



CLOVER



DUTCHMAN'S  
BREECHES



SPRING  
LILY



ANEMONE

Floral  
Trail



JACK-IN-THE-PULPIT



HAREBELLS



DAISY

## INTRODUCTION TO PLANT TRAILS

In the realm of natural science, probably flowers are the most popular. They fully gratify our senses. Everyone loves flowers, but this love is multiplied ten times when one learns that each and every part of a plant was built for particular duties, - the root to secure water and soluble food, the stem to transport food, the leaves to prepare the elements for food, the flowers and seeds to assure the world that there will be more of its kind the following year. How these parts change in appearance and structure to combat their enemies and use their friends will afford many happy hours of close watching. Corn leaves curl and cactus plants present only fleshy stems with leathery skins and spines as means of conserving moisture and defending their life food. The many contrivances or even gadgets that flowers offer to secure pollination have given thoughts for many books.\* The violet and primrose hid their nectar so deep that only bees, butterflies or moths with long tongues can get it and in return these insects must leave some pollen and gather a fresh supply.

New uses of plants for animal life has always been an interesting project. The success of agriculture depends upon these observations and experiments. Many of these simpler projects could be carried out in the craft shop or museum. Various flavors, fibers, dyes and rosins could be secured and used in food or crafts.

### FLORAL TRAILS

A master permanent floral sign could be placed at the beginning of the flower trail. If one wished to create a mood, Longfellow's lines might supply it thus:

"In all places then and in all season,  
Flowers expand their light and soul like wings,  
Teaching us by most persuasive reasons,  
How akin they are to human things."

Or if it were April, this would be appropriate, -

I have an urgent date with April,  
When the spring flower-show begins.  
Have you? The trail signs will lead the way.

Those preferring the floral trail could be encouraged to note types of flowers as are shown on Figure II. This page could be posted on a floral bulletin board with a note saying that a close study of this illustration would help all to name the blooms. They could write the names of types and their corresponding numbers in their notebook. The trail marker could keep temporary baggage tag signs on the type flowers using only the number of the type. Thus the visitors must do some close observation to identify the blossoms.

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\* Many of the pioneer botanists such as Darwin and Asa Gray have written much upon pollenation and fertilization.

