

# Flower

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Flower is a specialized condensed shoot of an angiospermic plant in which the shoot apical meristem gets transformed into floral meristem for carrying out sexual reproduction through progressive specialisation of leaves into floral appendages.

Like a branch, it may develop in the axil of small leaf-like structure called bract. Except for the lower internode, other internodes of the flower are imperceptible, i.e. not detectable. The lower internode forms the pedicel or stalk of the flower. It may also bear two bracteoles.

The region, where internodes are condensed, forms the broad base of the flower and lies at the tip of pedicel is called thalamus (= torus = receptacle). The numbers of appendages or floral leaves borne on each node are differentiated and more numerous than the foliage leaves on the nodes of a vegetative shoot.

There are four types of floral organs- sepals (green), petals (usually coloured other than green), stamens (= microsporophylls) and carpels (= megasporophylls).

Sepals and petals are nonessential or accessory floral organs or floral leaves which do not take any direct part in sexual reproduction. Stamens and carpels are essential organs. They are sporophylls which are directly involved in sexual reproduction.

## **There are several evidences to support that flower is a modified shoot:**

1. Flowers may develop in the axils of bracts like the axillary shoots.
2. In some plants, flowers are modified into bulbils or fleshy buds that take part in vegetative reproduction, e.g., Onion, *Agave*.
3. *Paeonia* shows gradual transition from vegetative leaves to floral leaves.
4. The floral organs of *Nymphaea* (Water Lily) show all stages between a sepal and petal and between a petal and stamen (Fig. 5.84).

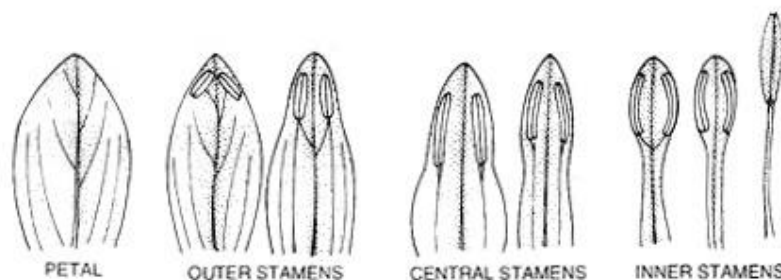


Fig. 5.84. Transformation of petal-like or laminar structure into typical stamen in *Nymphaea* (Water Lily).

5. The sepals are similar in morphology to leaves in Rose.
6. Passion flower (*Passiflora*) and *Cleome gynandra* (Fig. 5.85 C) has internodes in between various organs.
7. The growing point of thalamus may give rise to a shoot or another flower above it (Fig. 5.85 B, D).

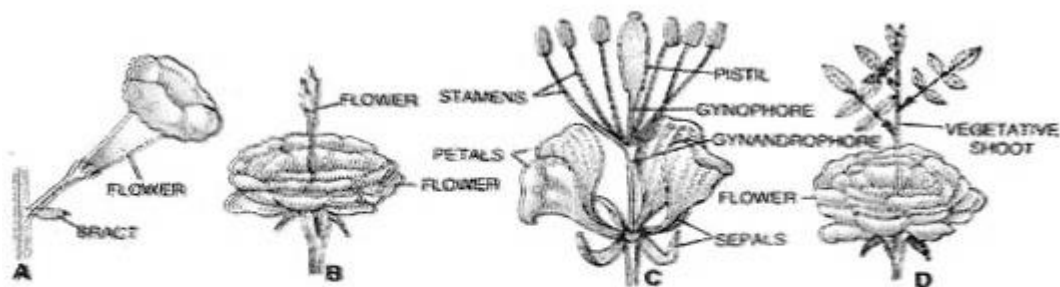


Fig. 5.85. Flower is a modified shoot.  
A, axillary origin; C, differentiation of nodes and internodes (gynandrophore and gynophore) in *Cleome (Gynandropsis) gynandra*; B and D, continuation of growth of tip of thalamus in Rose.

8. The stamens of *Degeneria* are expanded like leaves (Fig. 5.86 A).
9. The carpels of *Degeneria* appear like folded leaves (Fig. 5.86 B). Style and stigma are not differentiated.

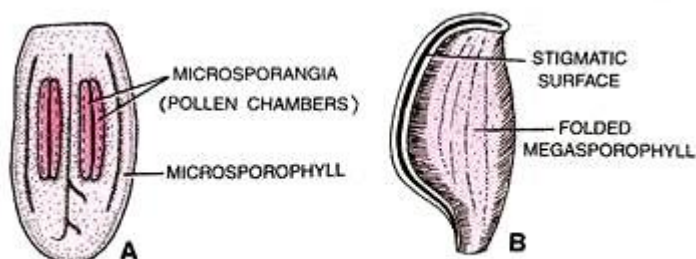


Fig. 5.86. Essential organs of *Degeneria*. A, stamen; B, carpel.

10. Anatomy of pedicel and thalamus is similar to that of stem while vascular supply to different floral organs resembles the vascular supply for ordinary leaves.

### Isomery:

Usually there is same basic number of parts in different floral organs. The phenomenon is called isomery. Depending upon the similar basic number of parts, a flower is described as bimerous (two or multiple of two parts in each type of floral organs, e.g., Mustard), trimerous (e.g., *Michelia*), tetramerous (*Oldenlandia*) or pentamerous (*Solanum*).

