

- ✧ Procambial cells develop into lateral meristem called vascular cambium
- ✧ Vascular cambium – a continuous single layer of cells that give rise to secondary phloem and xylem.
- ✧ Differences between young dicot and monocot roots
 1. Stele – smaller in dicot, larger in monocot
 2. Vascular bundle – fewer in dicot, numerous in monocot
 3. Endodermis – not so prominent in dicot, quite prominent in monocot
 4. Pith – small or not at all in dicot, larger in monocot

	Young Dicot	Young Monocot
Stele	Smaller	Larger
Vascular bundle	Few	Numerous
Endodermis	Not so prominent	Prominent
Pith	Small or not at all	Larger

- ✧ Differences between old dicot and old monocot:
 1. Pith – disappears in dicot, persists in monocot
 2. Cambium – produced in dicot, none in monocot
 3. Secondary growth – present in dicot, absent in monocot
 4. Cork cambium – present in dicot, absent in monocot
 5. Cortex and epidermis – peeled off in dicot, remain as integral part in monocot

	Old Dicot	Old Monocot
Pith	Disappears	Persists
Cambium	Produced	None Produced
Secondary growth	Present	Absent
Cork cambium	Present	Absent
Cortex and epidermis	Peeled off	Remains integral part

- ✧ Specialized roots

Roots are modified to have specialized function as:

1. Potato (called tuber) and cassava – for storage
2. Orchid roots – for photosynthesis and are provided with velamin as coat (function for water absorption from the air)
3. Mangrove roots (pneumatophores) – for aeration
4. Clinging, brace, prop and buttress roots – for support and stability

THE STEM

- ✧ The axis of plant that originates above the hypocotyl of the embryo in the seed.
 - It consists of nodes, internodes and appendages, e.g. leaves, buds, flowers and fruit from the node.
 - some stems are specialized for storage, reproduction and other purposes.
 - variation in the stem provides many useful taxonomic characters for identification

- ✧ PARTS OF STEM:

- a) Nodes - points on the stem where a leaf develops
- b) Internode - the section between two successive nodes
- c) Buds- undeveloped structures
- d) Lenticels - corky postules found in older stems , functions for gas exchange in the absence of stomata
- e) Stomata - present only in young stem
- f) Trichomes - present only in young stem
- g) Leaf scar - marks left on the stem by leaves that have naturally fallen off
- h) Bundle scar - scars left on the stem by strands of food and water conducting tissues passing from the stem to the leaf.

* The falling of leaves is a natural phenomenon, it is the result of the formation of abscission layer of special cells at the base of the petiole, the point where it is attached to the stem. It cuts the leaves off without injury to the stem.

- ✧ CLASSIFICATION OF BUDS

- Terminal bud - found at the tip of the stem which is responsible for elongation;