A MASTER SIGN FOR FLORAL TRAIL



1. Bell



2. Pea

Banner  
Wings  
Keel



3. Labiate  
(Mints)

Odor  
Square  
Stem



4. Funnel



5. Spurred



6. Rose-Like



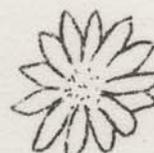
7. Crucifer



8. Salver-  
shaped  
(Phlox)



9. Rotate  
(Like potato or  
ground cherry)



Head



10. Ray  
Flower



Tube  
Flower



11. Lily

6 parts

Parallel  
Veins



12. Evening Primrose

4 Petals

4 Sepals

Pods  
4 parts

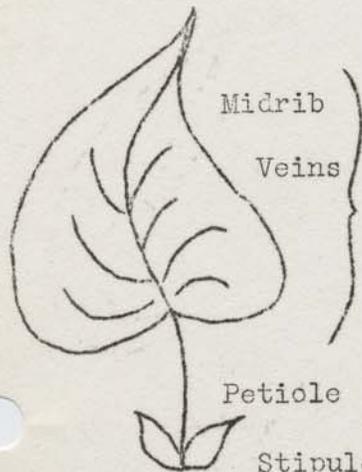


13. Poppy

4 Petals

2 Sepals  
Pushed Off

LEAF  
PARTS



Midrib

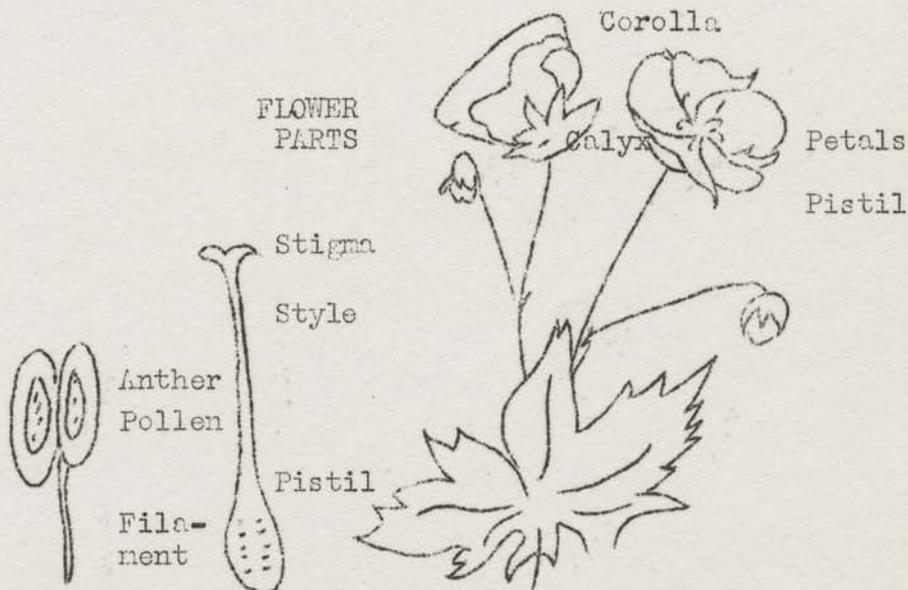
Veins

Blade

Petiole

Stipule

FLOWER  
PARTS



Corolla

Calyx

Petals

Pistil

Stigma

Style

Anther  
Pollen

Fila-  
ment

Pistil

Fig. XI

TYPES OF FLOWERS

"He is happiest who hath power  
To gather wisdom from the flower."

The following are current signs to be used only when plants are most interesting.\* These are flowers widely distributed over Nebraska.

1. Bed Straw or cleaver (*Galium* - several species), also called Virgin Mary's bedstraw. One species is used for curdling milk hence the Greek word means milk.
2. Anemones - Wind flowers. Why so called? Many species from low prairie to tall wood land kind. Solitary flowers or several. Some with three leaflets or five leaflets.
3. Poison Ivy \*\* - (*Rhus radicans* (L) kuntze.) A sumach. Three leaflets. White berries.
4. Woodbine - (*Parthenocissus quinque folia* (L) planch.) Also a vine like Poison Ivy but this one has five leaflets and black berries.
5. Jewel Weed - (*Impatiens biflora* (Walt). A Touch-me-not. Flowers a golden pendant. Seed pod is a tempermental football. Touch a ripe seed pod! Crush stem and rub on your poison ivy blisters.
6. Wild Clematis Vine - (*Clematis ligusticifolia* (Nutt.)). With five to seven leaflets - in Western Nebraska or (*Clematis missouriensis*) with three leaflets - in Eastern Nebraska. Often called "Old Man's Beard" or "Virgin's Bower". Why these nicknames? Sexes of flowers are divided on these plants just as "Quakers in Meeting".
7. Bindweed \*\*\* - (*Convolvulus arvensis*. L) Type No. 4. Small bindweed. Does it twine clockwise or counter-clockwise? Does it invite the night hawk moth? Find nectar. Noxious weed of Nebraska. Watch all vines to see in which direction they twine.
8. Dodders \*\*\*\* - (*Cuscuta arvensis* and other species). A parasite. A dishonest morning glory - Sponges a living. Where are its roots and leaves? The more seeds, the more mischief.
9. Night-flowering Catch Fly - (*Silene noctiflora* L). Why sticky stem? Watch for moths at night.
10. High Bush Cranberry - (*Viburnum opulse* L). Has red berries. Why left on bushes until spring? Taste one. Snowball bush has staminate flowers.
11. Dutchman's Breeches (*Bicuculla cucullaria* L) Millsp. and

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\* Look in bibliography for keys, stories, games and plays, to be used on Floral Trails.

