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HANDBOOK OF BOTANICAL DIAGRAMS



HANDBOOK OF BOTANICAL DIAGRAMS

By

BLODWEN LLOYD, Ph.D., M.Sc.

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1935

PREFACE.

THIS book contains a series of botanical sketches designed to illustrate a one-year lecture and laboratory course. It is based on diagrams which the author has for many years provided to students to facilitate teaching work both in the lecture-room and the laboratory. These appear to have met very adequately the needs of students both in school and college, so that the author has been prompted to revise them and have them issued in book form.

This collection of diagrams in its original form was prepared to cover the ground for the First Year University Examination and the Preliminary Scientific Examination of the Pharmaceutical Society. It has since been expanded, and while it has not been specifically prepared with a view to tutoring for any other examinations, it is suitable for such University curricula as the First Year Medical, Intermediate Science, and also for post-matriculation school work for the Higher Certificate. Part I (Morphology) and Part IV (Taxonomy of Phanerogams) may be used for pre-matriculation classes.

With the exception of a few sketches whose sources are acknowledged, the diagrams are original and prepared from actual specimens. The anatomical sketches are direct tracings made with the aid of a microprojector. Figs. 1-7, Pl. 61, have been made from preparations loaned by the Botany Department of the University, Glasgow.

In practice, the provision of a set of diagrams for each student has been found to have several advantages. In the lecture-room, the student may thus have before him some reasonably accurate illustrations of the lecture topic, thus compensating for his notoriously inaccurate and often unavoidably hasty copies of lantern slides or blackboard diagrams. Furthermore, in the laboratory, these diagrams may be used by the student as a ready source of reference for the naming of plant parts—with this proviso that the copying into the student's laboratory notebook of anything not verified by his own observation is strongly to be deprecated. Finally, for the student working alone—particularly if he has only limited facilities for the necessary field work and laboratory practice, these diagrams appear to be a welcome supplement to the ordinary botanical text-book.

Grateful acknowledgment is here made to the author's colleague, Mr. J. A. Stewart, for revising the proofs of the diagrams and of the index.

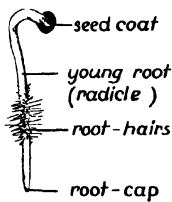
BLODWEN LLOYD.

IV. TAXONOMY OF PHANEROGAMS

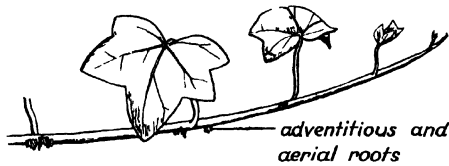
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MORPHOLOGY OF PHANEROGAMS

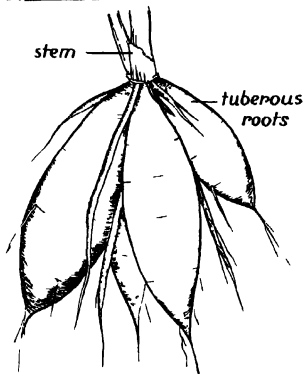
1. Mustard seedling



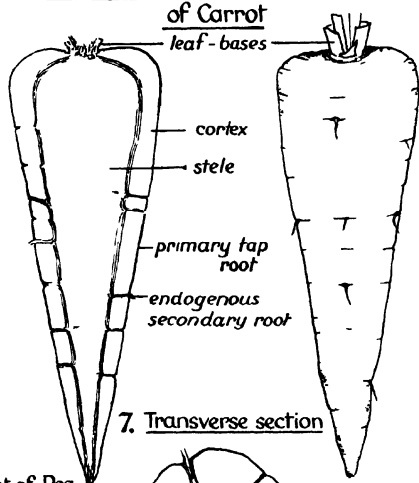
2. Ivy



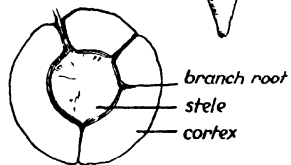
3. Dahlia



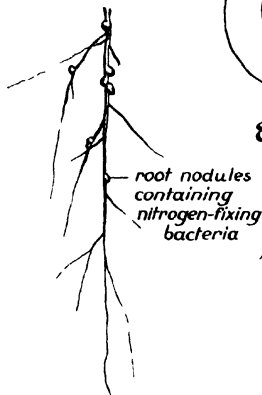
4. Longitudinal section and outside view



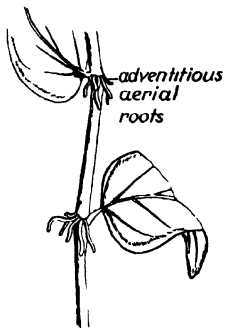
7. Transverse section



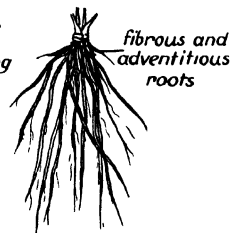
6. Young root of Pea



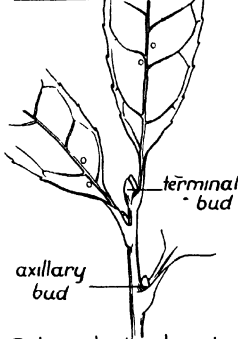
5. Black Pepper



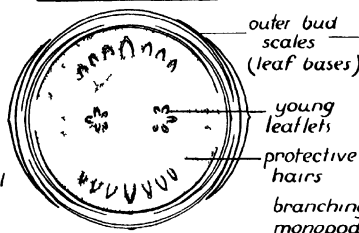
8. Buttercup: fibrous roots



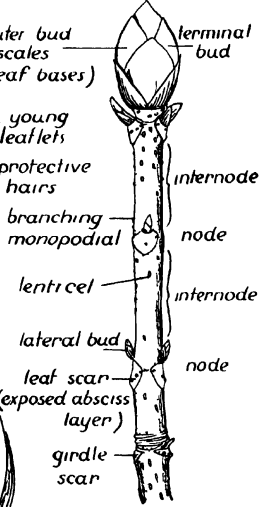
1. Prunus laurocerasus Shoot



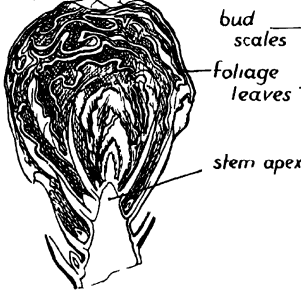
3. Transverse section bud of Aesculus



2. Aesculus (Horsechestnut) Shoot



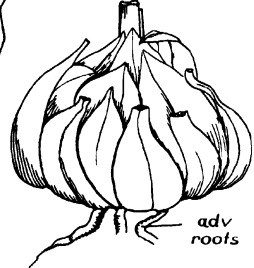
5. Longitudinal section bud of Brussels sprout



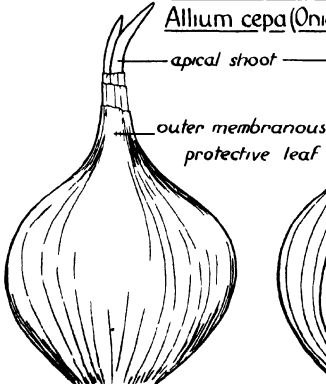
4. L.S bud Aesculus



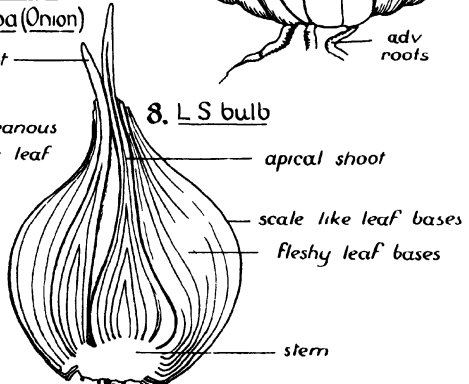
6. Scaly bulb Lilium



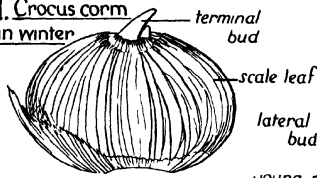
7. Tunicated bulb Allium cepa (Onion)



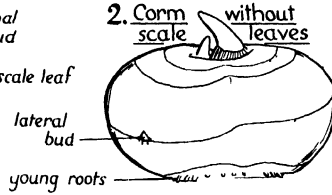
8. L.S bulb



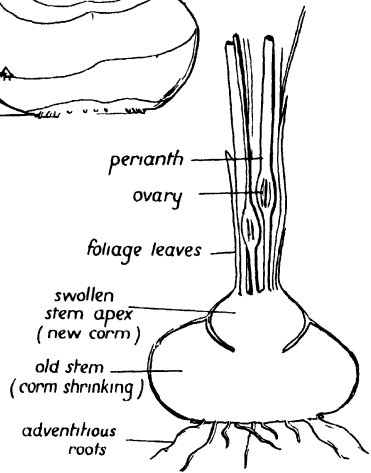
1. Crocus corm
in winter



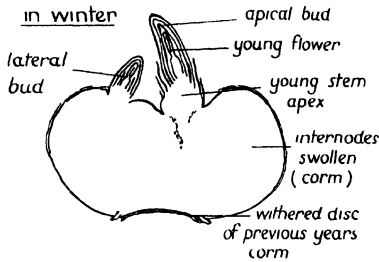
2. Corm scale
without leaves



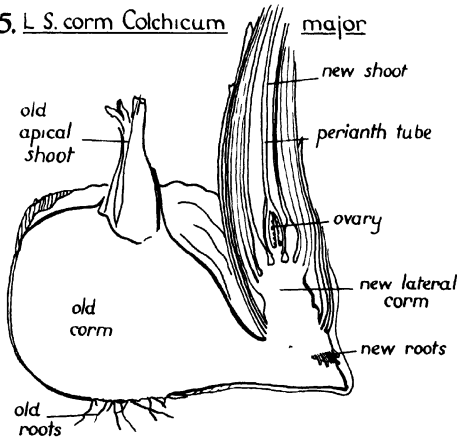
4. Crocus corm
in spring



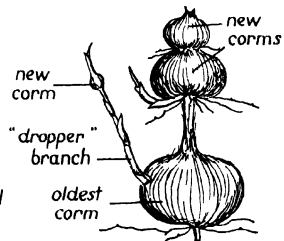
3. L.S. corm
in winter



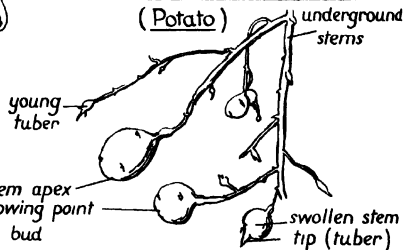
5. L.S. corm Colchicum major



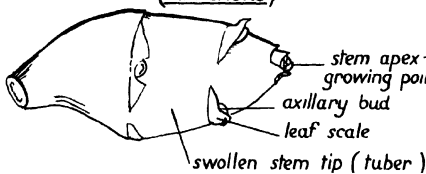
6. Montbretia corms



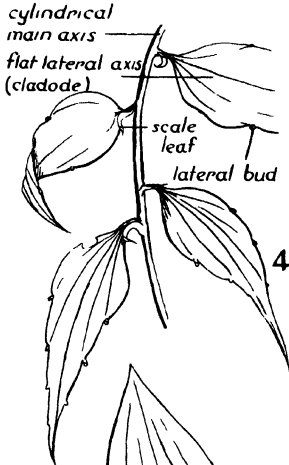
8. Solanum tuberosum
(Potato)



