# The Life of Flowers

Interesting Things are Going on in Your Yard

Prepared by Sharon Yiesla of
Sharon Yiesla, Horticultural Services New 1/24

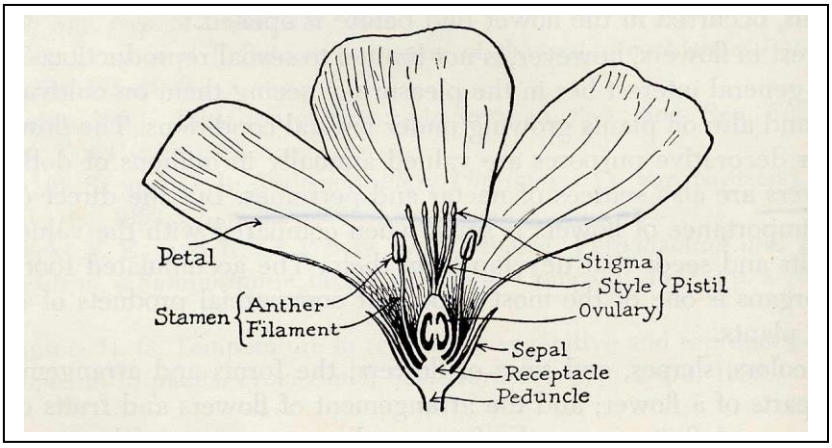
I. The Purpose of Flowers

Flowers have one purpose and one purpose only; sexual reproduction (production of seeds)

.

II. Flower Parts and Types

A. Flower parts




(T)

1. Pistil- the 'female' part of the flower; composed of a stigma (for receiving pollen), a style (a usually elongated section), and ovary (contains ovules that will become seeds when fertilized),
2. Stamen- the 'male' part of the flower; composed of the anther (which produces the pollen) and the filament (a stalk to hold the anther).
3. Sepals-the outer layer of floral parts, often (but not always) green and leaf-like in appearance, and serving to cover and protect the unopened flower bud. Collectively, the sepals are known as the calyx.
4. Petals-the inner layer of floral parts, often (but not always) brightly colored. Collectively, the petals are known as the corolla.
5. receptacle- the base of the flower from which all flower parts arise.

Flower parts are arranged in whorls: sepals are the outer whorl, the whorl of petals is inside the sepals, the whorl of stamens is inside the petals and the pistils are in the middle.

B. Types of flowers

1. Perfect flower – contains stamen and pistil (both genders)
2. Imperfect flower– missing one gender
   a. Staminate: has stamens, but no pistils; a male flower
   b. Pistillate: has pistils, but no stamens; a female flower
   c. Dioecious Plant: male (staminate) flowers and female (pistillate) flowers on separate plants
   d. Monoecious Plant: male (staminate) flowers and female (pistillate) flowers on the same plant, but in separate structures

III. Pollination and Fertilization

Pollination occurs when the pollen comes in contact with the stigma. Fertilization does not occur until the pollen (sperm) unites with the egg (ovule). At this point, the ovary starts to develop into a fruit and the ovules develop into seeds.

IV. The End Product: Fruit

A fruit is the ripened ovary of the flower.

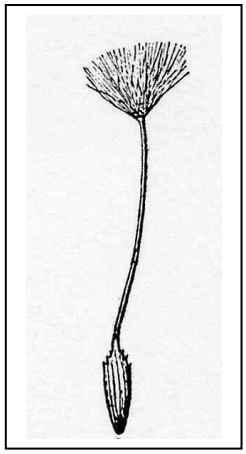
Fruits may be dry or fleshy when mature.

Dry fruit may be dehiscent (splitting open at maturity, along seams or sutures) or indehiscent (not splitting open at maturity).

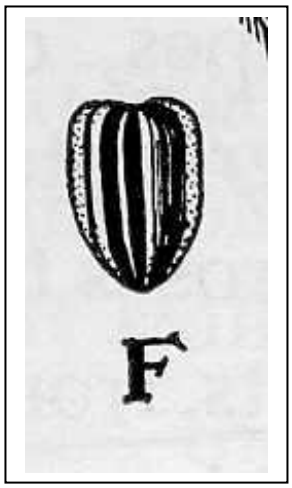
A. Dry fruits, 1 seeded, indehiscent

1. Achene: small, dry fruit with a thin and close fitting wall attached to the seed at one point. Example: sunflower "seed", strawberry "seed".

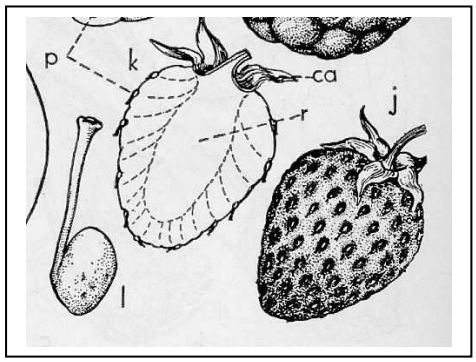
Achene:



**(C)**



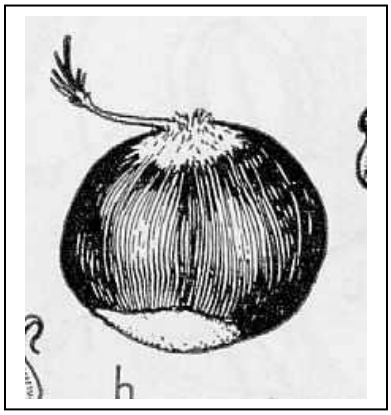

**(T)**




**(L)**

2. Nut: large, dry fruit with a thick, bony wall surrounding the seed. Example: walnut, oak.

**Nut:**

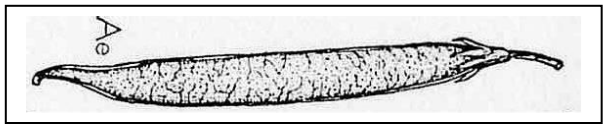



**(L)**

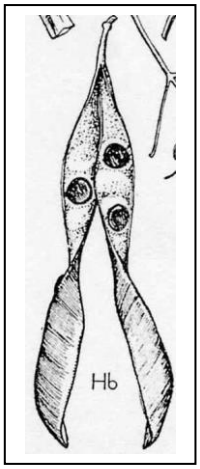
B. Dry fruits, multiple seeds, dehiscent

1. Legume: fruit derived from a single ovary and which opens along two longitudinal sutures. Example: pea, bean, honeylocust.

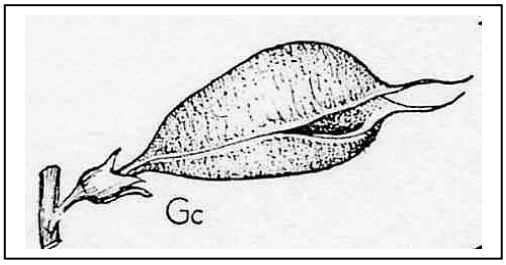
Legume:




(L)



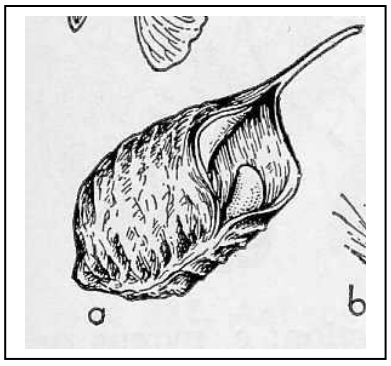

(L)




(L)

2. Follicle: fruit derived from a single ovary and opening along a single suture. Example: milkweed, columbine.

Follicle:

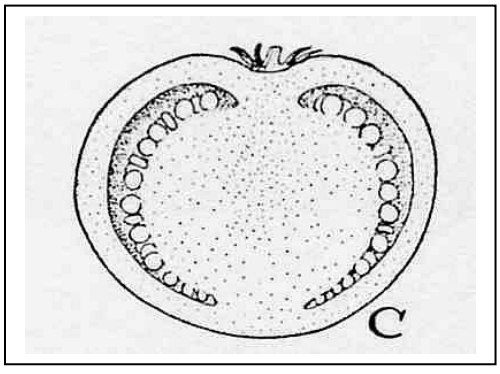



**(L)**

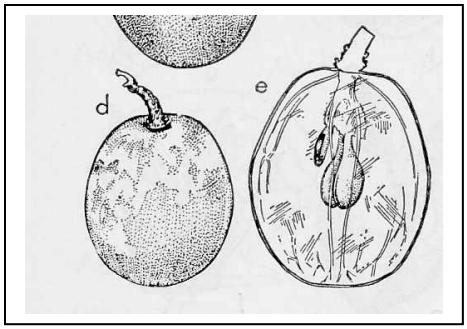
C. Fleshy fruits

1. Berry: entire fruit is fleshy and surrounds multiple seeds; walls may be present inside the fruit. Example: grape, tomato, banana.

Berry:



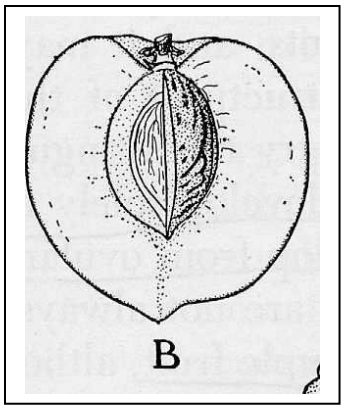

**(T)**




**(L)**

2. Drupe: outer fleshy fruit surrounds a hard 'stone' which encloses the seed. Example: the genus *Prunus* (peaches, plums).

Drupe




(T)

V. Discouraging self-pollination to attain genetic diversity

A. Self-incompatibility: the pistil of the flower is not receptive to pollen from the same flower or other flowers of the same plant.

B. Separation in time: male and female parts do not reach maturity at the same time.
1. Protandry: males mature first and release their pollen before the females become receptive.
2. Protogyny: females become receptive before the males can release their pollen.

C. Spatial separation:
1. Dioecious plants: male and female flowers on separate plants.
2. Monoecious plants: male and female flowers in separate structures on the same plant.
3. Heterostyly: styles of different lengths relative to the stamens in the flowers of different individual plants of the same species.

Note: Illustrations are from the following publications:

(C) – Coulter, John M.; "A Textbook of Botany"; D. Appleton & Company, New York
(L) - Lawrence, Gerorge H.M.; "Taxonomy of Vascular Plants"; MacMillian Publishing Co, New York
(S) - Smith Jr., James Payne; "Vascular Plant Families"; Mad River Press, Eureka, California
(T) – Transeau, Sampson and Tiffany; "Textbook of Botany"; Harper & Brothers; New York