\*\* Send for a Farmer's Bulletin #36. U.S. Dept. of Agriculture, Washington, D.C., "30 Poisonous Plants of the United States."

\*\*\* Look in free bulletin of Nebraska Weeds, Dept. of Agr., Nebraska.

\*\*\*\* Send to U. S. Dept. of Agri. for bulletin on "Noxious Weeds."

12. Squirrel Corn - (*Bicuculla canadensis* (Goldie)) Millsp. Bulbs look like corn. Two wild Bleeding Hearts.

"DUTCHMAN'S BREECHES AND SQUIRREL CORN"

By A. B. Comstock\*

"In a gymnasium where things grow  
Jolly boys and girls in a row,  
Hanging down from crossbar stem,  
Builted purposely for them.  
Stout little legs up in the air,  
Kick at the breeze as it passes there,  
Dizzy heads in collars wide  
Look at the world from the underside.  
Happy acrobats a-swing  
At the woodside show in early spring."

13. Pussy-Toes or Indian Tobacco - (*Antennaria* (Gaertn Spp.)). Staminate and pistillate flowers on different plants. Stolons (underground stems) are cause of growing in patches.
14. Daisy Fleabane \*\* - (*Erigeron ramosus*. Walt.) Notice the head of flowers of two kinds. Which have the seeds, the ray or disk flowers? Type No. 10.
15. Round-leaved Mallow (*Malva rotundifolia*). Low or running miniature holly hock. Cheeses (seed pds) are good tidbits.
16. Shepherd's Purse (*Capsella Bursa-pastoris* L). Type No. 7. A mustard. Why? Seeds are the "money" in the purse.
17. Solomon's Seal - (*Salomonina commutata* R. & S.) Edible root. Scars on rootstock like seals. Flowers in axils of leaves.
18. Wood Sorrel - (*Oxalis acetosella* L) White or pink flowers. Taste leaf to know meaning of name. Notice "Sleeping habit." Do all flowers open? Irish Shamrock of St. Patrick.
19. Common Violet - (Many species). Find the nectary (a tub for the Fairy's two feet.) Do all the flowers open?
20. Catnip \*\*\* - (*Nepeta cataria* L) Square stem and mint odor.
21. Chicory - (*Cichorium Intybus* L) Blue sailors. Roots ground and used for coffee.
22. Joe Pye Weed - (*Eupatorium purpureum* L) Joe Pye was an Indian Medicine man who claimed it cured Typhus Fever. Are there butterflies on it?

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\* Look in Handbook of Nature Study by A. B. Comstock, Comstock Publishing Co., Ithaca, N.Y. This poem could be read while listeners watch the flowers.

\*\* Look at Type No. 10 on Chart of Types of Flowers.

\*\*\* Look at chart type No. 3.

23. Purple Milkweed - (*Asclepias purpurascens* L.).

Milk is like rubber and can be removed by  
chloroform when dry on hands or clothes.  
Indian used young sprouts as our asparagus.  
Flowers gave sugar and stalks gave paper.  
The seed parachutes make down for pillows.

24. Wild Rose \* - (*Rosa blanda*, ait.) Smooth stems, or  
(*Rosa Arkansana*, porter) Bristles.

Indians made tea of roots to be drank when a new babe was born.

25. Butter and Eggs \*\* or Toad Flax - (*Linaria vulgaris* L.) Karst.

Juice of this plant put in milk makes fly poison. Leaves are good for  
a poultice. Flowers give a yellow dye, and emit a cheesy odor. Notice  
if large or small insects get into flowers.

26. Dog Tooth Violet - (*Erythronium Americanum* ker.) Dr. Bessey called it a  
spring lily\*\*\*. Why found in patches? John Burroughs christened it  
"Faun Lily". Why? Little corms (cormels) grow from big corm (or bulbs)  
and so multiply fast. How many petals and sepals in each flower of the  
lily family?