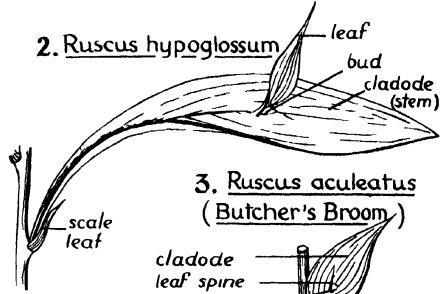
7. Tuber Helianthus tuberosus
(Artichoke)



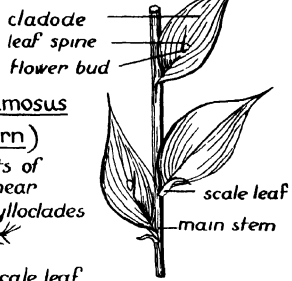
1. Semele androgyna



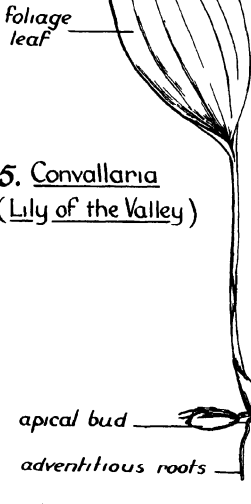
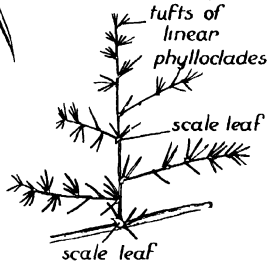
2. Ruscus hypoglossum



3. Ruscus aculeatus
(Butcher's Broom)

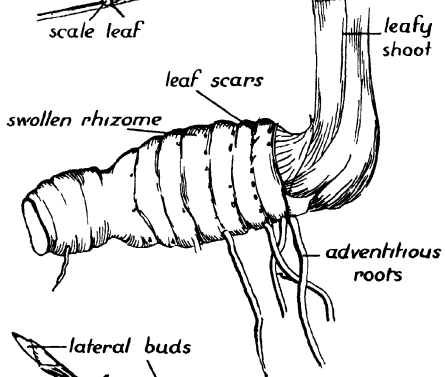


4. Asparagus plumosus
(Asparagus Fern)

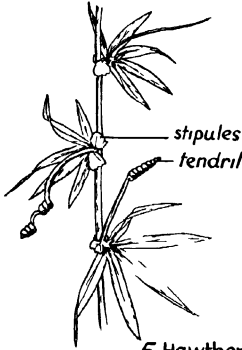


5. Convallaria
(Lily of the Valley)

6. Iris



1. Passiflora



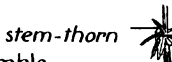
2. Virginian Creeper



3. Hop



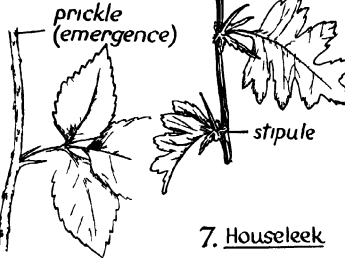
5. Hawthorn



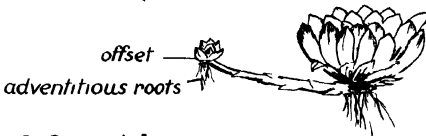
6. Whin (Gorse)



4. Bramble

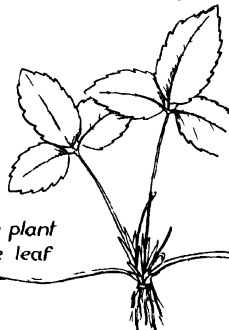
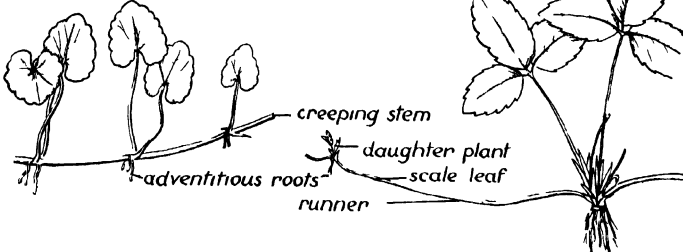


7. Houseleek



9. Strawberry

8. Ground Ivy



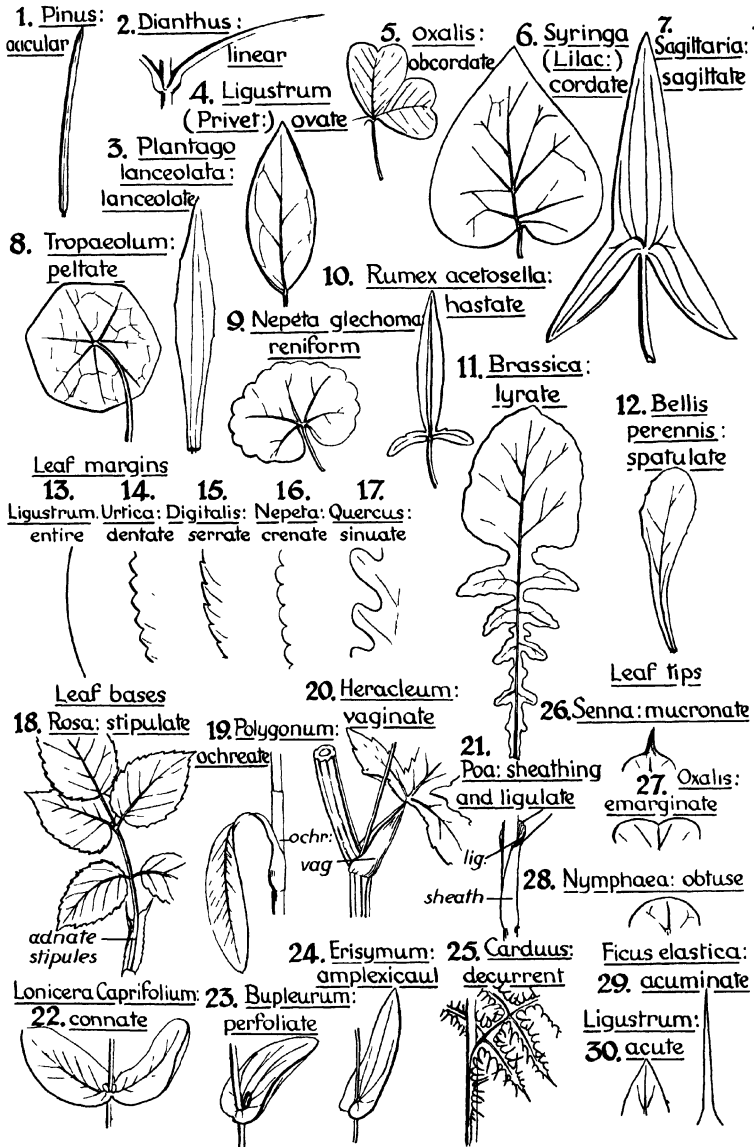


PLATE 6—LEAVES

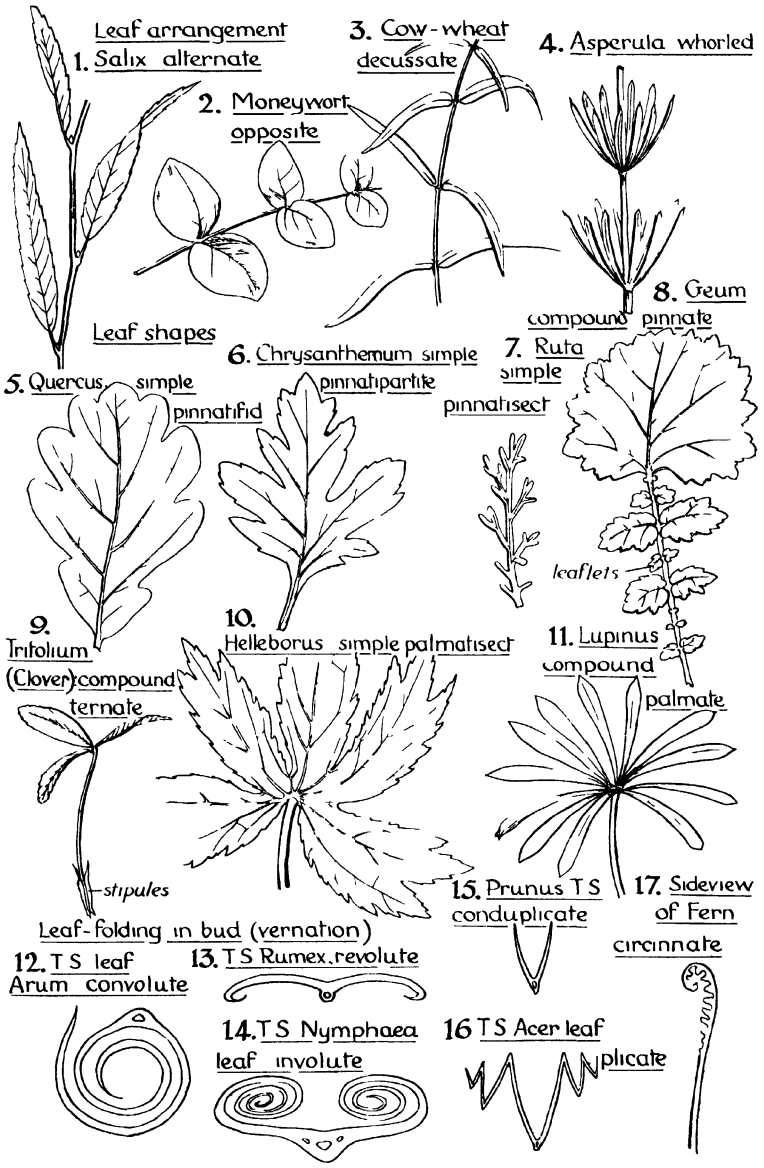


PLATE 7—LEAVES—Continued

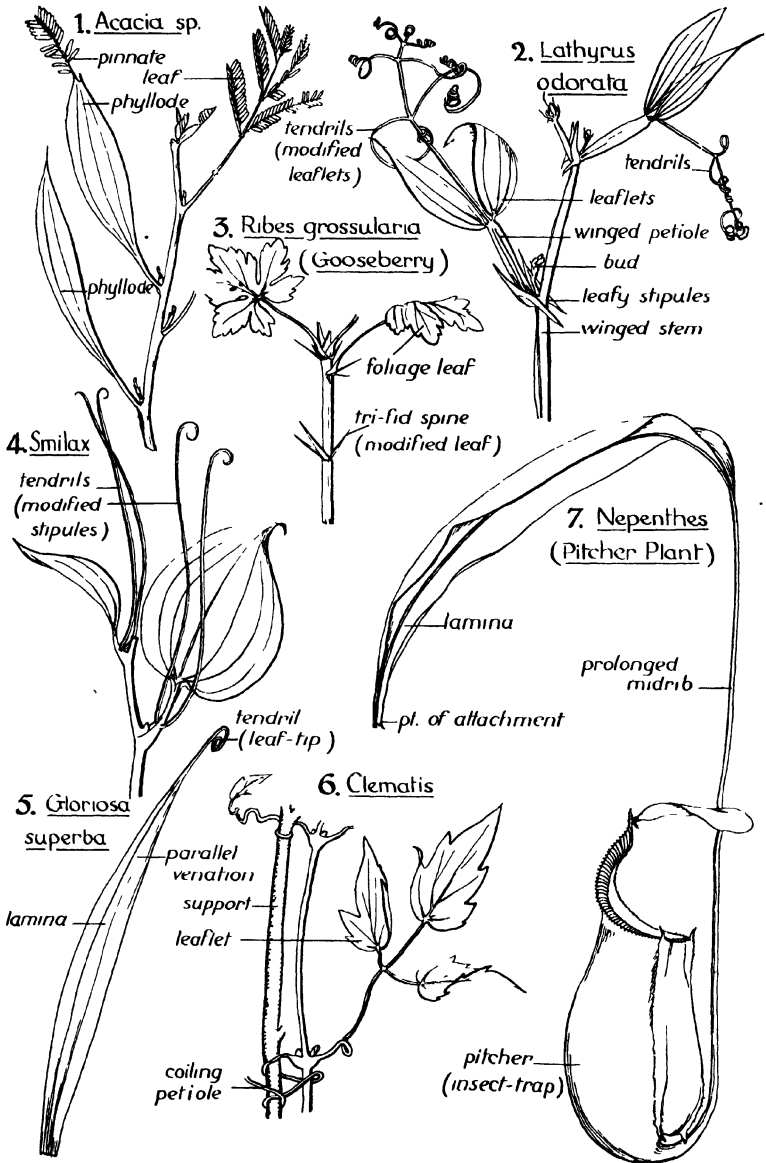
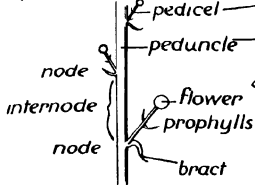


