NATIVE PLANT SOCIETY of OREGON

•OBJECTIVE•
To increase the knowledge of members and public in identification and conservation of the native plants of the Pacific Northwest.

Vol. XIII No. 10 OCTOBER 1980

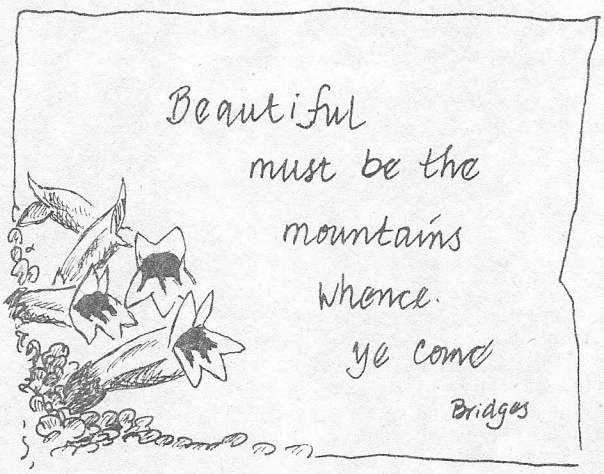
FIELD TRIP REPORTS

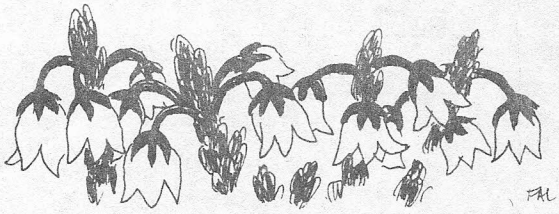
THREE FINGERED JACK

On a sunny and warm August 9, eleven members of Willamette Valley Chapter enjoyed the seven-mile round trip to the talus slopes at the base of Three Fingered Jack. The trail began in open conifer forest. Here Penstemon procerus bloomed abundantly with scattered appearances of Calochortus subaplinus, Ranunculus eschscholtzii, Linnaea borealis, and Gilia aggregata. Lunch was enjoyed in Canyon Creek Meadows where the Phyllodoce empetriformis, Mimulus guttatus, and Lupinus sp. which draped the streamside were admired and photographed. Very little was in bloom in the meadows compared to the abundance of asters and other species seen a year ago. As the trail ascended it passed again through open forest with wet areas appearing more frequently. Plants in bloom were Eriogonum pyrofolia, Lupinus sp., Phyllodoce empetriformis, Cassiope mertensiana, Luetkea pectinata, Saxifraga ferruginea, Cardamine bellidifolia, Spraguea umbellata, and Nothochelone nemorosa in moist rock crevices. Sharp eyes spotted a lone plant of Elmera racemosa. On the talus slopes were patches of Oxyria digyna in full bloom, Mimulus lewisii just beginning to bloom, and more Cardamine bellidifolia photogenically set among the rocks.

The trail is not difficult and from it one has an impressive view of the mountain as well as geologic features of the foothills.

Viola Sobolik





TOP OF OLALLIE BUTTE

Five hikers showed up for the climb up Olallie Butte, despite forecasts of cloudy weather and possible showerss. In reality this 23rd of August was almost an ideal day for the trip: clear and sunny with just enough breeze to moderate the heat of the sun and the climb.

The ascent is about 41/4 miles and is moderately steep. The trail head is about 11/2 miles north of Olallie Lake, and next to where the road passes under a power transmission line. The best approach is from the North.

The first half of the climb was dry with very few flowers in bloom, but above this point we began to see large beds of Luetkea pectinata and Vaccinium scoparium. A little higher up we found Saxifraga tolmiei and Phyllodoce empetriformis. Around 3/4 mile from the top we broke into an open area of volcanic sand that harbored Penstemon davidsonii, Penstemon procerus and Eriogonum umbellatum. The top of the butte, a rocky flat of about 2 acres, was swept by a cool breeze and had a snow bank on its north slope. Here were many colorful specimens of Spraguea umbellata, V. caudicifera and Hulsea nana. All of the plants mentioned were in full bloom.