Carpels may be fewer in number. For example, *Petunia* has 5 sepals, 5 petals, 5 stamens but two carpels. Such a flower is called heteromerous.

**Floral Phyllotaxy:**

Floral organs are borne on the thalamus either in spirals (acyclic or spiral, e.g., *Magnolia*, *Nymphaea*), whorls (cyclic, e.g., *Petunia*) or with some organs in spirals and other organs in whorls (spirocyclic or hemicyclic, e.g., *Ranunculus*). When the floral phyllotaxy is whorled, the number of whorls are often mentioned, e.g., tetracyclic (e.g., *Petunia*), pentacyclic, hexacyclic, etc.

**Complete and Incomplete Flowers:**

A flower having all the four types of floral organs is known as complete. The absence of any one or more of the floral organs makes the flower incomplete.

A flower having both the essential organs is described as perfect, bisexual, hermaphrodite or intersexual. It is imperfect or unisexual if only one of the two essential floral organs is present. A unisexual flower would be male or staminate (if only stamens are present) and female or pistillate (if only carpels are present).

When both the essential organs are absent, the flower is spoken as neuter or sterile flower. Both the types of unisexual flowers (staminate and pistillate) may be present on the same plant. Such plants are called monoecious, e.g., Maize, Castor, Cucurbits, *Acalypha*.

When a plant bears only one type of unisexual flowers, it is termed as dioecious, e.g., Date Palm (*Phoenix*), *Coccoloba grandis*, etc. In such cases, the male plant does not bear fruits. Some plants possess more than two types of flowers. For example, Mango (*Mangifera indica*), *Polygonum* and Cashewnut (*Anacardium occidentale*) possess three types of flowers—perfect (intersexual), staminate and female or neuter. They are called polygamous.

**Floral Symmetry:**

The arrangement of the floral organs around the axis of a flower is known as floral symmetry. The shoot on which the flower is borne is called mother axis. The side of the mother axis is posterior while the side of the bract is anterior (Fig. 5.87). In terminal flowers a distinction into anterior and posterior sides is absent.

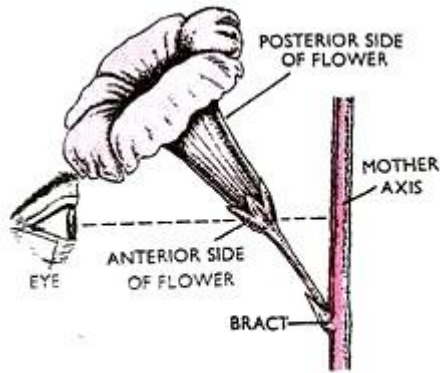


Fig. 5.87. Posterior and anterior sides of a flower.

A cyclic flower which can be divided into two equal vertical halves or mirror images by any vertical plane (anteroposterior or median, lateral, diagonal) is said to be actinomorphic. The actinomorphic flower has, therefore, radial symmetry, e.g., *Brassica*, *Datura*, *Capsicum*, etc.

A flower, which can be divided into two equal vertical halves by one plane only, is termed as zygomorphic. It is of two types - medianly zygomorphic (e.g., *Salvia*, *Pisum sativum*, *Cassia*) and laterally zygomorphic (e.g., *Fumaria*).

A zygomorphic flower has bilateral symmetry. A flower which cannot be divided into two equal parts by vertical plane is known as acyclic or asymmetric, e.g., *Opuntia*, *Canna* (Fig. 5.88C).

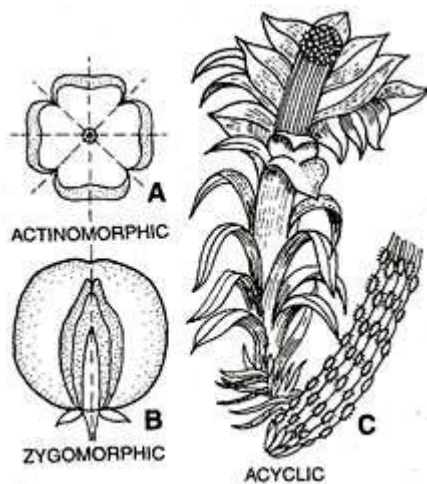


Fig. 5.88. Types of floral symmetry.

### Regular and Irregular Flowers:

If the floral parts of each series of a flower are similar in size, shape, colour and origin, the flower is said to be regular. A flower which shows any irregularity in any type of its floral organs, whether in shape, size, colour or origin, is described as irregular.

### Sepals or Calyx:

They constitute the lower accessory whorl or outermost series of green flattened or foliaceous floral organs which are mainly meant for protecting other floral parts in the bud condition. The sepals having colour other than green are called petaloid.

The sepal which lies in line with the mother axis is called odd sepal. It is anterior in family leguminosae (e.g., *Pisum*, *Cassia*, *Acacia*) and a few others. Mostly it is posterior (e.g., *Petunia*).

Calyx may be polysepalous (with free sepals) or gamosepalous (with fused sepals). Calyx can be bilabiate (2-lipped e.g., *Salvia*), spurred (one or more sepals drawn out into a beak or spur e.g., *Delphinium*, *Tropaeolum*) or changed into pappus (modified into hairy processes, e.g., *Sonchus*).

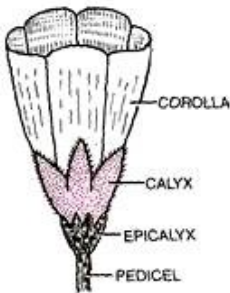


Fig. 5.89. A flower showing epicalyx.