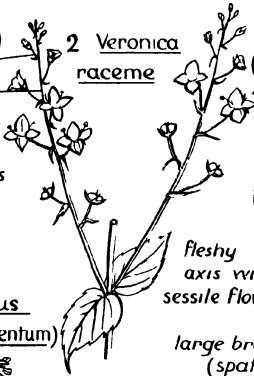
PLATE 8—LEAVES—Continued

1. Diagram of raceme

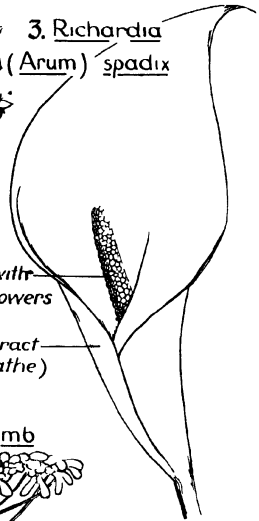
(indefinite branching)



2. Veronica
raceme



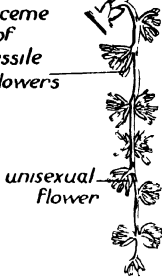
3. Richardia
(Arum) spadix



4. Plantago
spike



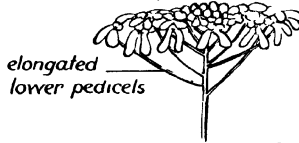
5. Quercus
catkin (amentum)



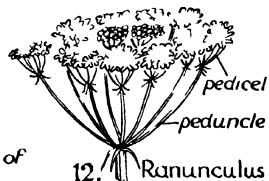
fleshy axis with sessile flowers

large bract (spathe)

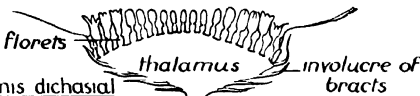
6. Iberis
(candytuft) corymb



7. Conium umbel

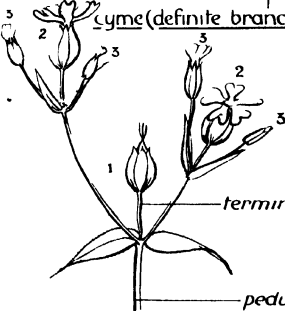


8. Anthemis capitulum



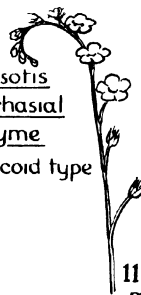
9. Lychnis dichasial

cyme (definite branching)

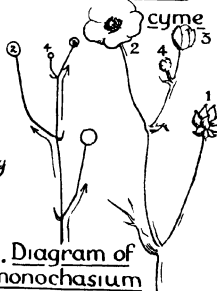


10. Myosotis
monochasial
cyme

helicoid type

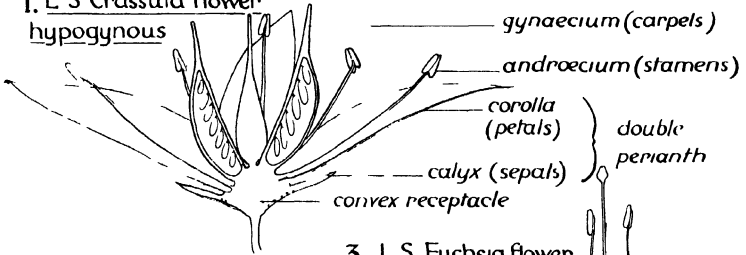


12. Ranunculus
monochasial
cyme

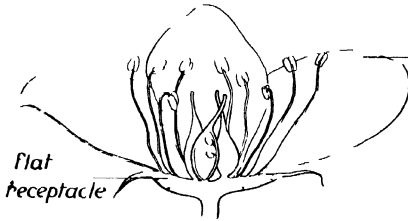


11. Diagram of
monochasium
scorpioid type

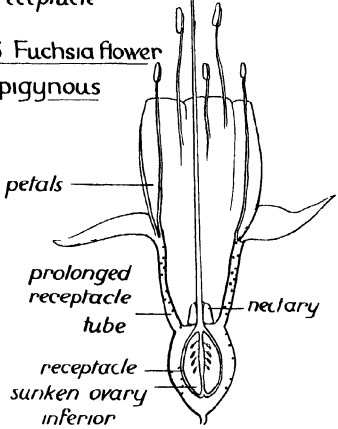
1. L S Crassula flower
hypogynous



2. L S Spiraea flower
perigynous

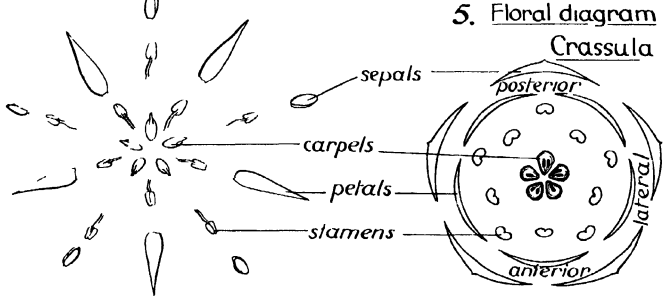


3. L S Fuchsia flower
epigynous



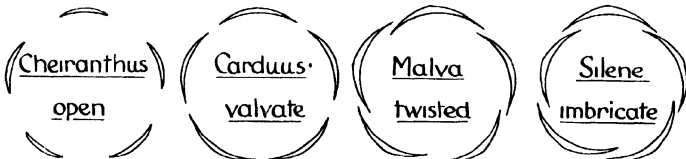
4. Dissection of Crassula flower

Floral Formula $K_5 C_5 A_5 + 5 G_5$



5. Floral diagram
Crassula

6 Types of aestivation of corollas



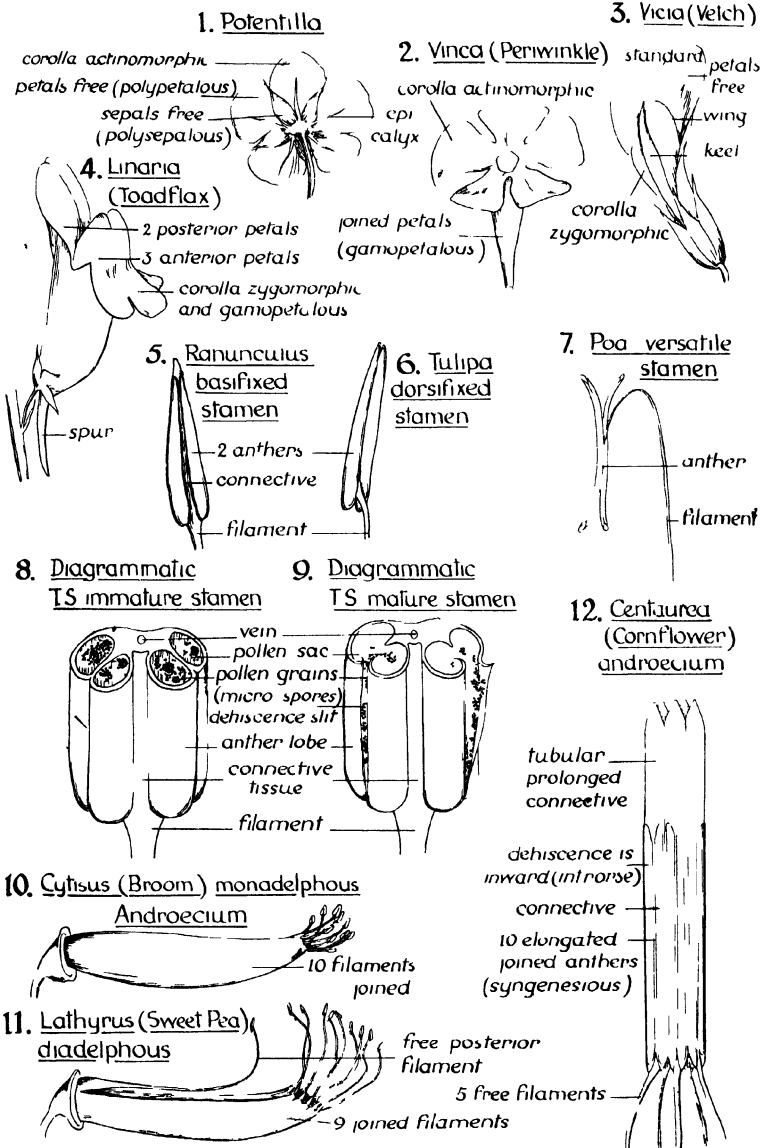
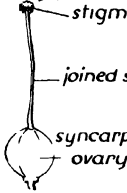
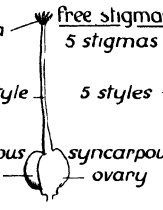


PLATE II—PERIANTH AND ANDRŒCIUM

1. Primula carpels entirely joined



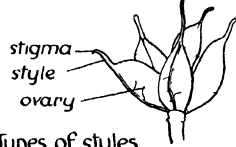
2. Geranium



3. Lychnis free stigmas and styles

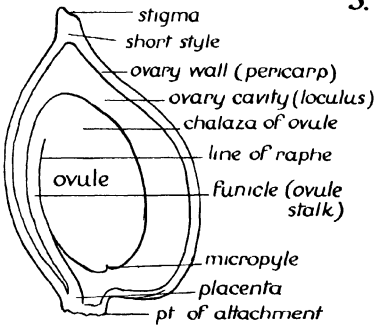


4. Caltha free stigmas, styles and ovaries (apocarpous)



Types of styles

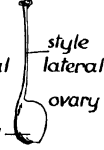
8. L.S Ranunculus fruit



5. Anemone



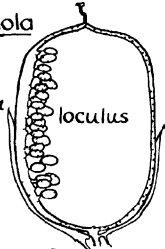
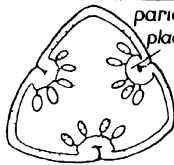
6. Prunus



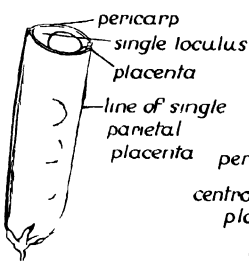
7. Alchemilla



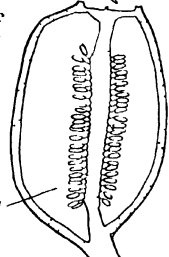
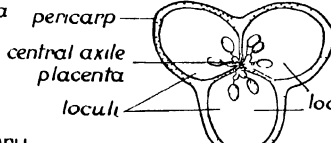
11. TS and 12. L.S Viola ovaries