27. Evening Primrose\*\*\*\* - (*Onagra biennis* (L) Scop.) Watch a new primrose  
open each evening. Fragrant at night. Why? Roots a celery substitute.  
Watch for winter rosette of leaves on ground. At entrance of Primrose  
Walk this verse might be written:

Children, Come  
To watch the primrose blow. Silent you'll stand,  
Hands clasped in hand, in breathless hush around,  
And see her shyly doff her soft green hood  
And blossom - with a silken burst of sound.

(With apologies to Margery Deland)

28. Mullein or Flannel Plant - (*Verbascum thapsus* L.) Even sheep will not  
touch it. Is it bitter? Or spiny? Put a bit of it under microscope.  
This network of spines protects it from grazing animals, also from cold,  
heat, and drought. Its root is a subsoiler. How late does it blossom?  
Does it blossom from top or bottom first, or just anywhere? Open the  
capsules to find its small visitors - A bird seed-box for winter - A  
rosette plant. The seed is a beauty.

"The mullein's pillar, tipped with  
Golden flowers,  
Slim rises upward, and you yellow bird  
Shoots to its top."

A. B. Street.  
or

\*Look at type No. 6 on chart.

\*\*A snap dragon type.

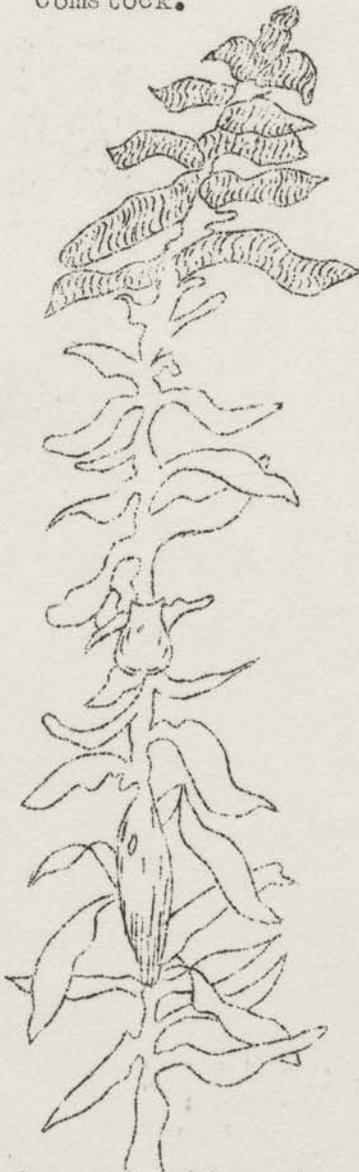
\*\*\*Look at Lily type No. 11

\*\*\*\*Look at Primrose type No. 12

"Sober dress never yet made you sullen,  
 Style or size never brought you a blush;  
 You're the envy of weavers, O, Mullein,  
 For no shuttle can mimic your plush.  
 With your feet in the sand you were born,  
 Woolly monk of the thorn, field and fallow,  
 But your heart holds the milk of the mallow,  
 And your head wears the bloom of the corn."

Theron Brown

29. Goldenrod - (*Solidago* spp.) 85 species in North America. Seven to ten species in Nebraska. A head flower. There are flat topped and panicled types. See how many you can find of our State and National flower. Read footnote and description under picture and then you will appreciate the truth of this poem found in Handbook of Nature Study by A. B. Comstock.



Stem of Goldenrod  
 Fig. XII

A green little world  
 With me at its heart!  
 A house grown by magic,  
 Of a green stem a part.  
 My walls give me food  
 And protect me from foes,  
 I eat at my leisure  
 In safety repose.  
 My house hath no windows,  
 'Tis dark as the night!  
 But I make me a door  
 And batten it tight.  
 And when my wings grow  
 I throw wide my door  
 And to my green castle  
 I return never more.

