usually have few lobes and sometimes none, but they are very spiny toothed. The lower and basal are petioled, whereas the upper are clasping and with basal earlike lobes. Stem and leaves contain an abundance of milky juice.

The blooming season is May to late autumn. The heads are several and often numerous. The involucre is more or less bell shaped and usually becomes thickened at the base and more or less cone shaped when old. The bracts are smooth and arranged in several series, the outer ones successively smaller. The receptacle is flat and naked. The pappus is strap shaped and 5-toothed at the end. Each of the flat and margined akenes, 3-nerved on each side but otherwise smooth, has a very abundant pappus of soft white bristles.

The Common Sow Thistle, *Sonchus oleraceus* L., is very similar to the spiny-leaved species, but the leaves are usually more lobed and not spiny, and the akenes are longitudinally fine ribbed and wrinkled crosswise. The plant is a common weed in most cultivated parts of the world except the extreme north, and has been naturalized in this country from Europe.

PRICKLY LETTUCE. MILK THISTLE

Lactuca Scariola L.

The Prickly Lettuce seems to have been introduced into this country from Europe about 1863 and is now common nearly throughout. In some places the young leaves are collected in great quantities in spring and used as a salad vegetable. Sheep eat the young leaves quite greedily and cattle seem to like them also. Generally, however, it is considered a noxious weed because its hard stems dull reaping knives and its copious juice is a major annoyance in threshing machinery.

The stem is stiff, leafy and branched near the top. It grows 2-7 feet high and is smooth, except that the lower portion is somewhat prickly. The alternate leaves are spiny toothed, sessile and clasping, and usually there is a row of prickles along the whitish green midrib below.

The heads are very numerous with 6-12 pale yellow flowers, blooming from July to September, in each. The involucre is cylindrical and the outer bracts are only about a third as long as the inner. The brown akene has a threadlike beak of equal length, and a white pappus of silky hair.

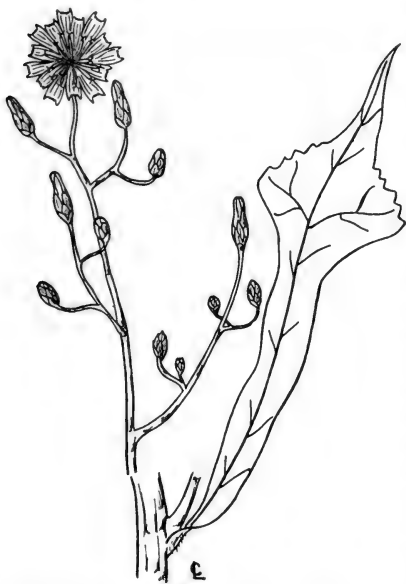
The Wild Lettuce or Horseweed, *Lactuca canadensis L.*, grows 3-10 feet high and is smooth throughout. The leaves are quite variable. Those of the main stem are usually somewhat pinnately lobed, sessile or clasping, and 2-8 inches long. The upper ones are usually smaller and entire, and sometimes all are nearly white. Each of the numerous heads contains 12-20 pale yellow flowers. The akenes are oval, flat and about as long as the slender beak. The pappus is white. Moist open places are favored by this plant, from Nova Scotia to British Columbia and south to Georgia, Alabama, Arkansas and Colorado.



BLUE LETTUCE

Lactuca floridana (L.) Gaertn.

The Blue Lettuce grows in moist open places or moist woods from New York and Pennsylvania to Nebraska and southwest, blooming from July to September. The stem is rather stout,



smooth, 3-7 feet high and leafy up to the large inflorescence. Like all species of wild Lettuce, it contains an abundance of milky juice. The leaves are smooth above but somewhat hairy on the veins beneath.

The numerous heads are borne on scaly peduncles, and the flowers, with strap-shaped corollas 5-toothed at the end, are blue. The bracts of the involucre are in several series, the outer much smaller than the inner. The akenes are thick, somewhat flattened, and narrowed at the end into a distinct beak which supports the

bristly white pappus, well adapted for wind dissemination.

The Hairy-veined Blue Lettuce, *Lactuca villosa* Jacq., is 2-6 feet tall and its leaves are 4-6 inches long, sessile and clasping. They have short stiff hairs on the veins beneath, hence the common name.

The Tall Blue Lettuce, *Lactuca spicata* (Lam.) Hitchc., is also common in moist soil. The smooth stout stems are 3-12 feet high and are leafy to the inflorescence. The leaves are sometimes entire but are more often variously toothed and lobed. They are mostly sessile but the lower are often narrowed into short-margined petioles. They are 5-12 inches long, 2-6 inches wide, and are smooth on both sides or somewhat hairy on the veins below. The green heads are very numerous, about one-quarter inch broad and tipped with dull purple to whitish rays. The akenes are oblong and narrowed above into a short beak. The pappus is brown.

