

FLOWER STUDIES FOR SEPTEMBER

Recommended by the State Normal for the Common Schools of Utah.

PLANTS ARE NOW BLOOMING.

Assigned With Specific Directions for Work to the Eighth Grades and Other Beginners.

Some people will like a technical article, so why print it? There are about 150 schools in Utah. They average say four teachers to a school. Three thousand teachers of the state could be interested in this article if they saw it. All persons who would like to observe a little more closely than by a passing glance, the most common and conspicuous of our Rocky mountain and desert fall flora, may find here a summary of interest in grades four to eight.

Would any teacher who knows how to study the wild flowers, take the children away from the masses of bloom and beauty that for the next few weeks only will cover the desert earth here, and set them at studying words and syllables while this glorious life is about them? Is this pleasing?

Therefore to the teachers and the considerate public, who have borne so patiently my attempts to bring this subject into actual use both in the school room and in every day observation, I offer this article at the opening of the schools, in the belief that many teachers will start right, if aided by even these imperfect notes. If the start is once made, the rest is easy.

Only plants should now be considered, for they will be available for only a few weeks longer.

FIRST AND SECOND GRADES.

LARGE FLOWERS.—The Morning Glory—Gather flowers, leaves, tendrils and root pods. Who knows the name of this flower? Why is it called the morning glory? What shape is it? A funnel. What color? How many lines, or folds, run to the top of the flower (corolla)? Ten. These plated lines show how it is rolled (twisted) around in smooth coils in the bud. Examine a bud. Count the leaves, olive, unequal and the pistil cone with a small sponge-like top (stigma). Count the outer small green flower leaves (petals), four large and two small. Notice the leaf, heart-shaped, but sharp pointed, and varying from the size of the heart of a second grade pupil to that of a man; while some of the leaves are as large as the outline of one's head. Look at the climbing tendrils thick, coiled, wire, turning from left to right contrary to the direction taken by the bands of a clock. What enables the vine to cling so tightly, and to stand up and climb? Examine the hairs; they grow downwards and act as pins. Observe their number and stiffness. Is a large seed pod—shaped like a turnip? Cut it across to show its five cells and five seeds. What good are morning glories? Where do they grow? Who will gather us some ripe seeds? Where shall we plant them in the spring?

(b) The Wild Morning Glory—gather the specimens and proceed in like manner. How may it be weeded out or killed in places where it has become a pest?

(c) The Hobo-ki—Bring in flowers, leaves, and seed pods. Study the colors; name them; the shapes (all); the size—large as a small teacup; the number of colored flower leaves (petals)—the shape of each a triangle, the lines (veins) in the middle; the veins. Study the double row of green flower leaves (sepals) five inner and six outer—pointed like spears and fuzzy. Observe the leaves, large open hands with five fingers and two small ones, two large and two small veins, rough, crinkled surface, wavy edges; notice how long the longest are. Look at the mass of fuzzy whitish stamens—like a brush; the wheel shaped pod; the numerous seeds; the giant stems, the rough, short hairs. Shall we gather seeds for our school garden in the spring? Where shall we plant them?

THIRD GRADE—THREE-PARTED FLOWERS.

(a) The Tiger Lily—Observe the three petals, their color, size, shapes, spots, curves; the three sepals, the three-fold; then count the stamens and notice with three or four other specimens, the black shining buds, etc.

(b) Proceed in like manner with the onion from the fields, noting its flowers, seeds, parallel veined leaves, scaly-bulbs, and roots. Discuss the care and harvesting of onions. (c) Similarly with the gourdines or other onions.

(d) Blazing-eyes—Find in the meadows a small grass bearing a bright blue flower with a yellow center. Study its three-fold structure, the shape of its petals, the linear shape of the leaves and their parallel veins.

Notice the long slender spike stems, the black shining buds, etc.

(e) Proceed in like manner with the onion from the fields, noting its flowers, seeds, parallel veined leaves, scaly-bulbs, and roots. Discuss the care and harvesting of onions. (f) Sixth GRADE.

Parted Flowers—(a) Mentzelia (M. ornata or levigata)—A large, rough branching plant with a beautiful yellow flower, open in sunshine, and found widely dispersed over our dry lands. It has leaves that stick to hands or clothing because of its hooked hairs, study its five yellow petals, note its five stamens, consider its hairy, sticky rays. Its beautiful bloom, etc. Find this glorious desert flower by all means "fall" many a gem of pure ray sorcery," etc.

(b) Milkweed (*Asclepias speciosa*)—Collect flowers and pods. Notice the five petals, with horns; the five curious spurs; and the stamens, with masses of waxy pollen in which insects get entrapped; observe the peculiar dash-tints of the inner petals; the delicate beauty of the striped, diminutive, silken, red seeds in the curious pods. Milky juice, the immuno "pig-eat" leaves. This is a wonder specimen. Don't fail to get it.