A round gall above, made by larva of a fly; and the spindle-shaped gall below made by caterpillar of a moth. \*

\*The caterpillar seems to realize it needs to get out after it has lost its chewing ability when changed to a moth, so chisels an opening widened to the outside and packs it full of debris which he easily pushes out when a moth.

Nature Activities for Floral Trail.

1. Make a key\* to the flowers of the trail area. Also a card index of flowers in area, using five and ten cent book pictures to be fastened to description card.
2. Native flowers not found in trail area could be transplanted to agreeable habitat i.e. wet or dry, sunny or shady places. These could be planted with a little ceremony or program and games correlated with the planting of the flowers.
3. A still rarer flower garden could be planted, and labelled. An Indian flower garden containing plants from which our Redmen gleaned tasty, and nutritious food stuffs, fibers for textiles, cordage, fine dyes and medicine. Many of these plants played an important part in their tribal ceremonies. This could be planted near a clear spot where Indian ceremonies\* pageantry and games could be played. This offers a form of recreation yet to be recognized as worthy of intense cultivation.
4. Choose a plant as yours for the summer's observation - Write a story of its doing as a) Its first leaf, b) Does first leaf differ from others, c) How the flower opens, d) What type and why? e) What insect visitors and do they pay for their nectar, f) What kind of a seed case? g) Device to scatter seeds? h) Who helps the seeds travel? i) Use of plant to us - its smell, taste, feel, etc. These could be used for material for the trail paper published at end of each season or for the nature column of the city paper.
5. What insects visit what flowers?\*\*\* Do the same kind of insects visit the same type of flowers? Do bees know their flowers? Follow a bee to see if he visits a yellow and a blue flower on same trip.
6. Have a "Floral matinee". Secure a person who knows many interesting things about flowers and who will give his or her afternoon to answering any questions or offering information to any one who wishes to come. Publish the fact in the paper.
7. Type gardens could be planted, i.e. Put one of each kind of mint in one space such as catnip, peppermint, bergamot, motherwood, oswego tea, etc. The mustard family of shepherd purse, black mustard, cress, pepper grass, etc., could be placed together to show similarity.
8. Herbariums can be made of only the very plentiful kinds.
9. Find the noxious weeds as named in our bulletin No. 101, Dept. of Agriculture.

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\*Petersen's Flora of Nebraska, (which can be secured from Nebr. St. Library Commission) or Bulletin #13, Conservation Dept. of University of Nebraska. These will suggest a workable key.

\*\*National Geographic Magazine, 1937, Vol., gives some colored plates for costume suggestions. Hiawatha Reading. Legends of flowers in Book of Knowledge, Vol. #4. "Little Papoose Listens" by E.M. Donaldson at ten cent store.

\*\*\*Books.

10. An Evening Primrose Walk \* - A nature guide could conduct a group to see a primrose doff its cap, to smell its fragrance and watch its insect visitors.
11. Sleepy hour - Locate your leaves and flowers that shut up at night or even earlier and visit them. Such as dandelion, oxalis, morning glory, wandering jew, spiderwort, chicory, anemones, etc.
- 12.. Gather leaves and flowers where there are many and press them to use in making leaf and flower charts, leaf and flower pictures, drawings, paintings, spatter prints, blue prints, carbon prints, smoke prints, paint prints, plaster of paris casts.
13. To notice veining of leaves, a very interesting leaf skeleton can be made by boiling in washing soda solution.
14. Observe difference between grasses, sedges and rushes \*\*. Grass exhibit for museum.
15. Collect seed travelers and exhibit as to their carriers and methods, i.e., by water, by animals, by man, by wind and by discharge.
16. Make seed, seed pod and berry zoos.
17. Make plaques, bookends, letter racks, etc., decorated with seeds, nuts, berries, flowers and leaves to form natural sprays, bouquets or scenery.
18. Take bouquets of wild flowers which are very abundant, to the hospital with interesting stories about these friends, attached, for the enjoyment of patients.
19. Rosette walk - In fall find all plants that make a rosette growth of leaves on the ground, as the dandelion, evening primrose, mulleins, wild asters, thistle, etc., and after story of why their leaves are low to avoid Jack Frost and that they take this beautiful rosette leaf arrangement to secure all the sunlight possible to get a good start for next years growth, play game called "Jack Frost".\*\*\*
20. Posters to protect wild flowers, listing those too rare to pick.
21. Flower legends\*\*\*\* - acted as a simple play.
22. Make perfume from flowers as follows:\*\*\*\*\*

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\*Read A.B. Comstock's story in her Handbook of Nature Study.