### Epicalyx (Hypocalyx):

It is an extra series of green sepal-like floral organs which lies on the outside of calyx (Fig. 5.89). Epicalyx occurs in some members of Rosaceae (e.g., *Fragaria*) and most of Malvaceae (*Hibiscus*, *Abutilon*). It provides protection to the other floral organs like the calyx.

### Petals or Corolla:

They constitute the upper or inner series of accessory floral organs which are leaf-like flattened but brightly coloured to attract pollinating animals. Corolla with greenish tinge is called sepaloid. Corolla may be polypetalous (= choripetalous, petals free) or gamopetalous (= sympetalous, petals fused). Polypetalous corolla is of four main types (Fig. 5.90):

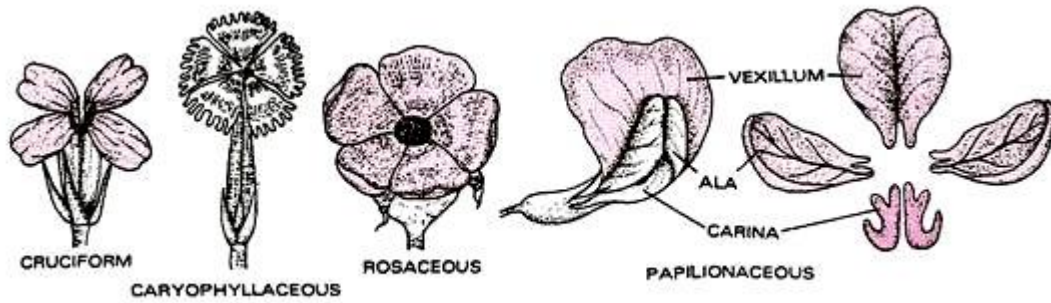


Fig. 5.90. Forms of polypetalous corolla.

**(i) Cruciform:**

Four clawed or unguiculate (with proximal narrow stalk or claw and a broad distal limb) petals are arranged diagonally or like a cross. It occurs in family Brassicaceae (= Cruciferae, e.g., *Brassica*, *Iberis*).

**(ii) Caryophyllaceous:**

Five unguiculate or clawed petals with limbs horizontally bent, e.g., *Dianthus* (family Caryophyllaceae).

**(iii) Rosaceous:**

Five or more sessile or shortly clawed petals bent horizontally like a saucer, e.g., *Rosa*, *Rubus*, *Cassia*, etc.

**(iv) Papilionaceous:**

Five unequal or irregular petals are arranged like a butterfly. The posterior large bilobed petal called standard or vexillum overlaps the two smaller lateral petals named wings or alae. The latter overlap the two anterior petals which are fused lightly by the upper anterior margins to form a boat-shaped structure called keel or carina. It is the characteristic feature of the family- Fabaceae or Papilionaceae, e.g.- *Pisum sativum*, *Clitoria ternatia*, *Indigofera*, etc

**Gamopetalous corolla can be (Fig. 5.91):**

**A. Regular forms:**

**(i) Tubular:**

Tube-like, e.g., disc floret of *Helianthus* and other members of Asteraceae, *Cestrum nocturnum*, etc

**(ii) Campanulate:**

Like a bell or inverted cup, e.g., *Campanula*, *Cucurbita*, *Coccinia*, etc.

**(iii) Infundibuliform:**

Shaped like a funnel, e.g., *Petunia*, *Ipomoea*, etc.

**(iv) Salver-shaped (hypocrateriform):**

Narrowly tubular with spreading lobes, looks like a disc e.g., *Catharanthus*, *Ixora*, etc.

**(v) Rotate/ wheel shaped:**

With short tube having limbs placed transversely like a saucer or the spokes of a wheel, e.g., *Solanum xanthocarpum*, *Solanum torvum*, *Nyctanthes arbor-tristis*, etc.

**(vi) Urceolate:**

Urn-shaped, e.g., *Bryophyllum*.

**B. Irregular forms:**

**(vii) Ligulate (Strap shaped):**

Corolla has a short and narrow tube below but is expanded above like a strap. Hairs are generally present at the point of union between the two, e.g., ray floret of *Helianthus* and other members of Asteraceae.

**(viii) Bilabiate:**

Corolla is bilipped, i.e. forming an upper and a lower lip in 3+2 or 4+1 orientation. The two lips are open. It is the characteristic feature of the family Lamiaceae/ Labiatae, although found in some other families including Acahaceae, Scrophulariaceae, etc. Example- *Leucas aspera*, *Leonurus sibiricus*, etc.

**(ix) Personate or masked:**

Corolla same as bilabiate, but the throat part is or closed by a projection of the lower lip called palate.

Example- *Antirrhinum majus*, *Lindenbergia indica*, etc.