WHITE LETTUCE

Prenanthes alba L.

The White Lettuce is common in rich woods from Maine to Saskatchewan and south to Georgia, Kentucky and Illinois. It is perennial and the entire plant is more or less covered with a thin coat of whitish wax. The stem is commonly purplish and 2-5 feet high. The leaves are thick and quite similar, the largest sometimes 8 inches long.

The heads, hanging downward, are numerous and 8-15-flowered, blooming in August and September. The purplish involucre is cylindrical and composed of about 8 principal bracts and several very small outer ones at the base. The receptacle is flat and naked. The flowers are greenish or yellowish white, fragrant, and all the corollas are tubular. The pappus is reddish brown and bristly.



The Rattlesnake Root or Smooth White Lettuce, *Prenanthes racemosa* Michx., grows in marshes and other open wet places. It too is covered with a waxy bloom. The stem is smooth and 2-6 feet high. The slightly toothed leaves are oval or oblong-lanceolate; the lower taper into winged petioles, whereas the upper are partly clasping. The heads are very numerous in crowded clusters and do not droop much. The oblong-cylindric involucre is nearly one-half inch long, covered with coarse stiff hairs, and has 8-10 principal bracts with several smaller outer ones. The flowers are purplish and there are 12-15 in each head, blooming in August and September. The pappus is straw color.

The Gall of the Earth or Tall Rattlesnake Root, *Prenanthes trifoliata* (Cass.) Fernald, is a smooth perennial 3-9 feet tall, nearly all of whose thinnish leaves are petioled, or the lower ternate. It grows in thickets and woods, principally in central and southern counties, and blooms from August to October. The smooth involucre is pale green or purplish, the flowers whitish or pale yellow, and the pappus is light brown.

PURPLE-LEAVED HAWKWEED

Hieracium venosum L.

Nine species of Hawkweed grow in Illinois, four of which are quite common. This one grows mostly in dry woods and sandy open places from Maine to Manitoba and south to Georgia and Nebraska.

The stems, 1-3 feet high and paniculately branching near the top, are several from the same root, or solitary. They are slender, smooth and entirely naked or with 1 or 2 leaves. A tuft of oblong-spatulate, smooth and purple-veined leaves grows at the base.

The blooming season is May to late fall. The heads are commonly numerous and 15-40-flowered. The bracts of the involucre are mostly in 1 series and smooth or nearly so. The receptacle is flat and naked. The corollas are strap shaped and yellow, and all the flowers are perfect. The akenes are cylindrical and the pappus is composed of a rather small number of brown bristles.

The Rough Hawkweed, *Hieracium scabrum* Michx., is also found in dry places and is probably our commonest species. The stem is stout, hairy, leafy and 1-4 feet high. The leaves are alternate, hairy, oblong and narrowed to a sessile base or the lowest into short-margined petioles. There is no cluster of basal leaves at flowering time, which is July to September. The heads are usually numerous and less than 1 inch broad, and the stout peduncles are very glandular.

The Canada Hawkweed, *Hieracium canadense* Michx., with a somewhat smooth or hairy stem 1-5 feet erect, likewise has no tuft of basal leaves at flowering time, from July to September. The many stem leaves are ovate to lanceolate, coarsely toothed especially below the middle, sessile and at least the upper are clasping by rounded bases. The yellow flowers are in numerous heads 1 inch broad.



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When the wayside tangles blaze
 In the low September sun,
 When the flowers of summer days
 Droop and wither, one by one,
 Reaching up through brush and brier,
 Sumptuous brow and heart of fire,
 Flaunting high its wind-rocked plume,
 Brave with wealth of native bloom—
 Goldenrod!

* * *

In the pasture's rude embrace,
 All o'errun with tangled vines,
 Where the thistle claims its place,
 And the straggling hedge confines,
 Bearing still the sweet impress
 Of unfettered loveliness,
 In the field and by the wall,
 Binding, clasping, crowning all—
 Goldenrod!

Goldenrod—ELAINE GOODALE

Hast thou named all the birds without a gun?
Loved the wood rose, and left it on its stalk?

Forbearance—RALPH WALDO EMERSON

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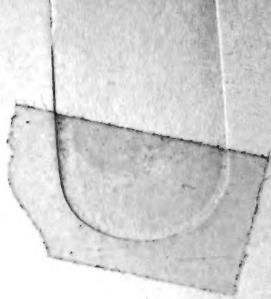
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