\*\*Bulletin #9, of School Nature League. 5 cents. American Museum of Natural History, New York.

\*\*\*In Dr. Vinal's "Nature Games".

\*\*\*\*Book of Knowledge, Volume #10, 3210.

\*\*\*\*\*Full directions in Book of Knowledge IV, pp 1515.

HOW TO MAKE PERFUME FROM FLOWER PETALS  
OF ROSES, VIOLETS AND OTHERS

Glass Jar



Fill jar with layers, then make airtight. Set in sunlight for 14 days. Press oil out of sheet wadding. This oil is your perfume. A combination perfume from the use of petals from several kinds can also be made.

Sheet wadding soaked in Lucca Oil.

Petals of flowers.

Salt, thin layer.

A SUGGESTIVE DISPLAY OF SEEDS  
FOR THE MUSEUM OR BULLETIN BOARD

Display of Seed:

Fall is time for the ripening and the scattering of fruits and seeds. They must travel, to find room to grow. They must devise many forms, shapes, baits and appendages to steal or pay for these rides. The carriers may be:

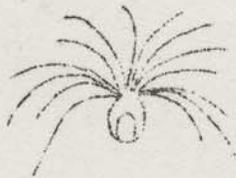
I. Wind, who carries free of charge:

1. Seeds having balloons or parachutes of hairs, as milkweeds, dandelions, lettuce, etc. Fig. XIV
2. Some have wings as the penny-cress, wild carrots and many trees. Fig. XV
3. Some whole plants or branches of plants blow off and blow around as the tumble weeds, fire weeds and tickle grass.



Wild Salsify  
or  
Oyster Plant

Fig. XIV



Milkweed



Penny-  
cress



Ash

Fig. XV

II. Animals.

1. Some seeds, by means of hooks and barbs, steal rides on the fur of animals or clothing of man, as sandburs, puncture vine and wild licorice. Fig. XVI.
2. Water birds, animals and man may carry seed in mud on their feet.
3. Fruits containing indigestible seeds may be eaten by animals and birds and man, discarding seeds - as rose apple, berries and cherries. These pay for their ride. Fig. XVII.

4. Nuts. Squirrels often store away more than they eat. Their food is the transportation fare for carrying some nuts away and planting them. The gray squirrel has planted many forests of our nut trees. Fig. XVIII.



Puncture  
Vine

Fig. XVI



Wild  
Licorice



Wild  
Rose

Fig. XVII



Cherry



Hickory



Acorn

Fig. XVIII

III. Water

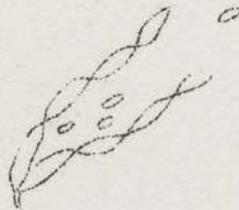
Many seeds do not sink in water so are carried on surface as grasses, sedges and cattails. Fig. XIX

IV. Discharge.

Some seed pods burst or twist open as peas and beans, jewel weeds and violets. Fig. XX



Cattail  
Fig. XIX



Pea

Fig. XX



Violet

As a tribute to the grasses, plants that furnish most of the food for man and beast, one might also say that the grasses won the world war. How? By this circuitous route. Years before, a great waste of country in France was planted to grass, this allowed the seeds of trees to germinate and maintain their foothold and a mighty forest grew. When the United States came to help France, there were no barracks for the soldiers but soon the wood of this forest was turned into shelters and forts so the United States men could remain and turn the trend of the World War.