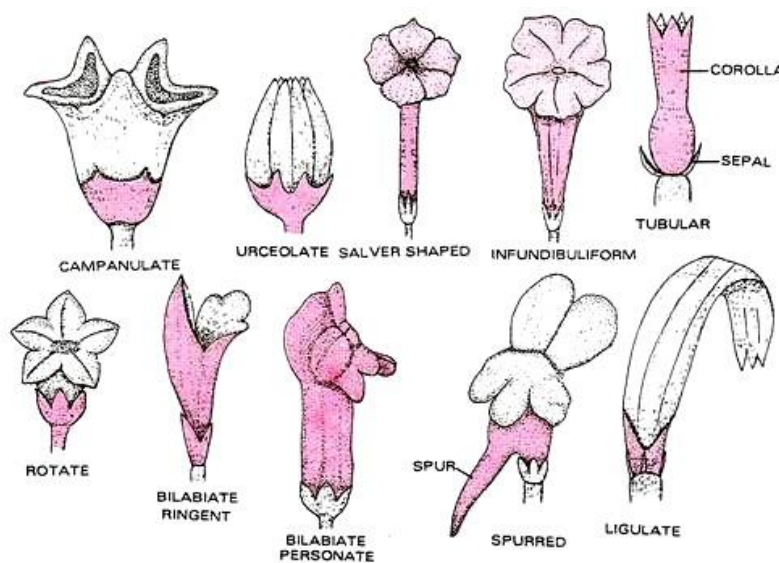


Fig. 5.91. Forms of gamopetalous corolla.

**(x) Spurred:**

One or more petals are drawn out like a beak or spur, e.g., *Delphinium*.

### **Aestivation:**

Aestivation is the arrangement of accessory floral organs (sepals or petals) in relation to one another in the floral bud. It is of four types (Fig. 5.92).

#### **(i) Open:**

Margins of the adjacent petals are sufficiently apart from each other.

#### **(ii) Valvate:**

Margins of the adjacent petals touch each other but without overlapping e.g., corolla of *Brassica*.

#### **(iii) Twisted or Contorted:**

One margin of a petal overlaps regularly the margin of an adjacent petal; the other margin being overlapped by margin of another adjacent petal, e.g., corolla of *Hibiscus rosa-sinensis*.

#### **(iv) Imbricate:**

There is an irregular overlapping of petals by one another. Here one petal is completely outer, one is completely inner and rest are in twisted fashion, e.g.- *Acanthus*, *Leucas*, etc.

It has 3 sub- types besides the imbricate proper:

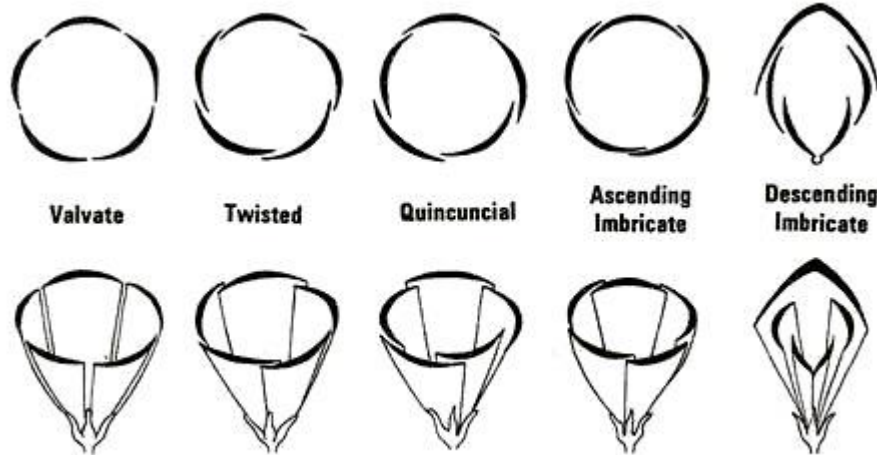


Fig. 5.92. Aestivation of corolla.

#### **(a) Quincuncial:**

Here two petals are external, two internal and the fifth one is arranged in twisted fashion, e.g.- Sepals of *Cassia sophera*.

#### **(b) Ascending Imbricate:**

Posterior petal being overlapped by the two lateral ones while they are being overlapped by the two anterior petals, e.g., *Cassia fistula* (Amaltas), *Delonix regia*, etc.

#### **(c) Descending Imbricate or Vexillary:**

The posterior petal overlapping the two lateral petals, the latter overlapping the two anterior petals, e.g., *Pisum sativum*. It is found in papilionaceous forms of corolla.



### Perianth:

When there is no distinction of sepals and petals, the nonessential floral organs are collectively called perianth.

The individual parts of the perianth are known as tepals, e.g., *Asphodelus*, *Allium*, *Lilium*. They may be sepaloid (greenish) or petaloid (coloured other than green). The free and fused perianth is written as polyphyllous (= polytepalous) and gamophylous (= gamotepalous) respectively.

### Stamens or Androecium:

A stamen or male reproductive organ of a flower is made up of two parts—a stalk-like filament and a knob-like terminal anther. Each anther has two lobes which are attached at the back by a sterile band called connective (Fig. 5.93 B, D).

A slight enlargement separates the two anther lobes to make them divaricate or divergent (e.g., *Petunia*). In *Salvia* (Fig. 5.93 C), the connective is highly elongated (distractile). Its one end bears a fertile anther lobe while the other end has a sterile anther lobe. Here, connective forms a lever mechanism with the filament. Spurred stamens occur in *Viola*. Sterile and undeveloped stamens are called staminodes.

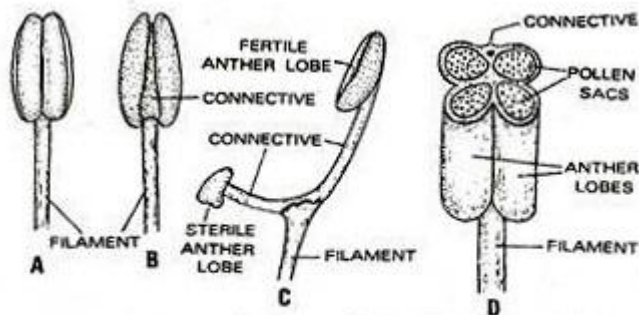


Fig. 5.93. A, part of a stamen; B, back view of the anther showing connective; C, a distractile stamen of *Salvia* showing lever mechanism; D, an anther cut to show its internal parts.