The view from the top is spectacular on such a day, with Mt. Hood and Mt. Jefferson rising on the north and south like giant bookends. There were numerous lakes in view all around the butte. We could see beyond Madras to the east and were it not for the Valley Smog, could have seen the Coast Range.

Thanks to those who have and will participate in the field trips this year. Special thanks to those who accepted the responsibility of leadership. They have all been successful.

Jack R. Bailey

POTLUCK AT SEARS'

On August 31, several members of the Siskiyou Chapter gathered at the home of Willy Sears in Talent. Willy and Sue hosted a potluck and sauna. We all admired Sue's homespun talents and Willy's skill in working native hardwoods.

Andy Kier

BREITENBUSH LAKE AND PAPOOSE LAKES AREAS

A beautiful day, a few flowers, good fall color, and grand scenery lured 16 Willamette Valley Chapter people to the Breitenbush Lake and Papoose Lakes area in the high Cascades on September 6. Gentiana calycosa, and Microseris alpestris provided most of the bloom. Spiranthes romanzoffiana, Spiraea densiflora, Arnica latifolia, Luetkea pectinata, Potentilla glandulosa, Castilleja parviflora var. oreopola, Nothochenlone nemorosa, Veratrum viride, and Tofieldia glutinosa showed an occasional season-ending bloom. Fruits of Vaccinium spp. and Gaultheria humifusa were delicious. The fall color of a Vaccinium sp. and Sorbus sitchensis were at their brilliant and subtle best.

Wilbur Bluhm

WELCOME TO NEW MEMBERS

Mid-Columbia Chapter
Michael S. Trinkle, Mosier

Portland Chapter
Barbara & Loren Strunk, Portland

High Desert Chapter
Janet Chandler, Bend
Albert Franklin, Hines

CHAPTER CALENDARS

PORTLAND CHAPTER

Field Trips

Sat. Oct. 4 -- Oneonta Gorge Loop. Leader undesignated. Meet 9:00 a.m. at Lewis and Clark State Park.

Sat. Oct. 11 -- Japanese Garden and Hoyt Arboretum. Meet 10:30 a.m. below the tennis courts in Washington Park. Admission to the garden is $2.00.

Sat. Oct. 18 -- Ramona Falls for Mushrooms. Keith Warren, leader. Meet 10:00 a.m. at Zig Zag Ranger Station. Carpool 9:00 a.m. in the Oregon Motor Vehicle Dept. parking lot N.E. 60th and Glisan.

Sat. Oct. 25 -- Tillamook Head, Ingeborg Day, leader. Meet 10:30 a.m. in the Indian Beach parking lot, Ecola State Park. Carpool at OMSI 8:30 a.m.

Sat Nov. 1 -- Celilo Area. George Lewis, leader Meet in the Portage Inn parking lot, The Dalles, at 10:30 a.m. Carpool at Lewis and Clark State Park, 8:30 a.m.

Sat. Nov. 8 -- McCord Creek. Dr. George Jeffcott, leader. Meet 9:30 a.m. at Lewis and Clark State Park.

SISKIYOU CHAPTER

Meeting -- Mon. Oct. 6, 7:30 p.m. SOSC campus, Ashland, Room 171 of the Science Building. Lewisias of Southwest Oregon. Dr. Janet Hohn, speaker. Our first regular meeting will be this date (rather than the usual first Thursday) so that we may accomodate Dr. Hohn, Regional Botanist, U.S. Fish and Wildlife Service. Janet will be in the area for an Interregional meeting on T&E Plants, so don't miss her.

Change in By-Laws

The membership cast a unanimous ballot to approve adding a new article to the By-Laws.

Article II- Purpose
This corporation is formed for charitable, educational, and scientific purposes.

The present Article II - Membership becomes Article III, etc.

Frank A. Lang

PRESIDENTS MESSAGE.