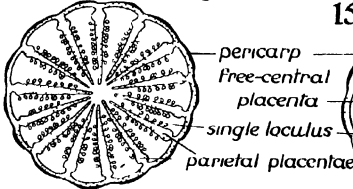
9. Pisum ovary



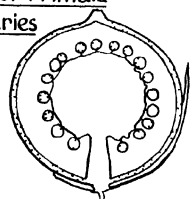
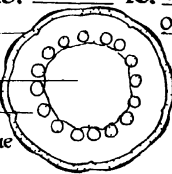
13. TS and 14. L.S of Narcissus ovaries



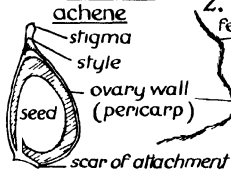
10. TS Papaver ovary



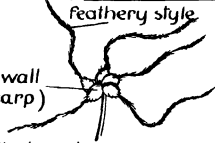
15. TS and 16. L.S of Primula ovaries



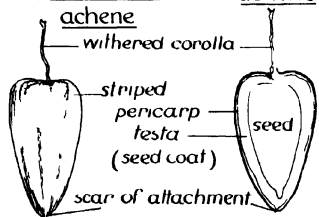
1. L.S Ranunculus



2. Clematis achenes



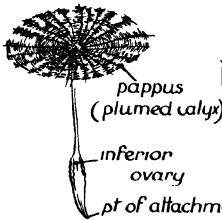
3. Helianthus



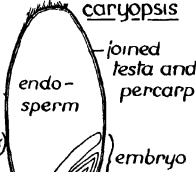
4. L.S Helianthus

achene

5. Tragopogon cypsela

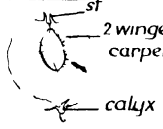


6. Triticum



7. Ulmus

samara

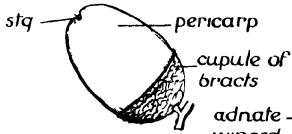


8. Fraxinus

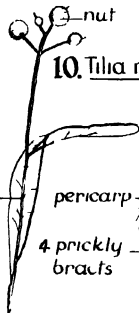
samara



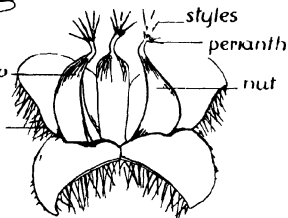
9. Quercus nut



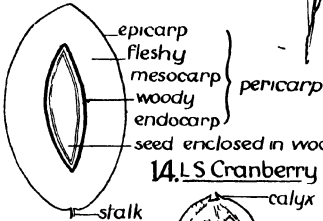
10. Tilia nuts



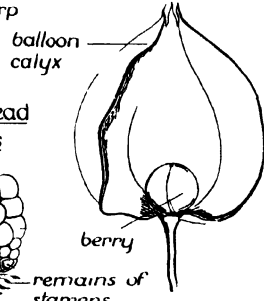
11. Castanea nuts



12. L.S Prunus drupe



17. Physalis (Cape Gooseberry)

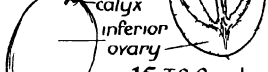


14. L.S Cranberry

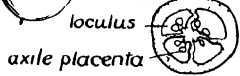
calyx

Vaccinium oxycoccus

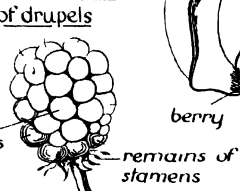
13. (Cranberry)



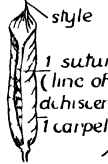
15. T.S Cranberry



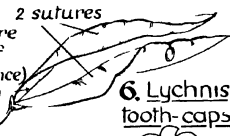
16. Rubus head of drupels



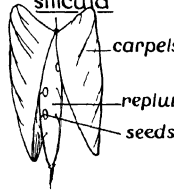
1. Aconitum follicle



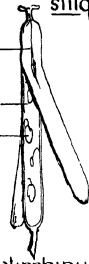
2. Cytisus legume



3. Capsella silicula



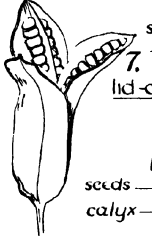
4. Cheiranthus siliqua



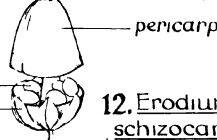
6. Lychnis tooth-capsule



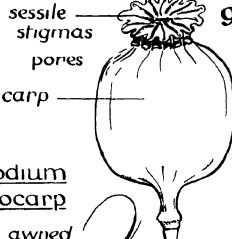
5. Iris valve-capsule



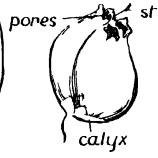
7. Plantago lid-capsule (pyxis)



8. Papaver pore-capsule



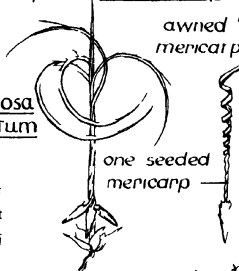
9. Antirrhinum pore capsule



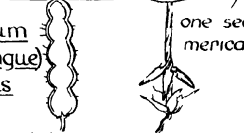
10. Tropaeolum schizocarp



12. Erodium schizocarp



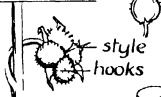
11. Mimosa tomentum



13. Acer (Sycamore) winged schizocarp



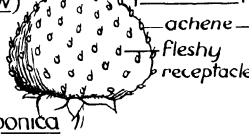
14. Cynoglossum (Hound's Tongue) carcerulus



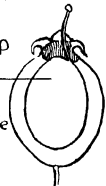
15. Malva (Mallow) schizocarp



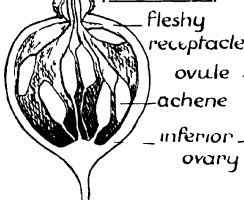
16. Fragaria pseudocarp



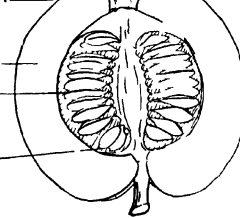
17. Crataegus drupe-like pome



18. Rosa pseudocarp



19. Pyrus japonica pome



20. Morus (Mulberry) pseudocarp



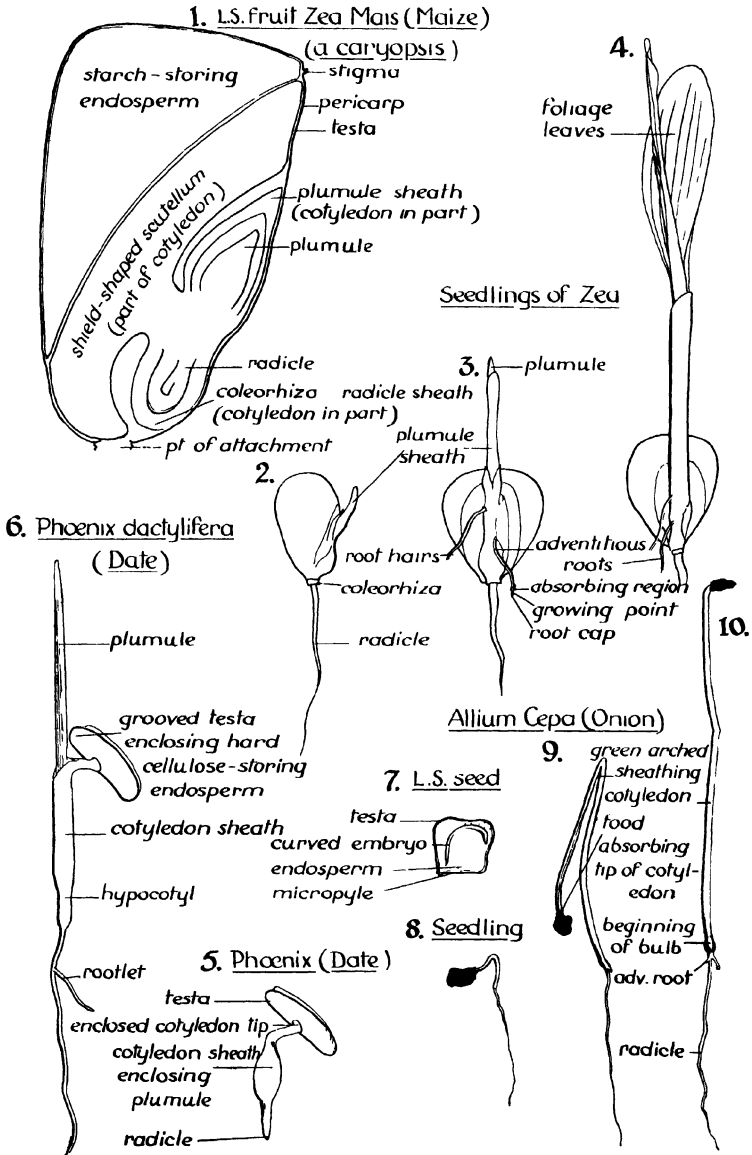


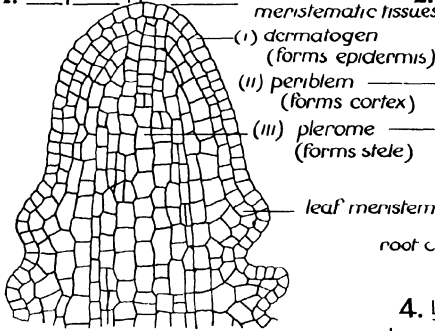
PLATE 17—SEEDS AND SEEDLINGS—Continued

*

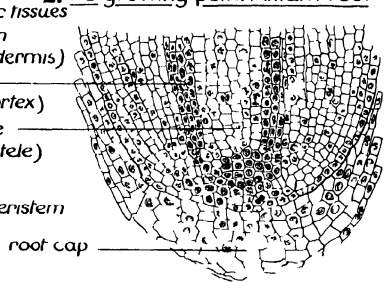
ANATOMY OF PHANEROGAMS

*

1. V.S apex Hippuris stem

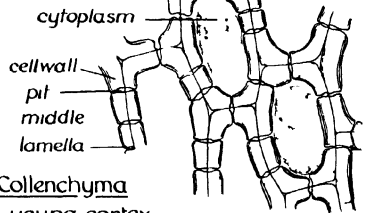
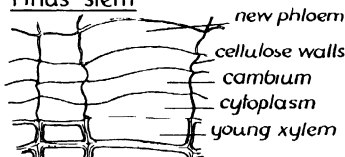


2. V.S growing point Allium root



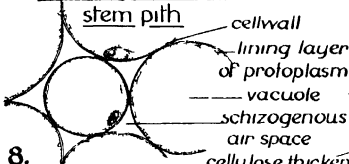
3. T.S cambial meristem

Pinus stem



5. Parenchyma from Pinus

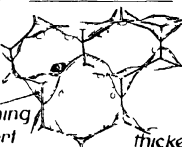
stem pith



6. T.S Collenchyma

from young cortex

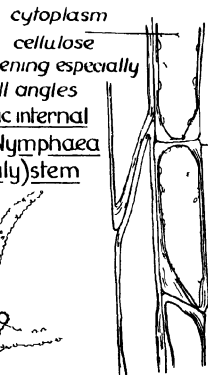
of Sambucus



7. L.S Collenchyma

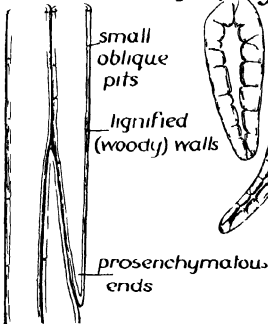
from cortex of

Cucurbita stem



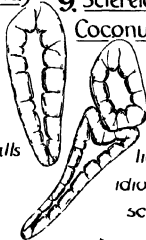
8. L.S lignified fibres

(for support sclerenchyma)