When both the anther lobes are present, the stamen is called bithecous. When a single anther lobe is found, the stamen is termed as monothealous (family Malvaceae, e.g., *Althaea*, *Hibiscus*). Each fertile anther lobe contains two pollen sacs or chambers.

Stamens shorter than the flower are termed as inserted. When stamens protrude out of the flower they are known as exserted.

They may be borne directly on the thalamus or fused with petals (= epipetalous, e.g., *Solanum*, *Petunia*) or tepals (= epiphyllous or epitepalous, e.g., *Asphodelus*). Condition of attachment of stamens with pistil is called gynandrous. Fusion with a dissimilar organ is called adhesion while fusion with a similar organ is known as cohesion.

The free stamens are called polyandrous. They may be equal or unequal in length. The two common types of unequal stamens are tetradynamous (four long and two short, e.g., Mustard) and didynamous (two long and two short, e.g., Ocimum).

**The cohesion between stamens is of three types (Fig. 5.94):**

**(i) Adelphous:**

The stamens are fused by their filaments only. The anthers are free. Fusion of filaments may produce a single group (monadelphous, e.g., *Hibiscus*, *Althaea*), two groups (diadelphous, e.g., *Pisum*) or many groups (polyadelphous, e.g., *Citrus*).

**(ii) Syngenesious (= Synantherous):**

Stamens are fused by anthers only. The filaments are free. The fused anthers form a ring around the gynaecium, e.g., *Helianthus*.

**(iii) Synandrous:**

Stamens are fused by both their filaments as well as anthers, e.g., *Cucurbita*.

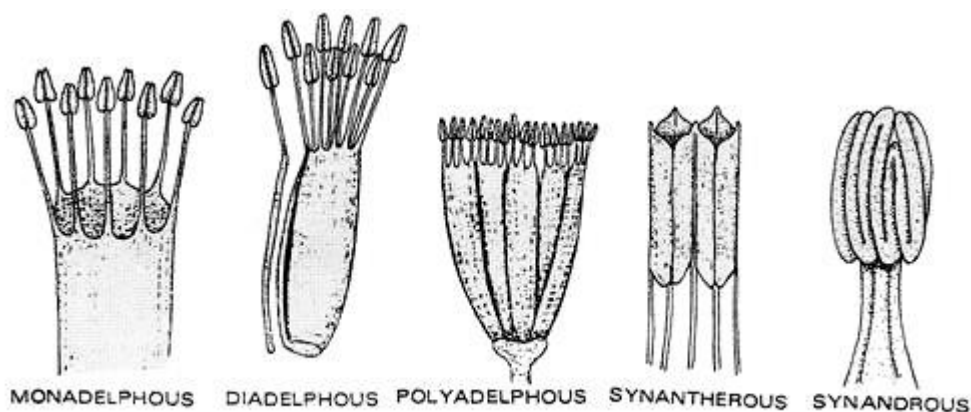


Fig. 5.94. Forms of cohesion (fusion) of stamens.

**Fixation of Anthers:**

**The anthers may be attached to the filaments by any of the following four methods (Fig. 5.95):**

**(i) Basifixed or Innate:**

The anther is fixed directly at the top of the filament so that the latter joins the anther at its base, e.g., *Brassica nigra* (vern. Sarson), *Raphanus stivus*.

**(ii) Adnate:**

The filament runs throughout the length of the anther or becomes continuous with the connective, e.g., *Ranunculus*, *Magnolia*, *Nymphaea* (Water Lily).

**(iii) Dorsifixed:**

The filament is firmly fixed to the back of the anther, e.g., *Passiflora*, *Sesbania*, *Prunus*, etc.

**(iv) Versatile:**

The filament is attached generally to the back of the anther and the anther can swing freely, e.g., *Oryza sativa* and other members of Poaceae.

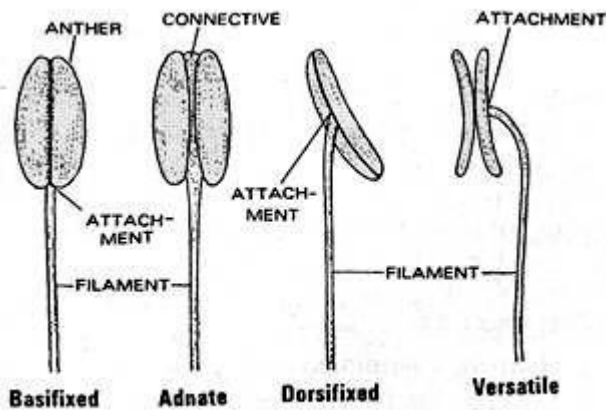


Fig. 5.95. Forms of fixation of anthers.

**Dehiscence of Anthers:**

The lobes of an anther dehisce to expose the pollen grains by the following methods (Fig. 5.96):

**(i) Longitudinal:**

Long slits appear lengthwise in the anther lobes (e.g., *Datura*, *Ranunculus*, *Citrus*, etc.).

**The longitudinal dehiscence is of three types:**

**(a) Laterorse (Lateral):**

Slits appear on the sides.