Summer is over and it is back to business as usual for me. I would like to thank Lisa Hirsch and Robbin Pearce for all the work they have done on the Newsletter (preparing mailing labels, typing, folding, stapling, etc.) and on the membership list (which you should be receiving soon). They have been a great help and I appreciate it.

Frank A. Lang

1. Notes on Growing Native Plants

Seed gathered from species of native plants should be a very small percentage of that which remains for natural distribution.

Seed should be fully mature when harvested. This is indicated by the browning of the seed heads and ripe seed beginning to drop. Some pods disperse seeds quickly and these are better gathered just before opening. Stage of maturity can be assessed by comparing with those already dropping seed. Often it is possible to remove seed from recently opened pods or capsules by shaking seed into a container without removing the stem from the plant. When collecting in one's garden or easily accesible place maturing seed can be covered on the plant with a paper or cheesecloth bag and tied closely around the stem to catch ripening seed.

Place gathered seed heads and pods in paper envelopes or bags and label at once with scientific name, date, place collected and type of habitat. Guard against storing in closed plastic bags which may encourage mold and insect activity. At home spread out the collections on newspapers or trays to dry thoroughly. Certain drying pods explode with great force. Place these in a bowl or cover with a screen to contain the seed. Improve air circulation by lifting and rearranging the material each day.

When the seed is dried it should be cleaned to remove bits of pods, stems, foreign seed and any insect present. Cleaning can be accomplished by sifting, winnowing or both. Coarse pieces of unwanted materials can be removed by use of kitchen collander, strainers, or screening with suitable hole sizes. Start with the large size holes and reduce in succeeding siftings.

Winnowing is accomplished by placing small quantities in a deep bowl and gently blowing out bits of pod as seeds are stirred. Or place seed on a large tray or sheet-cake pan and blow across the seed to remove large pieces of extraneous materials. Then gently tilt the tray to one end. The seed will roll to the low end but friction holds back the flat particles. Remove with a finger or cloth. Then tilt the tray in reverse direction and repeat until seed is clean.

Larger seed can be placed on a table top, spread out, and removed from the litter simply by pressing on them gently with finger tips and drawing them to the edge of the table and into a container below the edge.

Seed of fleshy fruits is ready for gathering when the fruit is ripe as indicated by its size and color. One can also check the degree of milkiness of the seed and the hardness of the seedcoat. To remove seeds from the fruit, mash and discard as much pulp as possible. Wash seed and spread out to dry. A second washing will remove any remaining bits of pulp and mucilage. Spread on newspaper to dry thoroughly.

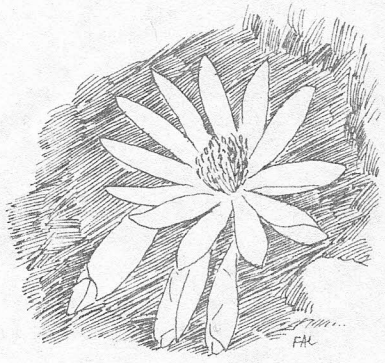
Seeds of most trees and shrubs with dry seeds or nuts are best collected when they begin to fall naturally.

Store dry and clean seed in paper envelopes, properly labeled, in a covered jar in the refrigerator at temperatures just above freezing. Stored seed must be kept cool and dry for maximum longevity.

Remember that a seed is a living organism. While it is dormant there is no cell division and therefore no growth, but there is a tiny flow of energy from a slow rate of oxygen consumption used in cell respiration. Moisture and heat increase respiration thus using up stored energy of the seed and decreasing its vitality and life span.

NEXT MONTH: Seed Germination

Viola Sobolik, Portland Chapter
(Editors Note: Vi Sobolik is also a member of the Rock Garden Society and the National Association of Garden Clubs.)