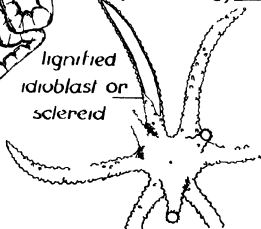
9. Sclereids from

Coconut husk



10. hair from Nymphaea

(Water Lily) stem



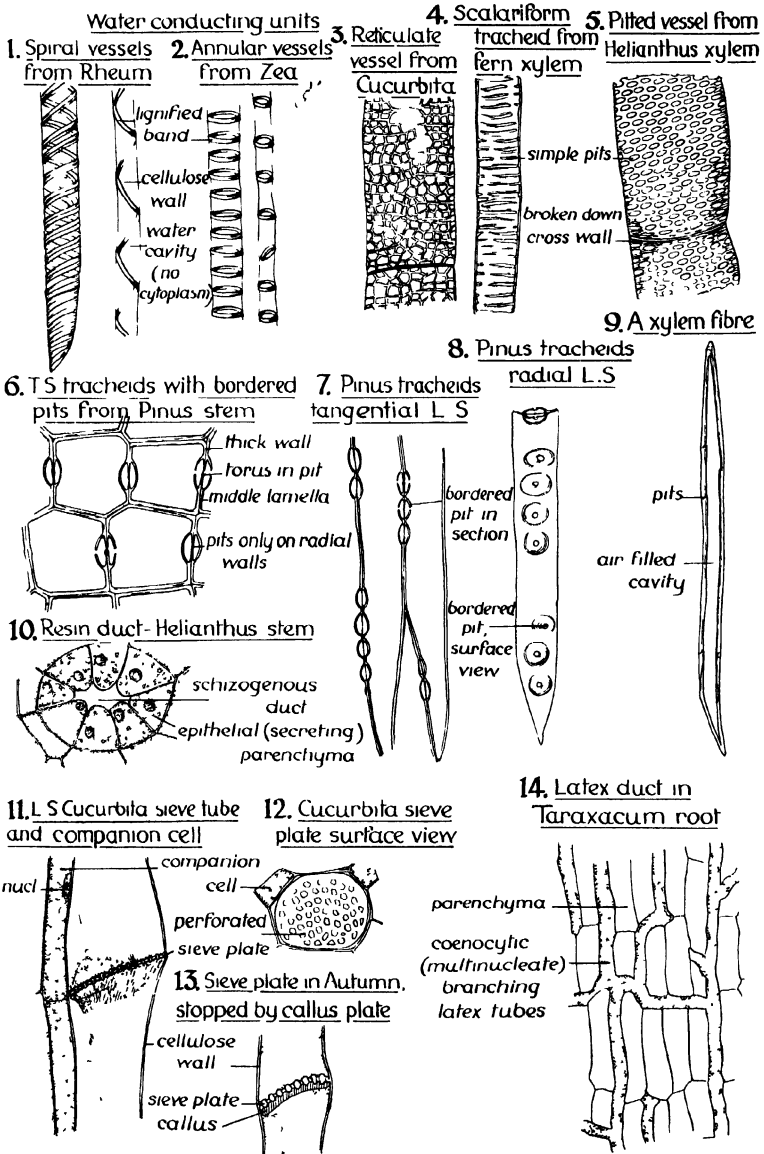
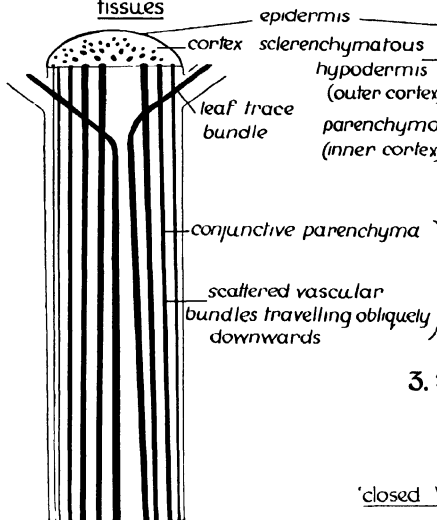
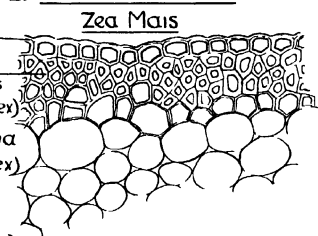


PLATE 21—TYPES OF CONDUCTING TISSUES

1. Diagram of vascular tissues



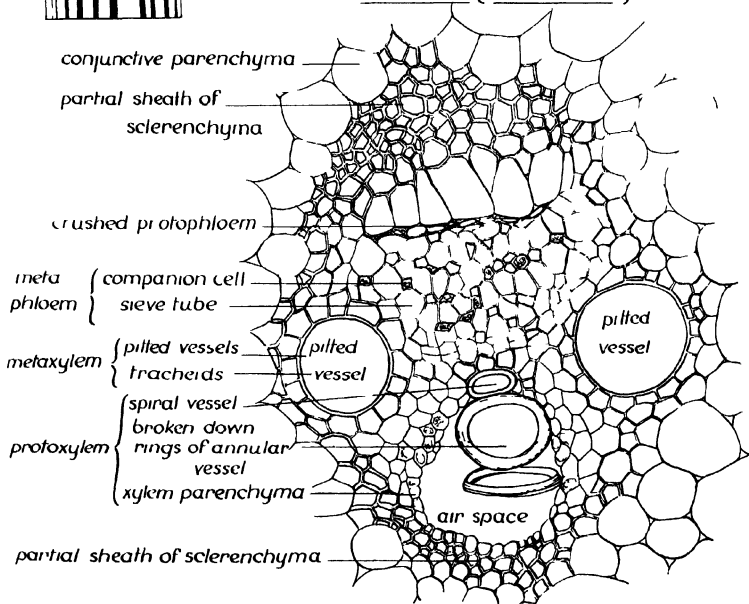
2. Outer stem-tissues



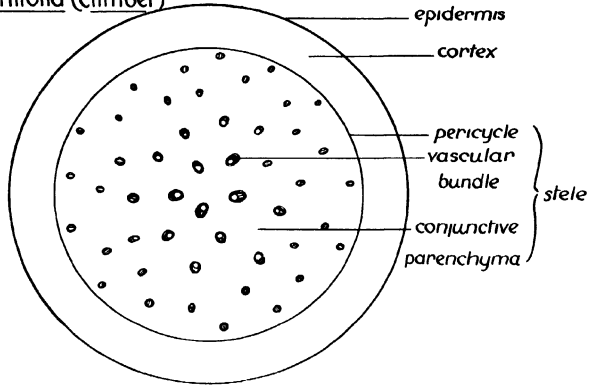
3. Single collateral fibro-vascular bundle

0 01 05 mm

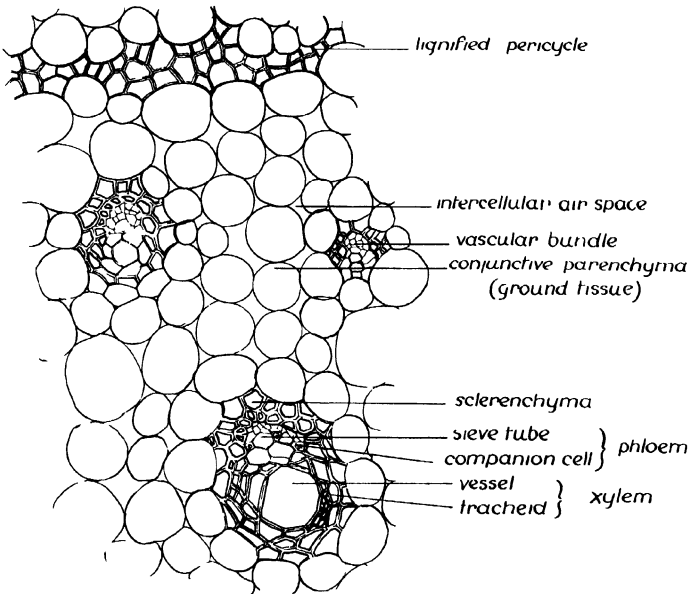
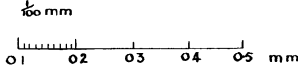
'closed' V B (no cambium)



1. Diagram showing tissue arrangement as seen in transverse section
Vanilla planifolia (climber)

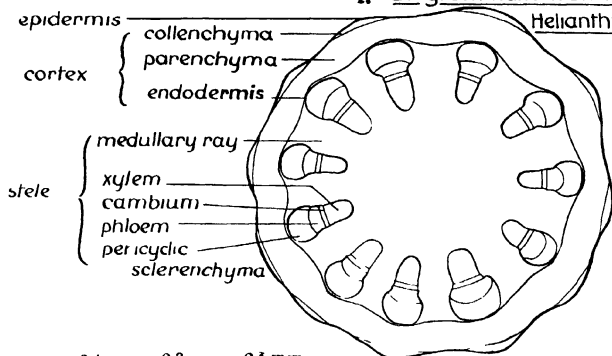


2. T.S single V.B

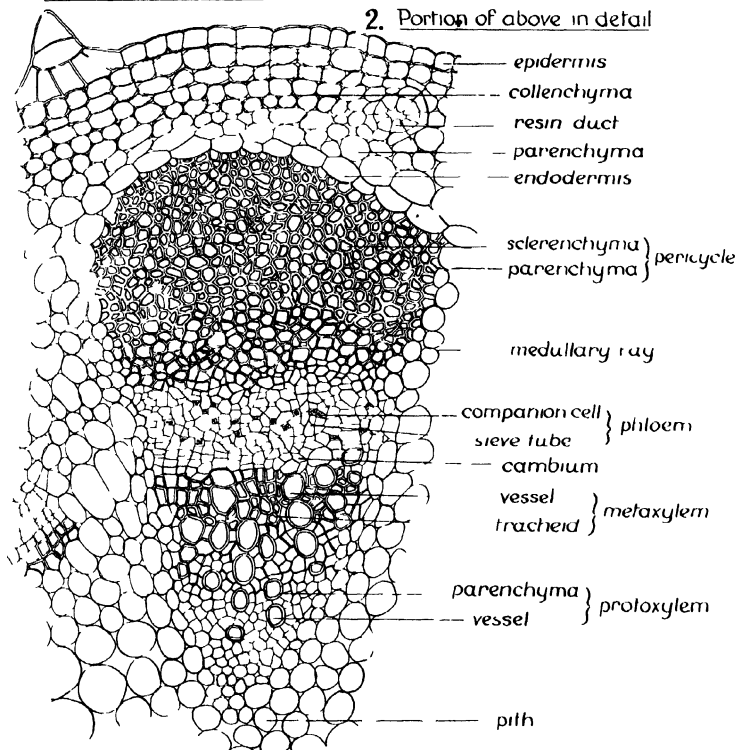


1. Diagrammatic transverse section

Helianthus annuus



2. Portion of above in detail



TS portion of stem Cucurbita (climber)