**(b) Introrse:**

Slits are formed towards the inner side or centre of the flower.

**(c) Extrorse:**

Slits lie towards the outer side of petals.

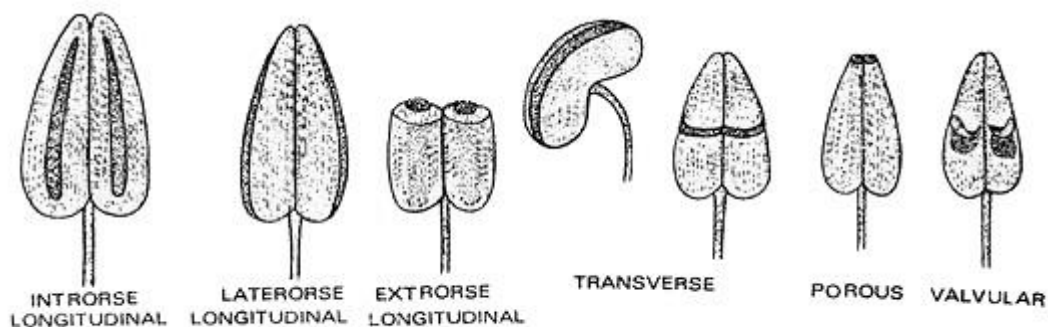


Fig. 5.96. Dehiscence of anthers.

**(ii) Transverse:**

In this type the anther lobes burst by slits breadth wise roughly in the middle, e.g., Lady's Finger (*Abelmoschus esculentus*), *Malva*, *Althaea*.

**(iii) Valvular:**

Wall of anther lobes breaks at places and gets lifted like valves to expose the pollen grains, e.g., *Cinnamomum*, *Berberis*.

**(iv) Porous:**

The anther lobes dehisce by pores which appear at the tips (e.g., *Solanum*, *Lycopersicum*) or base (e.g., *Cassia*).

**(v) Irregular:**

The anther wall breaks irregularly to expose the pollen grains, e.g., *Najas*.

**Carpels or Gynaecium:**

Carpels or female parts of a flower develop from the central region of the thalamus. A flower may have one or more carpels. They may be free or fused. The free occurring unit of gynaecium is called pistil. Pistil is a flask-shaped structure.

It has a basal swollen ovary, a stalk-like style and a terminal receptive part called stigma. Ovary has one or more chambers or loculi (singular loculus)- unilocular, (e.g., *Pisum*), bilocular (e.g., *Brassica*), trilocular (e.g., *Asparagus*), tetralocular (e.g., *Ocimum*), pentalocular (e.g., *Hibiscus*) or multilocular (e.g., *Althaea*, *Ablemoschus*).

In the chambers are present oval outgrowths called ovules attached to a flattened cushion like placenta. Ovules later mature into seeds while the wall of the ovary forms a covering called pericarp. The two together constitute a fruit. A sterile and undeveloped pistil is called pistillode.

Gynaecium having a single carpel is called monocarpellary, two bicarpellary, three tricarpellary, many polycarpellary. Carpels may be free, when gynaecium is called apocarpous (e.g., polycarpellary apocarpous in *Rosa*, *Nymphaea*, *Ranunculus*) or fused when it is known as syncarpous (= compound, like bicarpellary syncarpous in Mustard and *Petunia*, tricarpellary syncarpous in *Asphodelus*, polycarpellary syncarpous in *Althaea*).

Fusion may occur in the region of ovaries only (e.g., *Dianthus*), ovaries and styles (e.g., *Hibiscus*) or ovaries, styles and stigmas, (e.g., *Petunia*).

## Placentation:

Placenta is a parenchymatous cushion present inside the ovary where ovules are borne. An ovary may have one or more placentae. The number, position, and arrangement or distribution of placentae inside an ovary is called placentation.

It is of the following types:

### 1. Marginal (Fig. 5.97):

One or two alternate rows of ovules occur longitudinally along the ridge in the wall of the ovary in the area of fusion of its two margins or ventral suture. A true placenta is believed to be absent. Ovary is unilocular. Marginal placentation is found in monocarpellary pistils of leguminosae (e.g., *Pisum*, *Cassia*, *Acacia*) and other plants (e.g., *Delphinium*).

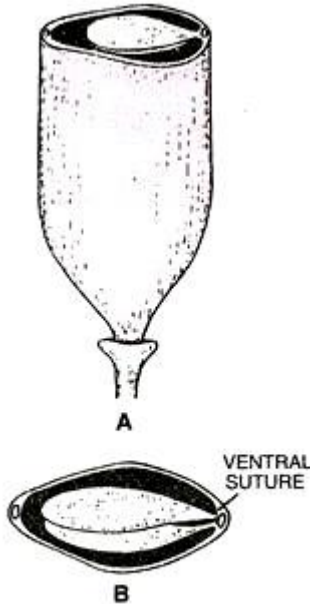


Fig. 5.97. A-B, Marginal placentation.

### 2. Parietal (Fig. 5.98):

Two or more longitudinal placentae develop along the wall of a syncarpous or compound pistil. The number of placentae correspond to the number of fusing carpels, e.g., two (*Fumaria*), three (*Viola*), four (*Capparis*).