(c) Marsh Mallows (*Malva rotundifolia*) with their round, crumpled leaves, stems forming a sort "cheeses" like the fruits; found almost everywhere.

(d) Canterbury Bells, Ground Cherries, Matrimony vines, penstems and wild verbena are all available in September.

SIXTH GRADE.

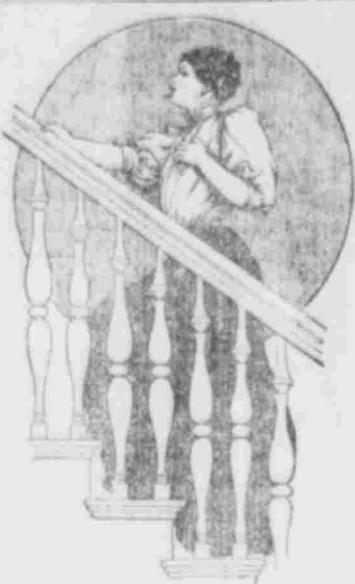
The irregular and spurred flowers—(a) Sweet Peas. Study the flower; find five petals. The broad one, the banner, or vexillum is the one on which the bee alights. The two side ones are wings (note their irregular shape), the other two are united into a keel (carpus) of a spur. Notice the way the flower turns from the standard. The stamens and pistil promptly come out of their hiding place and the flower is rubbed by them. So when the bee thrusts his head against the keel in order to run his tongue down into the base of the flower where the honey lies, the stamens rubbing over the bee's back, cause the pollen dust to fly off. The bee picks up the pollen dust from other flowers and thus gets his own pollen cross-fertilized by them. Observe what bees, butterflies, wasps, and moths eat the sweet pea. Study the stamens, united into a long tube and one separate around the pistil notice the crook and the sticks underneath of the stigma, explain their use. Count how many lobes make up each compound leaf and observe their oval shape.

(b) Grindelia—Find in the meadows a small grass bearing a bright blue flower with a yellow center. The high wages paid make it a mighty temptation to our young artisans to join in the form of skilled workmen, not to mention the Panama Canal. Many are restrained however by the fear of fever and malaria. It is the knowing ones—those who have used Electric Bitters, who go there without this fear, well knowing they are safe from malarious influences with Electric Bitters on hand. Cures blood poison too, all fevers, weak heart and all nervous, liver and kidney troubles. Guaranteed by Z. C. M. I. Drug Store, 121-122 So. Main Street, druggists, etc.

FOURTH GRADE.

The four-parted flowers, also the umbrella plant, umbelliferous or carrot family.

(a) Evening Primrose (*Oenothera biennis*). In the lower lands near the meadows is a beautiful yellow flower on the higher lands a white one. Count the petals in fours, the stamens 8, notice the 4-lobed pod with its four rows of seeds, tiny hair-like, the 4-lobed stigma, oval shape, and



Some leaflets become tendrils. Which way do they twist? Observe the angled stems, and the base of each leaf stem. Study the pod, the means by which the plant protects its seeds from being devoured by insects. Discuss the beauty and usefulness of the plant and decide on a place for rearing it next spring in the school garden.

(b) Larch—Study the flower. Notice how the stamens tube and pistil suddenly drop off when the keel is pressed by the finger. What would that do to the bee? Why does the flower act so? Would the bee get into this flower a second time? No, the flower has only enough honey for a single visit of the bee. To save the time of its polite friend, as well as to drive a sharp bargain, the flower makes haste to let the bee to the nectar before the nectar is closed by the protruding stamen tube and pistil. Be sure to let pupils find out by experiment now that occurs, study leaves—how they're cutting, curving, feelings, value; as a plant—the roots, the soil roots; the fertilizing power, the soil, etc., as a seed—it's shape, how protected from insects etc.

Common White or Dutch Clover—Common in lawns and wet places and a most interesting study. Notice how in its bed of white flowers, the outer ring seems first, then the inner ring, then a ring still further inside. The outer ring of flowers has turned downward and hangs toward the ground looking dry and dead, but this is only an appearance—a mere make-believe in order to deceive the insects. An intense activity is really going on within the little seeds toward which have been cross fertilized by the visit of the bee. Each flower, as it grows, receives the pollen carried by the bee from other flowers, and then the blossom shrivels to save the bee from a real feast second visit. Like the larch it has just enough honey for one visit; then it very obligingly turns downward, thus saving the bee's time and energy, and preserving its precious fertilization from the attacks of marauders—ants, etc.

(c) Red Clover. Proceed as above. These flowers do not turn down, for each head is protected by a leathery sheath at the base to keep off crawling insects.

(d) White or Sweet Clover. Proceed as with larch.