EDITORS APPRECIATE ALL YOUR WORK

Your NPSO Bulletin editors want to thank everyone who has been contributing information and articles for each month's issue. We could not hope to research and write all the fine material that we have received, nor to contact each chapter for their monthly calendar information. Our hands are full with just the editing and distribution tasks. In short, your continued eagerness to send in news about native plants and native plant people is essential. And we are sure many NPSO members take pride in seeing their contributions, however long or short, included in our society's publication. So, thanks from us...and never hesitate to share your feelings about ways to make the Bulletin more and more effective for our membership.

Frank Lang and Vern Crawford, Editors

SPALDING'S SILENE RETAINS OREGON RESIDENCY

Dry hills of the Wallowa region still harbor at least one population of Silene spaldingii, as they have since Cusick's most recent Oregon collection of it in 1898.

Oregon's population represents one of the largest of fourteen extant populations--at scarcely more than 100 individuals. It is one of the few grazed sites among the fourteen, which are more tokens of native grassland from northeastern Oregon, through southeastern Washington and Idaho into western Montana, generally occupying native begetation islands among prime agricultural land.

Locally it occupies dries sites than any other sympatric Silene species, representing variations on Festuca idahoensis - dominated habitats. Its Oregon associates also include Agropyron spicatum, Artemesia cana, Chrysothamnus viscidiflorus, and Stipa lemmonii, differing from the more northerly sites at which Haplopappus liatriformis and Symphoricarpos albus are usually present. The habitats are found in a variety of geomorphic and historic settings, including steep wheatfield eyebrows on the north-face of loessal dunes, on a level cemetery remnant among wheatfields, remnant of native vegetation on headwaters above the Snake River, and in Oregon at the tail end of a lateral moraine.

August is the prime period of reproductive activity, the excessively glandular nature of S. spaldingii accomodating the August heat waves and evapotranspiration stress. Its tardy appearance also potentially mitigates some level of grazing impact, since the surrounding vegetation has little forage value in August, and the plant itself would seem unpalatable. Sticky leaves aside, a large percentage of seeds are eaten by insects that frequently penetrate the capsule wall, though the local swarms of grasshoppers have not gotten past the viscid calyx.

As one of the most distinctive Northwest Silene species, S. spaldingii is readily distinguished by its diminutive white petals and highly viscid herbage. It is further characterized by its compact cyme, sessile and slightly connate leaves, and illustionary appearance as an oasis of green in a brittle, brown sea of dry vegetation.

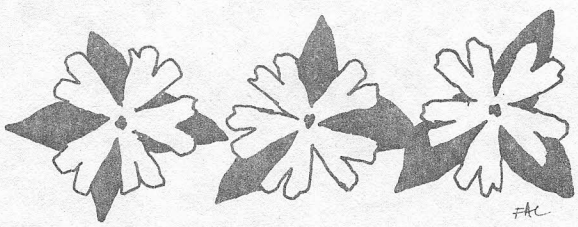
The discovery of Silene spaldingii in Oregon this year represents the relocation of a notable member of NE Oregon's rare flora. (This species is soon to be proposed as Threatened by the U.S. Fish and Wildlife Service - Office of Endangered Species).

Bonnie Heidel
Office of Endangered Serv.
U.S. Fish & Wildlife Serv.
Portland, Oregon

GOPHER GRASS COULD PROVIDE CRUDE OIL

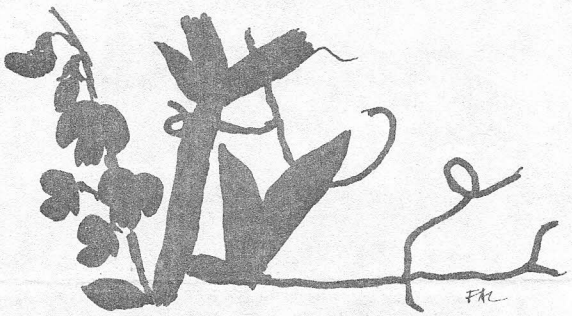
Nobel Prize-winning scientist Melvin Calvin of the University of California at Berkeley has a plantation of gopher grass, also known as Euphorbia lathyrus, which he claims "is the best way to capture solar energy" and could provide as much as 10 percent of U.S. crude oil needs. The plants' latex-like sap is yielding the equivalent of 10 barrels of petroleum/acre/year at $40/barrel. He indicated genetic improvements may yield a 10-fold increase in per-acre production.