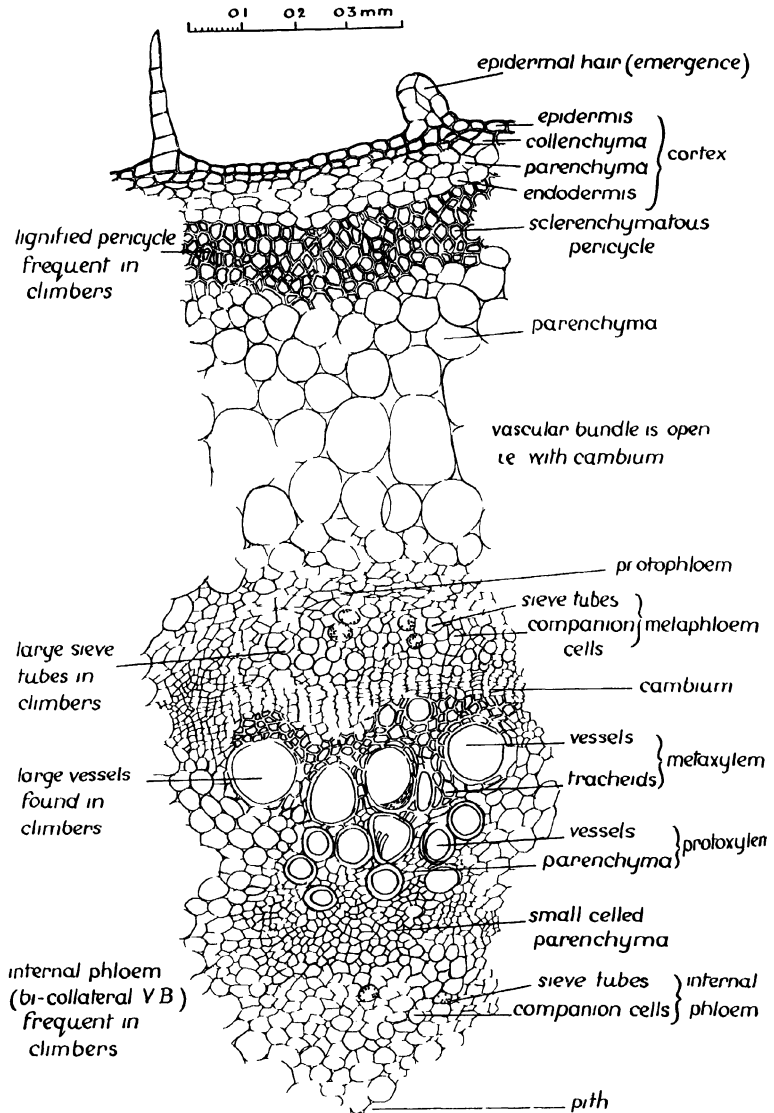


PLATE 25—CLIMBING STEM CUCURBITA

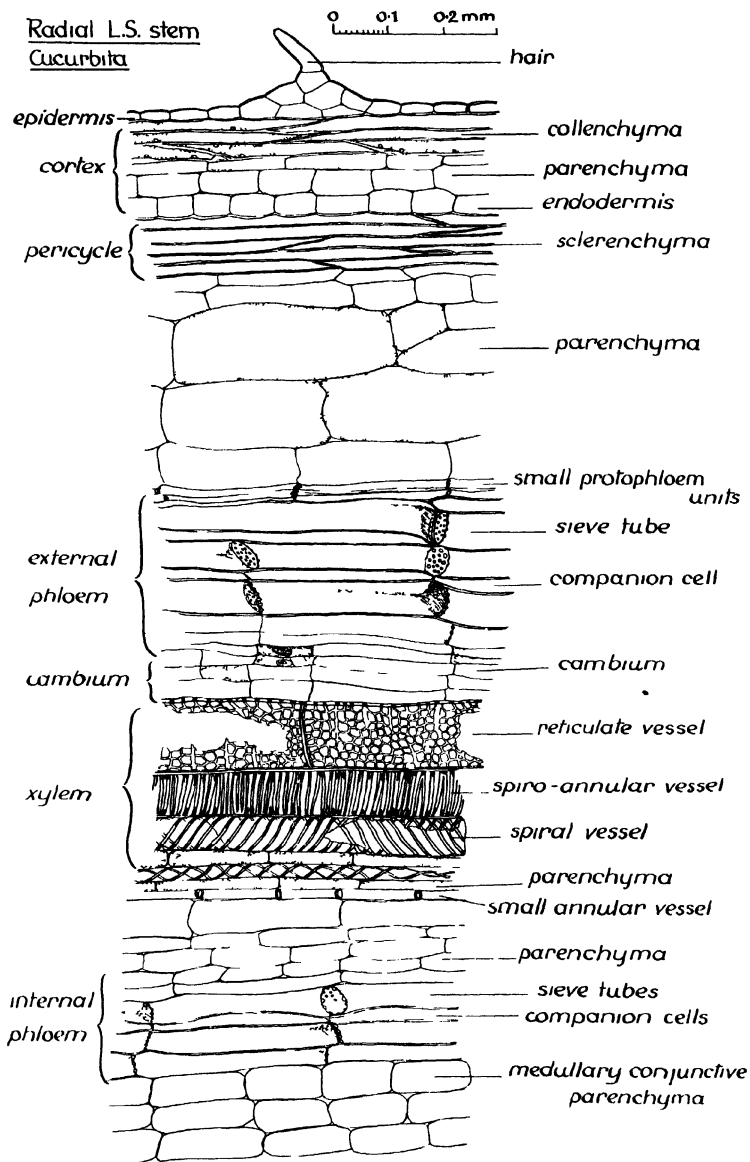
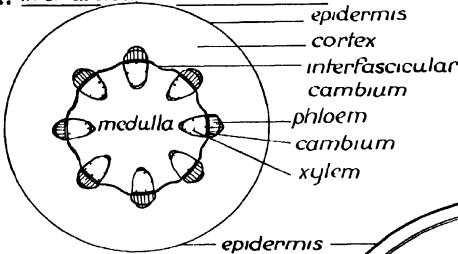
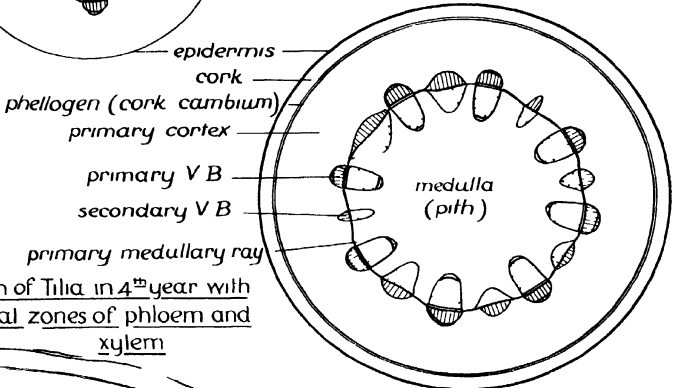


PLATE 26—CLIMBING STEM: CUCURBITA—Continued

1. Interfascicular cambium arises



2. Primary cambium and interfascicular cambium both form secondary xylem and phloem
cork cambium (phellogen) arises usually in cortex



3. Stem of Tilia in 4th year with annual zones of phloem and xylem

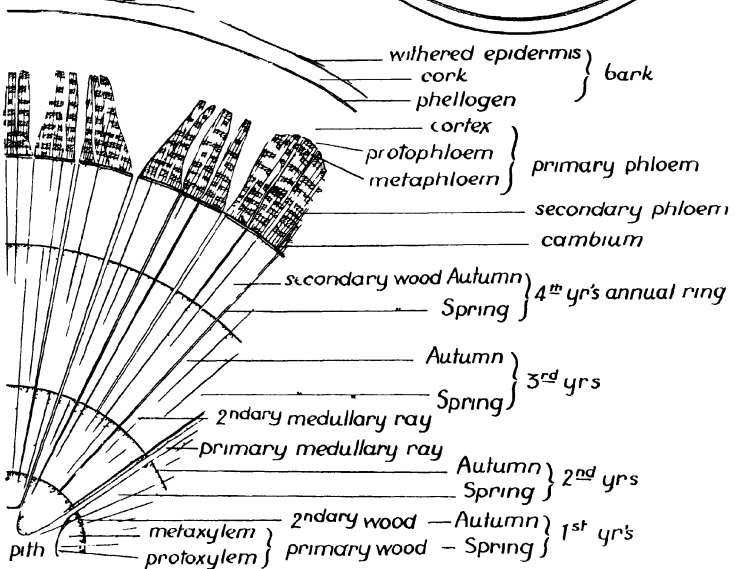
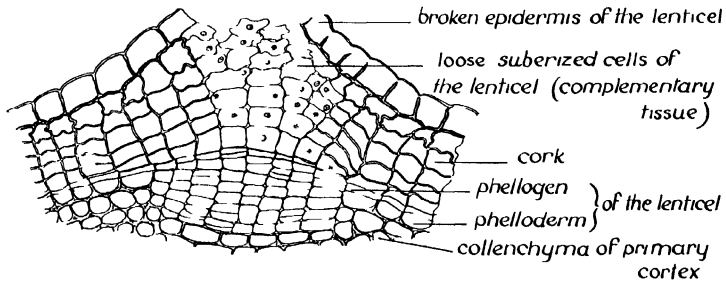
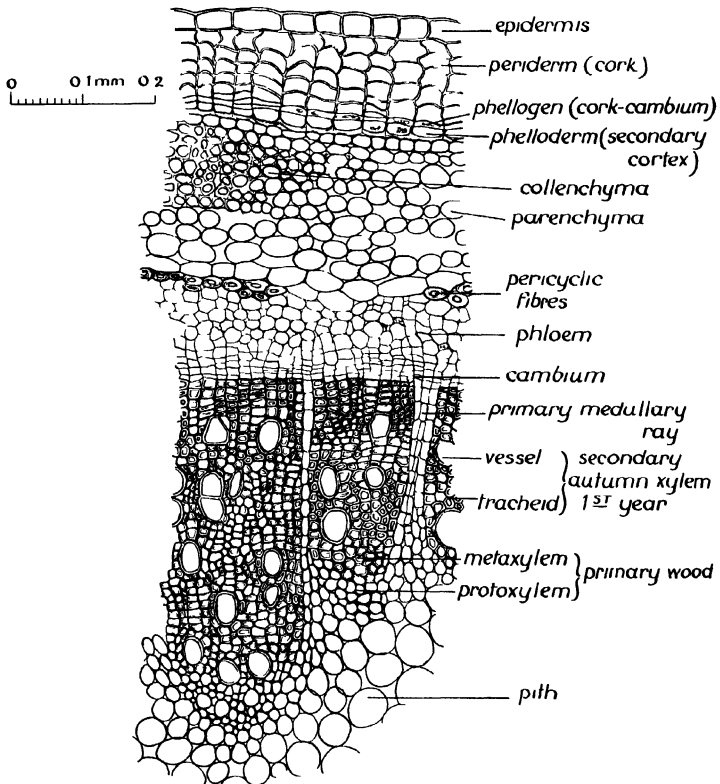