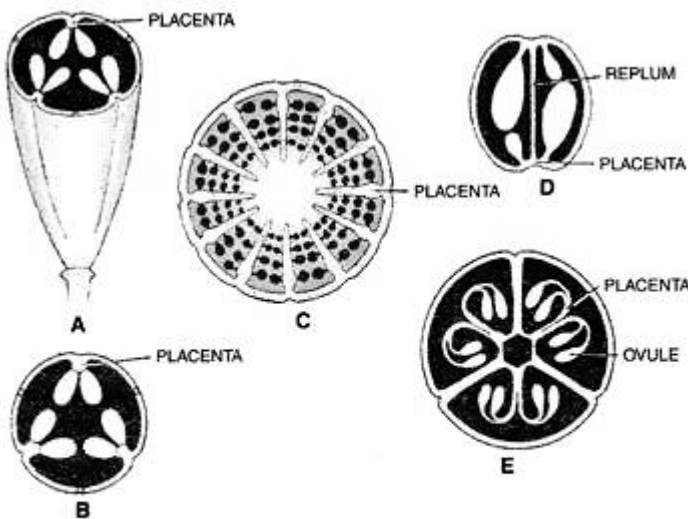


Fig. 5.98. Parietal placentation. A-B, normal parietal placentation. C, parietal placentation of Poppy. D, parietal placentation in *Brassica*. E, modified parietal placentation of *Cucurbita*.

The ovary is usually unilocular (Fig. 5.98 A-B) but modifications occur in many. In polycarpellary syncarpous pistil of *Papavar* and *Argemone* the ovule bearing placentae grow inwardly to form incomplete septa.

A false septum called replum develops between the two parietal placentae in *Brassica* and other members of family Brassicaceae. The ovary becomes bilocular. In the tricarpelary syncarpous pistil of

cucurbits the three placentae grow inwards to meet in the centre and then bend outwardly. The ovary, therefore, becomes trilocular.

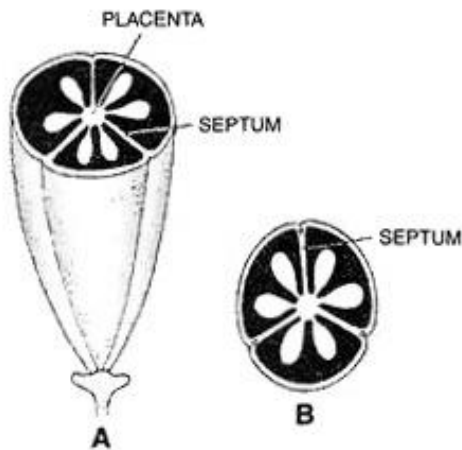


Fig. 5.99. A-B, axile placentation.

### 3. Axile (fig.5.99):

It occurs in syncarpous pistils. The ovary is partitioned into two or more chambers. Placentae occur in the central region where the septa meet so that an axile column bearing ovules is formed, e.g., *Petunia* (bilocular), *Asphodelus* (trilocular), *Lycopersicum* (bilocular or tetralocular) *Hibiscus* (pentalocular), *Althaea* (multilocular), *Citrus* (multilocular).

### 4. Free Central (fig. 5.100):

It is quite similar to that of the axile placentation, but the septum or partition wall is completely absent. So, the central axis along with the ovules seems to be free floating at the central part of the ovary in cross sectional view. So it is named as free central placentation, e.g.- *Primula* (Primulaceae), *Caryophyllum* (Caryophyllaceae), etc.

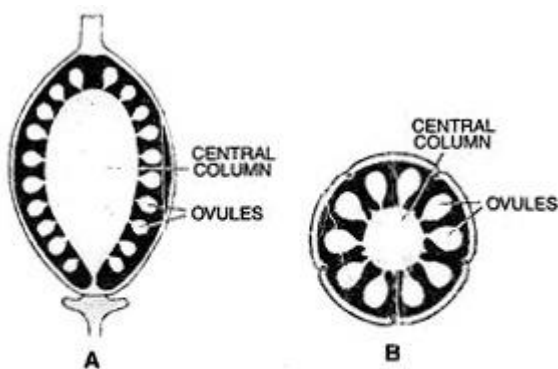


Fig. 5.100. A, L. S.; B, T.S. free central placentation.

### 5. Basal (Fig. 5.101):

The pistil can be monocarpellary or syncarpous. The ovary is unilocular. It bears a single placenta at the base with generally a single ovule, e.g., *Ranunculus*, *Helianthus*, etc.

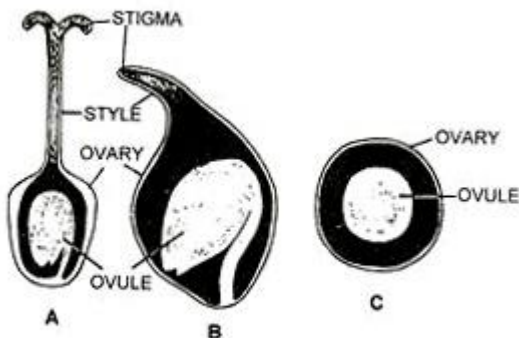


Fig. 5.101. Basal placentation. A, Sunflower; B, *Ranunculus*; C, T.S. ovary.

### 6. Superficial (fig. 5.102):

Here the placental tissue develop along the septal wall, so the ovules develop on the septum or partition wall, e.g.-*Nymphaea*, *Nelumbo*, etc.