Source: TECHNOLOGY REVIEW, May 1980
contributed by Larry Purchase, Portland



JOIN THE
HIMACHAL PRADESH/KASHMIR BOTANICAL EXPEDITION

$100 of your cost of attending this exciting trip will go directly to NPSO. So plan to join the group May 5-29 1981. The program in India will be hosted by an Indian Botanist who will accompany the group during the entire trip. Four days will be spent in Delhi with a tour of the city included. Ten days botanical trekking in the Himachal Pradesh, with porters, tents, cook & kitchen help, all meals, and sherpas, will follow. At the return of the trek, we will go further north to Srinagar and explore the region and gardens of Kashmir. Our program will reach an end in Delhi after the flight from Srinagar. A day's rest at Janpath, then the group will board the plane for the return flight. An optional two-day visit to the Taj Mahal, red fort, and Bharatpur Bird Sanctuary.
Land Cost: $1450
Airfare: $1250 (east coast slightly less. Subject to change).
For information, contact Folkways International Trekking, Inc. 14903 S.E. Linden Lane, Milwaukie, OR 97222, telephone (503) 653-5882.



PLANT FAMILY PROFILES
By Herm Fitz

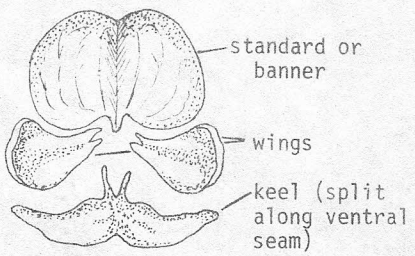
The Leguminosae - PEA FAMILY

The Pea Family, Leguminosae (also called Fabaceae), is one of the three largest angiosperm families. With perhaps 600 genera and 15,000 species (sources vary), this cosmopolitan family competes with the Orchid Family for ranking second only to the largest - the Sunflower Family. The Pea Family is of notable economic importance, yielding many food crops (peas, beans of all sorts, peanuts, lentils), forage plants (clover, vetch, and lucerne or alfalfa), ornamentals (brooms, acacias, sweet peas, red bud, lupines), and valuable woods, dyes, resins, gums, and oils. At the same time several groups contain species that are poisonous to livestock (lupines, locoweeds, stemless loco). Of this vast family, Oregon provides habitat for only 20 genera and somewhat less than 200 species.

Some genera are entirely alien: Crown Vetch (*Coronilla varia*), an ornamental native of the Old World, is apparently established in parts of Western Oregon; the shrubby, colorful, yet pesty Brooms (*Cytisus*), the Medicks, Bur Clover, and Lucerne or Alfalfa (*Medicago*), the robust Sweet Clovers (*Melilotus*), and the formidable, spiny-leaved Gorse or Furze (*Ulex europaeus*) of coastal bluffs are all introduced from Europe. Black Locust (*Robinia pseudo-acacia*), originally native to the eastern United States, has been introduced widely as an ornamental and valuable wood tree. Swainsona (*Swainsona salsula*) is a weedy asiatic plant occupying alkali soils of eastern Oregon.