PLATE 27—DICOTYLEDONOUS STEMS . SECONDARY GROWTH

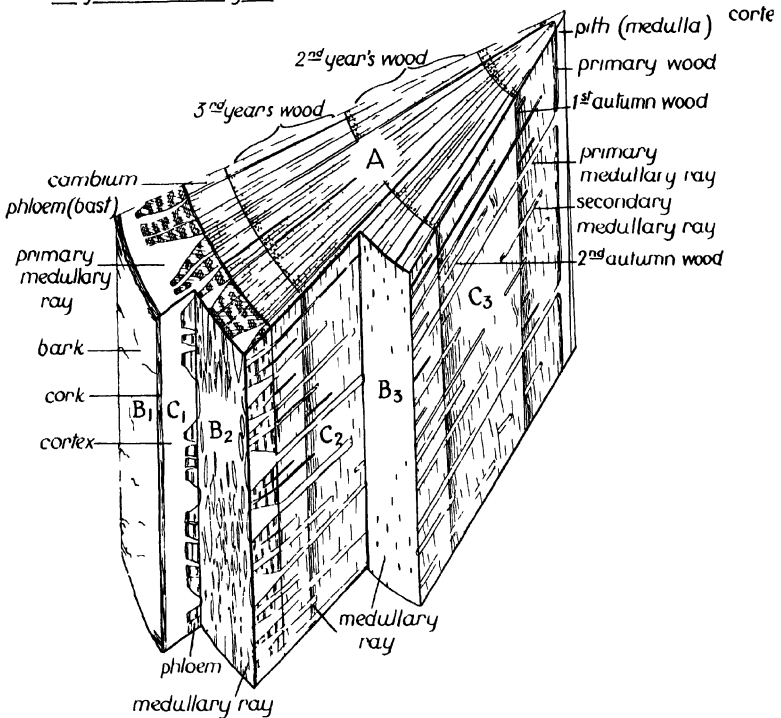
1. TS lenticel Sambucus



2. TS Sambucus (Elder) stem 1 year old



Diagrammatic representation of Tilia (Lime)
twig in its fourth year



A — transverse view, showing all tissues

B — longitudinal tangential views, parallel to one another

B₁ — external view showing bark

B₂ — tangential section through bast

B₃ — tangential section through wood

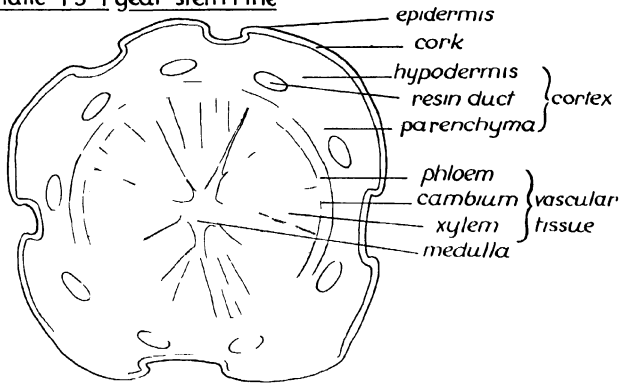
C — longitudinal radial views, parallel to one another

C₁ — shows cortex and outer bast

C₂ — " inner bast, cambium and wood

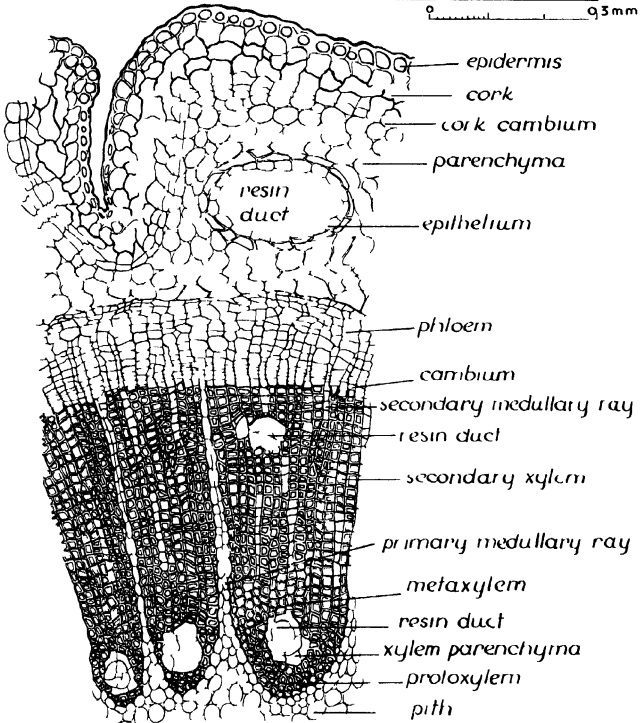
C₃ — wood and pith

1. Diagrammatic TS 1 year stem Pine

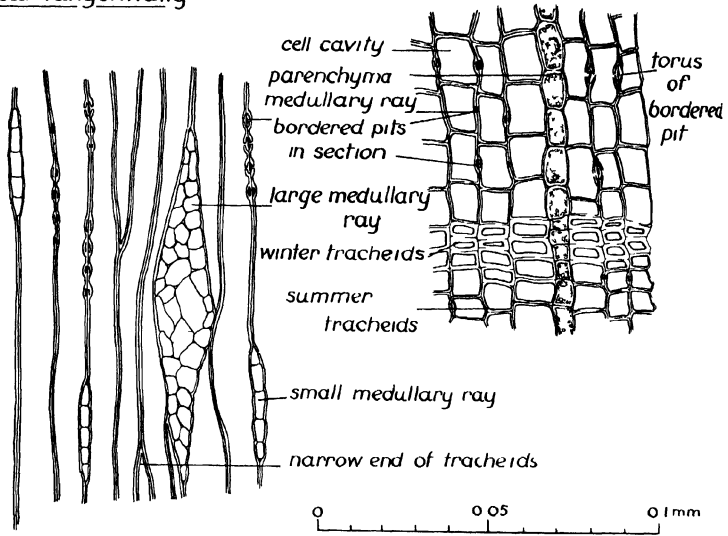


2. TS 1 year Pine stem

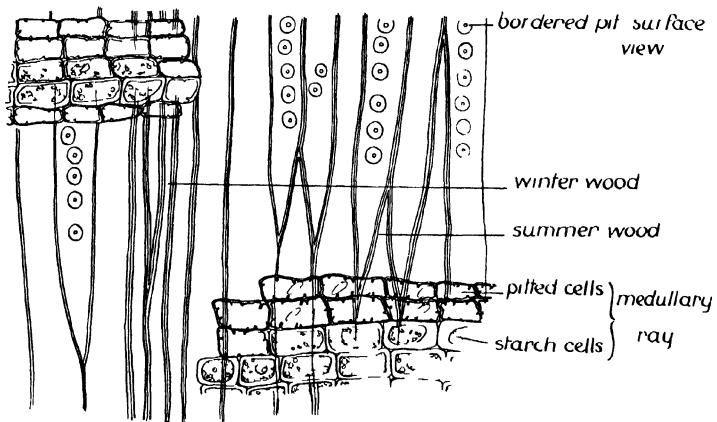
9.3 mm



2. Longitudinal section,
cut tangentially



3. Longitudinal section, cut radially



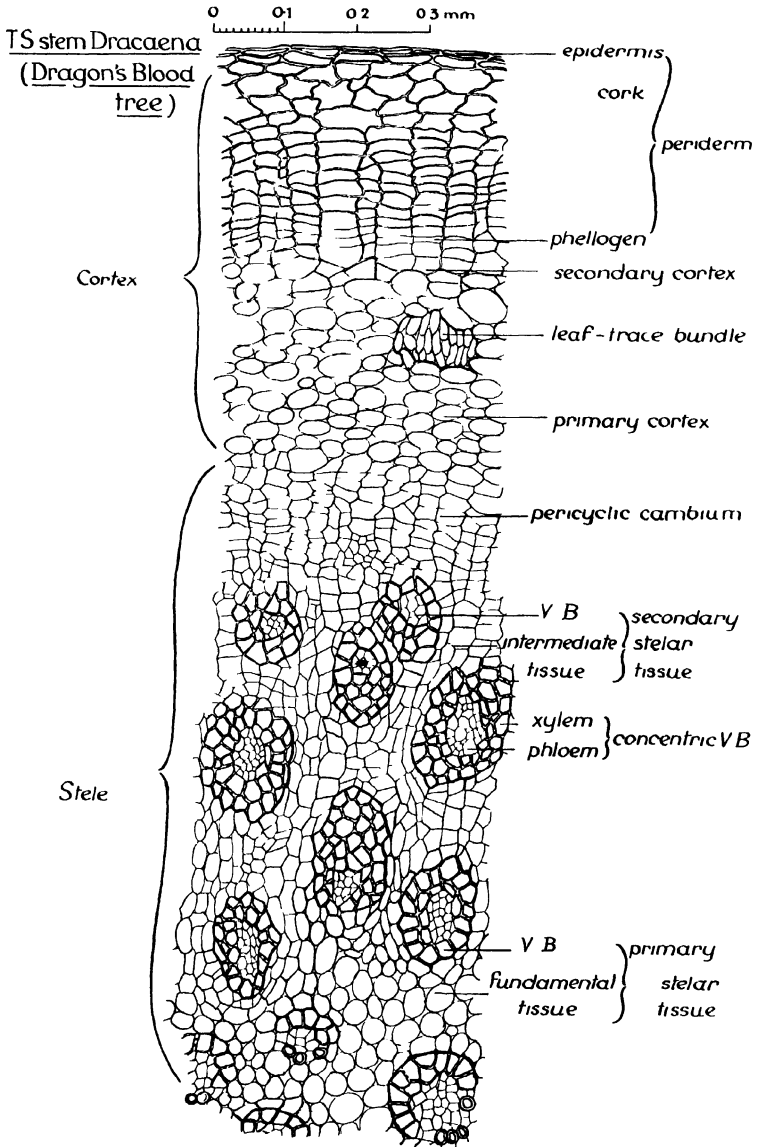


PLATE 33—MONOCOTYLEDONOUS STEM : SECONDARY GROWTH

TS stem *Hippuris* (Mare's Tail)

0 0.4 mm

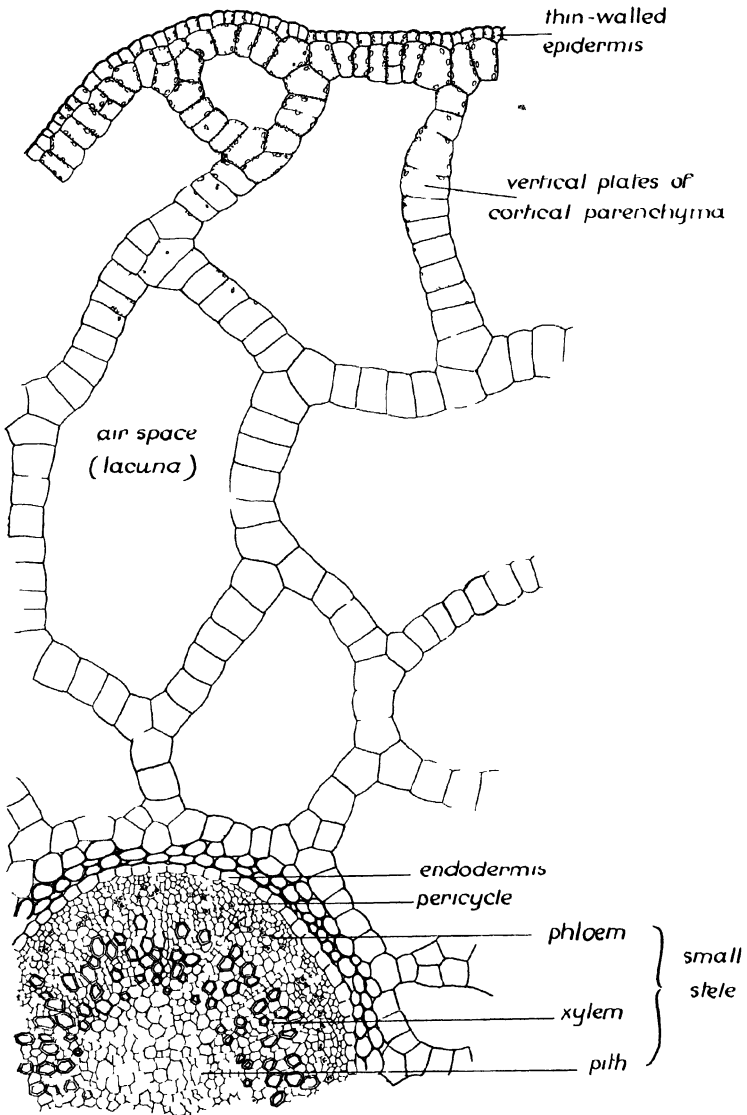
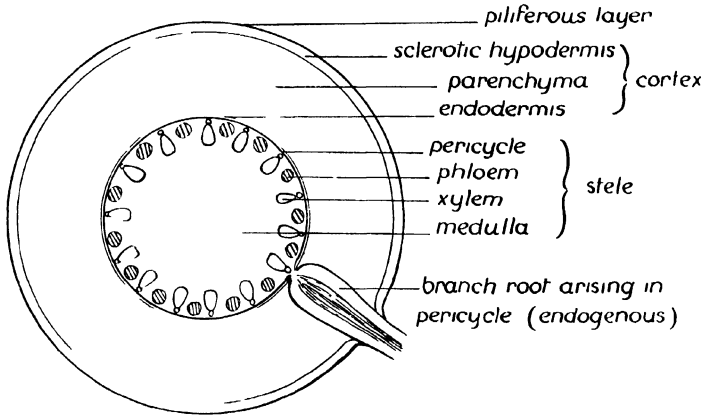
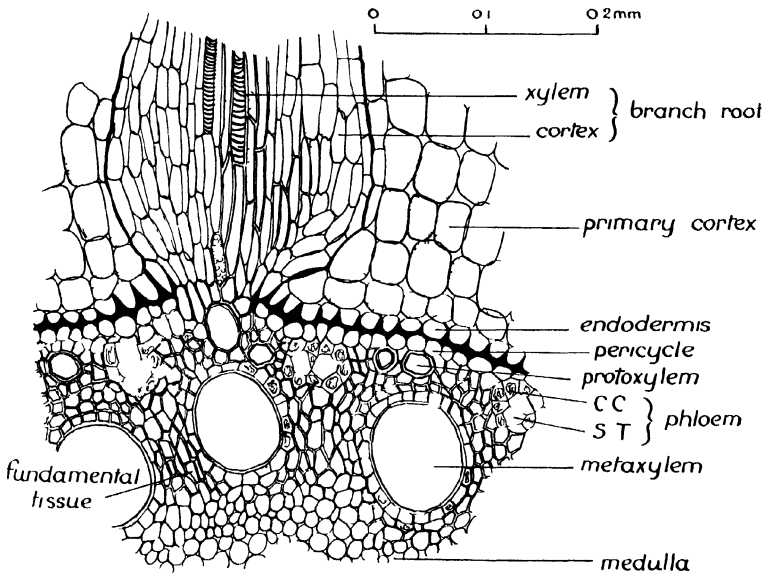