Wooly Plants and Grasses.—(a) Knotweed (*Polygonum*). The first group includes (1) creeping knotgrass and several erect species, (2) the docks, (3) the knotweeds. The first group, with silvery lower leaves, thin, bare stalks, and flowers whitish or pinkish in spikes or umbels. The common knotweed has stems jointed (nodes), sheathed at joints, branched slender, creeping, tough leaves alternate oval, blunt, smooth, sessile; fruit a triangular awl, acute, hornily, numerous. Major species are: *Polygonum aviculare*, white with white growth on under side of leaves—use good lens to see seeds and spores of this runny, knotweed the universal companion of man; covers waste places and rubbish with a handsome carpet; type of perseverance. Flowers of two kinds: those with stamens, others pistillate; lower flowers. Petal many, oval, purple white and petal-like, and sometimes pinkish.

(b) The Dock—Study leaves, jointed stems, stipules, or sheaths, and especially the triangular winged awns or fruits that bear one or more grains on their heads. The dock is a commoner species in the Eric railroad offers to the expansion visitor a special car service with visitor connections at Marion, O., Pocahontas, O., Monclova, O., Youngstown, O., Elmira, N. Y., Waverly, N. Y., and New York City.

A daily through sleeping car line is operated from Chicago on Erie train No. 8, leaving at 9:30 p. m., to Marion, O., Pocahontas, O., Monclova, O., Youngstown, O., Elmira, N. Y., Waverly, N. Y., and New York City.

The routes embrace trips via Baltimore and Washington, thence various steamship lines, in addition to stop-over privileges now permitted at Niagara Falls, Chattanooga lake, until October 15, if ticket is deposited on or before September 30th. (Jamestown or Lakewood), Cambridge Springs and Saugertown, stop-overs are permitted at any station on this company's lines, including 40 miles west of New York at the latter point for 10 days if desired. Stop-overs are permitted only within final return limit of ticket.

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(d) The Knotweed—Weed looking like a shrub—purple, pinkish, often nearly leafless. They take alkali out of the soil and are good feeders. See bulletin on saltbushes and weeds.

(e) Greasewood—(*Sarcobatus*). A worthless desert shrub growing in poorest land. Collect and examine. Find its seeds.

(f) Timbleweeds—We have three—the Bristle Thistle, the amaranth and the timble salt brush. They roll and scatter their seeds.

(g) Grasses—Begin by studying the oats. Note parallel veined leaves, pointed hollow stems, fibrous roots, flowers bearing three stamens and one pistil, covered with long green awns instead of a calyx and corolla; leaves sheathing the stem, but split on one side. Flowers in spikelets arranged in a panicle, each spikelet two flowered, two glumes (outer flower leaves), two pale (inner flower leaves), lower one notched and bearing an arm or bristle on its back. Leaves linear lanceolate, yellow, rough with loose stiff hairs. Distinguish from red-top, timothy, wire grass, witch grass, squirrel tail grass, June grass, blue grass, orchard grass and bunch grass.

SEVENTH GRADE.

Composite flowers

(a) Sunflowers—Collect flowering heads, leaves, stems, and dry chaffy heads of last year. Two kinds of flowers in the head—dry and discoid flowers in the outer show yellow strap-like rays; flowers in the center show yellow strap-like rays; flowers, the inner small tubular corolla, five-toothed, showing five petals united through which the two branched style protrudes with the five stamens clinging to it just below the divided style. Notice the two chaffy bracts that represent the calyx, the chaffy receptacle which holds the seeds, and the unique shape of the whole flower and fruit. Make drawings. Use a magnifying glass. Show how the flowers get cross-fertilized. What flying insects visit the heads? What attracts them? (nectar, pollen, color, odor). The daisy flowers are perfect, with both stamens and pistil; the ray flowers imperfect, lacking stamens. Of what use are they to the flower? To the bee? To us? Which insects are of use to the plant? Those that fly and eat only when the flower is open, serve us; they render? (They carry pollen from one plant to another. Which insect or animal is of use to the plant, eating flowers and seeds?) The worms, ants, bugs, etc. How does the sunflower attract its friends? (Bright colors, odors).

(b) Composite flowers—Collect flowers and pods. Notice the five curved stamens and the stamens, with masses of waxy pollen in which insects get entrapped; observe the peculiar dash-tints of the inner petals; the delicate beauty of the striped, diminutive, silken, red seeds in the curious pods. Milky juice, the immuno "pig-eat" leaves. This is a wonder specimen. Don't fail to get it.

(c) Marsh Mallows (*Malva rotundifolia*) with their round, crumpled leaves, stems forming a sort "cheeses" like the fruits; found almost everywhere.

(d) Canterbury Bells, Ground Cherries, Matrimony vines, penstems and wild verbena are all available in September.

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