Native genera include Milkvetch or Locoweed (*Astragalus*) with some 60 species (18 of which are threatened or endangered) scattered, often locally, mostly on dry, sometimes sterile, slopes and plains east of the Cascade Crest or in other drier areas. Licorice Root (*Glycyrrhiza lepidota*) occurs in moist areas mostly east of the Cascades. Mackenzie's Hedysarum (*Hedysarum mackenzii*) occurs in Oregon only in the Wallowa Mountains, along with the Stemless Loco (*Oxytropis*) of the high peaks. Western Prairie Clover (*Petalostemon ornatum*) may be found in the rocky or sandy soils, often among sagebrush, of the more arid sections east of the Cascades. California Tea or Psoralea (*Psoralea*) is represented by a species on each side of the Cascade Crest. The yellow-flowered and threatened Western Sophora (*Sophora leachiana*) is found only locally in Josephine County in sparsely wooded hills. Species of Buckbean (*Thermopsis*), resembling yellow-flowered lupines, grow in open woods in mountainous regions. Common and widespread in many habitats are 17 species of Wild Pea (*Lathyrus*), 12 species of Lotus and Trefoil (*Lotus*), about 50 species of Lupine (*Lupinus*), some 37 species of Clover (*Trifolium*) and 11 species of Vetch (*Vicia*) Of these, 1 species of *Lathyrus*, 12 species of *Lupinus*, and 1 species of *Trifolium* are considered rare, threatened, or endangered.

Members of the Leguminosae are herbs, shrubs and trees. The plants have leaves that are usually alternate, trifoliate to palmately- or pinnately-compound (simple and reduced to spines in *Ulex*), with stipules that may be broadly expanded, as in the garden pea, or modified into spines (*Robinia*). Terminal leaflets are occasionally modified into tendrils for climbing (*Vicia, Lathyrus*). An interesting and valuable characteristic found virtually throughout the family is the symbiotic (mutualistic) relationship with species of the bacterium *Rhizobium*. These microbes dwell within root nodules and have the ability to fix atmospheric nitrogen (elemental diatomic gas - unavailable as a plant nutrient) into nitrates and other absorbable nitrogen compounds that can be used as building blocks for amino acids and proteins. Nitrogen fixation performed by the bacteria yields nutrition to the legumes that not only enables them to grow in nitrogen-deficient soils, but also ensures a high protein content in their leaves, stems, fruits and seeds that ultimately enriches the soils of the ecosystems in which they grow.



Dissected papilionaceous flower of Wild Sweet Pea (*Lathyrus sylvestris*) showing upper standard or banner, 2 lateral wings, and keel (formed of 2 fused lower petals) which encloses the stamens and pistil

The inflorescence is usually an erect or pendant raceme, sometimes spikelike, an umbel, or a tightly-clustered head. Most typically the flowers are butterfly-like, or "papilionaceous," named after a family of Swallowtail butterflies, the Papilioniidae. In such a flower, the 5 petals assume different forms: the top or dorsal petal becames the "standard" or "banner," 2 lateral petals form "wings," and the two lower or ventral petals become joined along their lower margins to form the "keel," which encloses the stamens and pistil. Stamens are usually 10, either free (*Sophora, Thermopsis*), united by their filaments, or "monadelphous" (*Ulex, Lupinus, Psoralea*), or in a special arrangement termed "diadelphous" whereby the filaments of 9 stamens are united, leaving the 10th, and dorsal, stamen completely free of the others (*Vicia, Lathyrus, Lotus, Trifolium*). The fused filaments form a tube about the ovary. A single pistil, of a single carpel, with a superior ovary and an elongate style with stigma, encloses 2-to-many ovules in two alternating rows along a dorsal parietal placenta. The fruit is a one-chambered pod called a "legume," either dehiscent along 2 sutures or non-dehiscent, sometimes constricted between seeds, then called a "loment."
Variations in the flower structure lead to the description of three subfamilies as follows:

Mimosoideae - Mimosa Subfamily - Tropical and subtropical trees, often with bipinnate leaves. The flowers are regular, with 5 small, but equal, petals and numerous stamens, either bisexual or unisexual. Examples are *Mimosa* and *Acacia*. Oregon has no native or naturalized members.

Caesalpinioideae - Senna Subfamily - Tropical and subtropical trees and shrubs with pinnate leaves and bisexual flowers that are usually irregular, with distinct petals, and wings that enclose the banner in the bud. These flowers, though zygomorphic, are not considered to be truly papilionaceous. The stamens are 10 or 5, free or monadelphous. The Redbud (*Cercis occidentalis*) of California foothills is an example; Oregon has no natives.