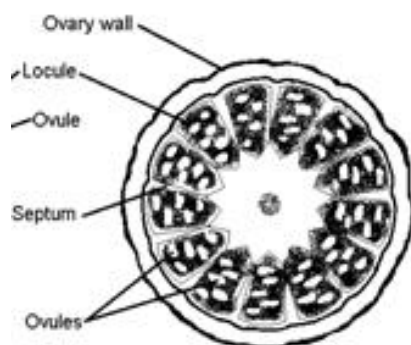


Fig. 5.102. Superficial placentation

### Thalamus:

It is the broadened or swollen part of the flower which lies at the tip of the pedicel and bears floral organs. Thalamus is similar to a dwarf shoot in which growth is definite and the internodes are very short. Rather the differentiation of nodes is absent in the thalamus of most flowers.

### Rarely internodes become elongated as:

- (i) Anthophore between calyx and corolla, e.g., *Silene*,
- (ii) Androphore between corolla and androecium, e.g., *Passiflora*,
- (iii) Gynophore between androecium and gynaecium, e.g., *Cleome gynandra*.

The term gynandrophore is also used for axial prolongation bearing both androecium and gynaecium e.g., *Cleome gynandra* (= *Gynandropsis pentaphylla*). Rarely the thalamus is prolonged into gynaecium to form a central axis called carpophore (e.g., *Coriandrum sativum*).

### Superior and Inferior Ovaries:

The ovary is termed superior when the other floral organs are not connected with it directly or indirectly. If the ovary is fused with the thalamus so that sepals, petals and stamens arise from its top like the style, the condition is called inferior.

### Relative Position of Floral Organs on Thalamus:

#### (Forms of Thalamus):

There are three forms of thalamus as regards the insertion of pistil and androperianth or other floral organs- hypogyny, perigyny and epigyny (Fig. 5.102).

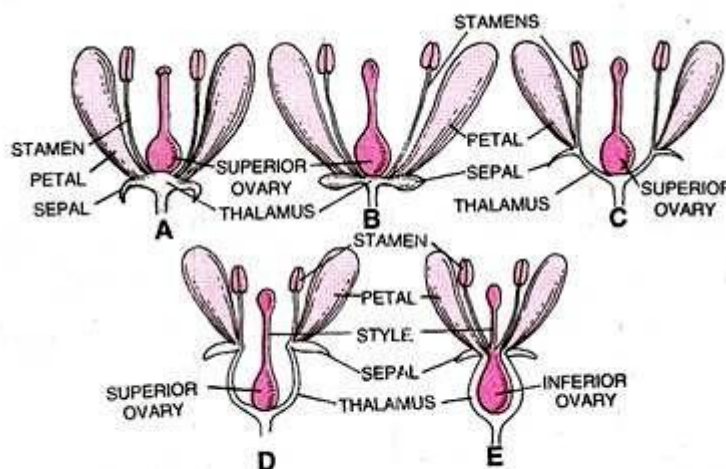


Fig. 5.102. Insertion of floral parts on the thalamus. A, typical hypogynous; B, disc-shaped perigynous of Pea; C, cup-shaped perigynous of *Prunus*; D, flask-shaped perigynous of Rose; E, epigynous of *Pyrus*.

### **1. Hypogyny:**

The thalamus is convex or conical. Gynaecium or ovary develops at its top while stamens, petals and sepals are borne successively below. The ovary or gynaecium is superior. Androperianth or other floral organs are inferior. A flower having hypogyny is called hypogynous, e.g., *Ranunculus*, *Brassica*, *Petunia*, *Hibiscus* (China rose), *Solanum* (Brinjal), etc.

### **2. Perigyny:**

The periphery of the thalamus grows to varying degree to form an expanded structure called hypanthium (= floral cup).

**Perigynous thalamus is of three subtypes:**

#### **(i) Disc- shaped:**

Thalamus is flat like a disc. The gynaecium lies in the centre while other floral parts occur on the periphery but at the same level, e.g., *Pisum*, *Cassia*. Ovary is considered superior,

#### **(ii) Cup-shaped:**

Margin of the thalamus is turned upwardly to form a cup or saucer. Gynaecium grows from the bottom of the cup while remaining floral organs are borne at the rim of the thalamus, e.g., *Prunus* (Plum, Peach),

#### **(iii) Flask-shaped:**

Margin of the thalamus grows upwardly to produce a hollow flask with gynaecium at its bottom and remaining floral parts at the mouth of the flask, e.g., *Rosa*. In both cup-shaped and flask-shaped perigyny gynaecium or ovary is described as half inferior while androperianth or the remaining floral parts are said to be half superior. However, many workers prefer to describe the ovary of such flowers as fully superior.

### **3. Epigyny:**

The thalamus is hollowed out in the form of a flask but its internal wall is fused with wall of the ovary. Only the style and stigma of the pistil is observable from the upper side. The other floral organs are borne at the top of the ovary. The flowers having epigyny are called epigynous. The ovary or gynaecium is said to be inferior while other floral organs are called superior, e.g., *Malus*, *Helianthus*, *Cucumis*, *Psidium*.



**Flower Functions:**

1. Flower is modified shoot which is specialised to perform sexual reproduction in angiosperms.
2. It possesses coloured petals or corolla for attracting pollinating agents.
3. Flower often possesses edible pollen or nectaries for feeding the visiting pollinators.
4. It has a covering of green calyx or sepals for providing protection and support to delicate floral organs.
5. Stigma part of pistil is specialised to receive the pollen grains. Only compatible pollen grains are allowed to germinate over the stigma. There is an internal system of providing nourishment to the growing pollen tube.
6. It provides nourishment and protection to young growing fruit.