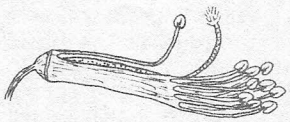
Papilionoideae - Bean Subfamily - Tropical, subtropical and temperate. This largest subfamily is mostly herbaceous, but contains some trees and shrubs. The leaves are usually compound, in various ways. Flowers are truly papilionaceous, with lateral petals (the wings) enclosed by the banner in the bud stage, and the basal petals connate to form a keel. Stamens are always 10, free, monadelphous, or diadelphous. This subfamily comprises the Leguminosae in Oregon.

We may write the floral formula for the Leguminosae as follows (Papilionoideae only, in Oregon):

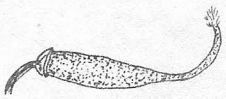
$$\underset{\text{Ca}}{\textcircled{5}} \quad \underset{\text{Coz}}{\textcircled{5}} \quad \underset{\text{V}}{} \quad \underset{\text{S}}{10,\ \textcircled{10},\ \text{or}\ \textcircled{9}+1} \quad \underset{\text{P}}{1}$$

Now, if you encounter a shrub, tree, or more commonly an herb with compound leaves, perhaps tendrils, but most definitely with papilionaceous flowers in racemes, spikes, umbels, or heads - with 10 stamens either free, monadelphous, or diadelphous - and if the single pistil is maturing to a legume or loment, you have certainly come upon some representative of the Leguminosae - the Pea Family.

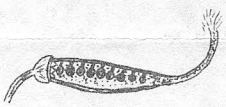
SEXUAL PARTS OF A WILD SWEET PEA



A) Sepals and petals dissected from flower of Wild Sweet Pea (*Lathyrus sylvestris*) showing diadelphous ($\textcircled{9}+1$) stamens and protruding style and stigma.

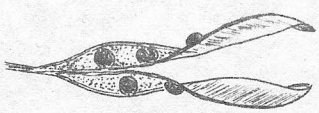


B) Stamens removed from A, showing single pistil, with single locule and curved style and stigma.

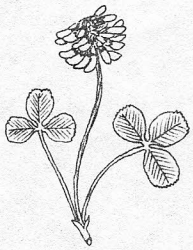


C) Ovary with ½ outer wall removed showing 2 alternating rows of ovules dorsally attached to a single parietal placenta.

D) Enlarged view of cross-section of ovary, showing alternating habit of ovules. Note also the true dorsal suture and the false ventral suture of the single locule.

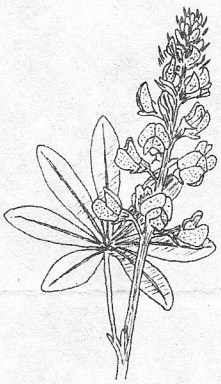


Mature fruit of the Wild Sweet Pea (*Lathyrus sylvestris*) showing splitting along 2 sutures characteristic in legumes, followed by twisting.

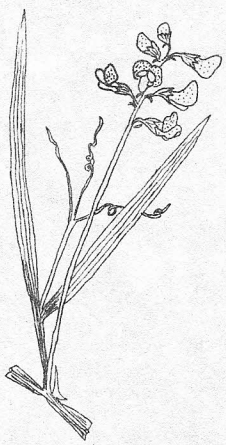


White Clover (*Trifolium repens*) showing head-like inflorescence, a dense cluster found in the Leguminosae, and typical trifoliate leaves.

Bird Vetch (*Vicia cracca*) showing pinnately-compound leaf with many leaflets and tendrils. Note also the many-flowered, one-sided spike-like raceme of papilionaceous flowers.



Broad-Leaved Lupine (*Lupinus latifolius*) showing palmately-compound leaf and flowers with reflexed banners.



Wild Sweet Pea (*Lathyrus sylvestris*) showing racemose inflorescence and pinnate leaf with terminal leaflets modified as tendrils.

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