PLATE 34—DICOTYLEDONOUS HYDROPHYTE STEM : HIPPURIS

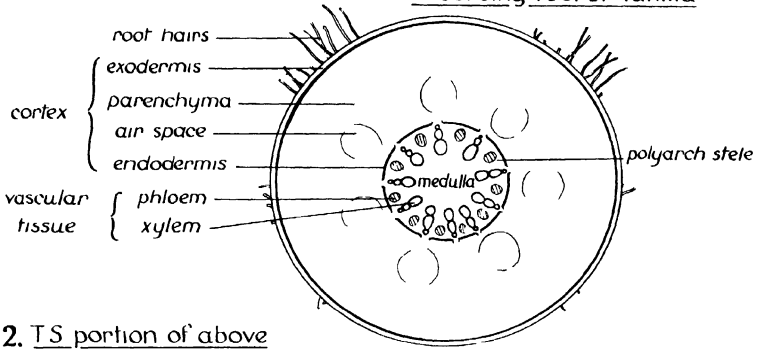
1. TS aerial "bultress root of Maize



2. A portion of above, magnified



1. Diagrammatic TS aerial water absorbing root of Vanilla



2. TS portion of above

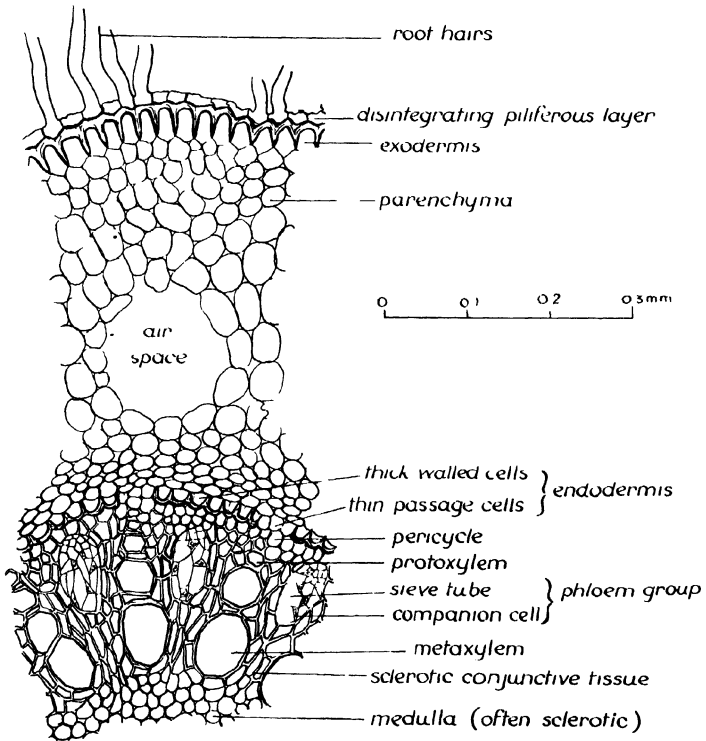
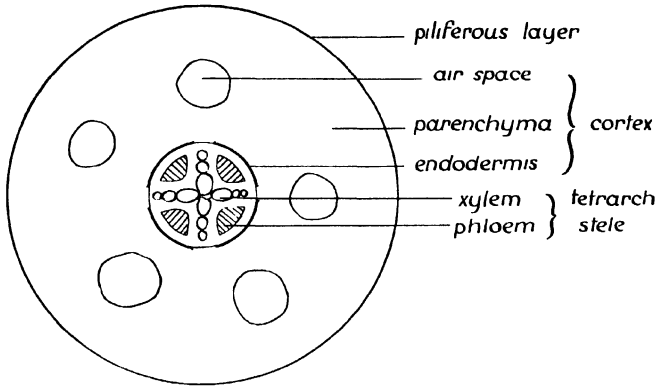
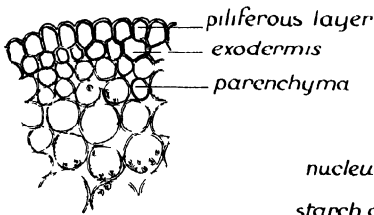


PLATE 36—MONOCOTYLEDONOUS ROOT : VANILLA

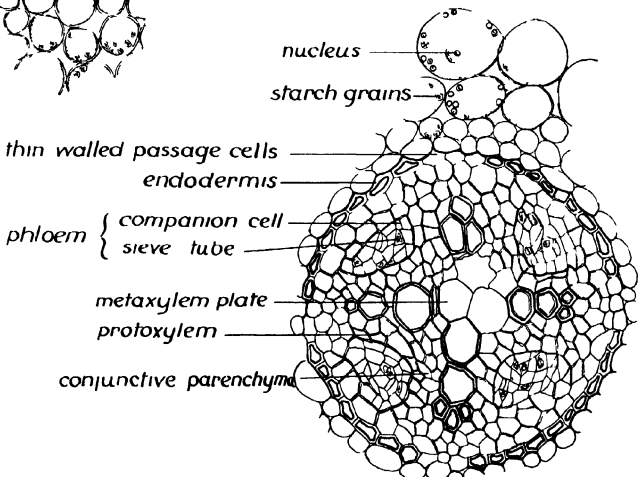
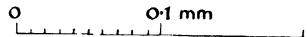
1. Diagrammatic TS Ranunculus root



2. Outer tissues Ranunculus root



3. Stele of Ranunculus root



Pentarch root of *Vicia Faba*

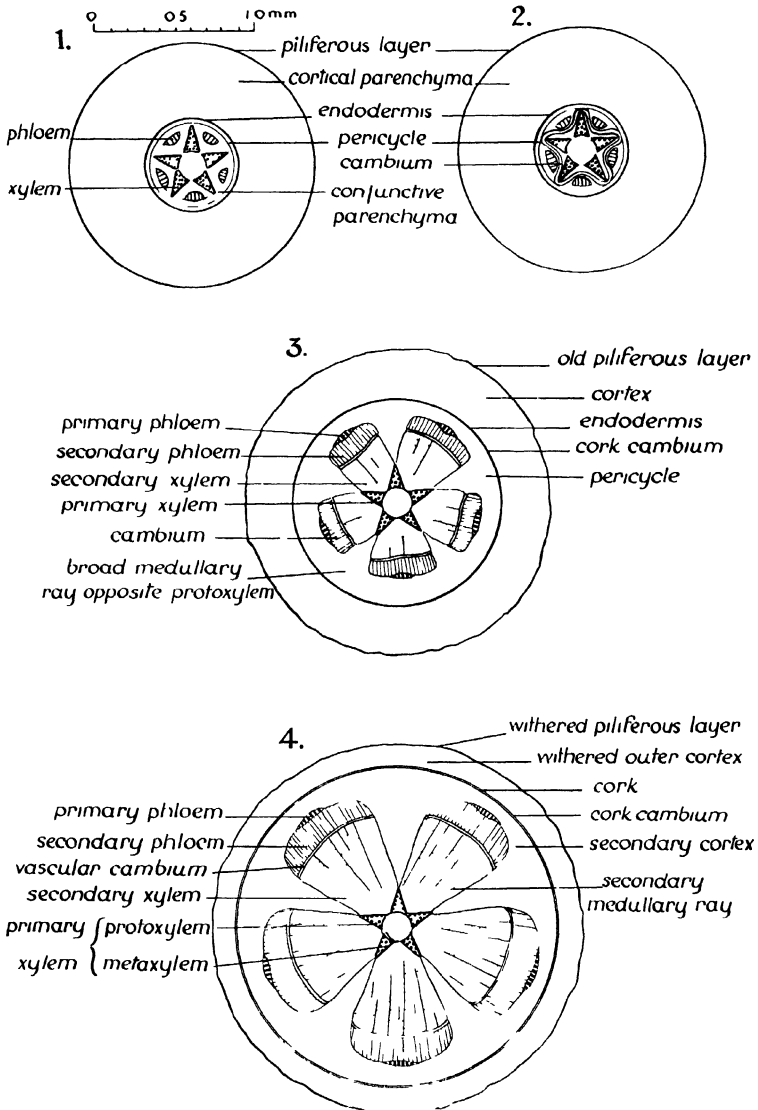
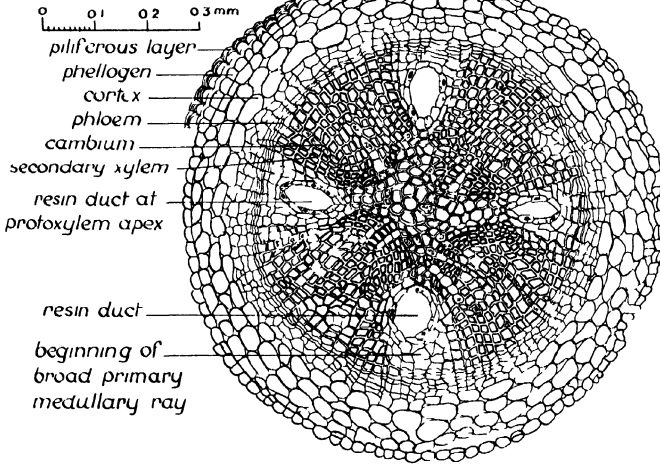
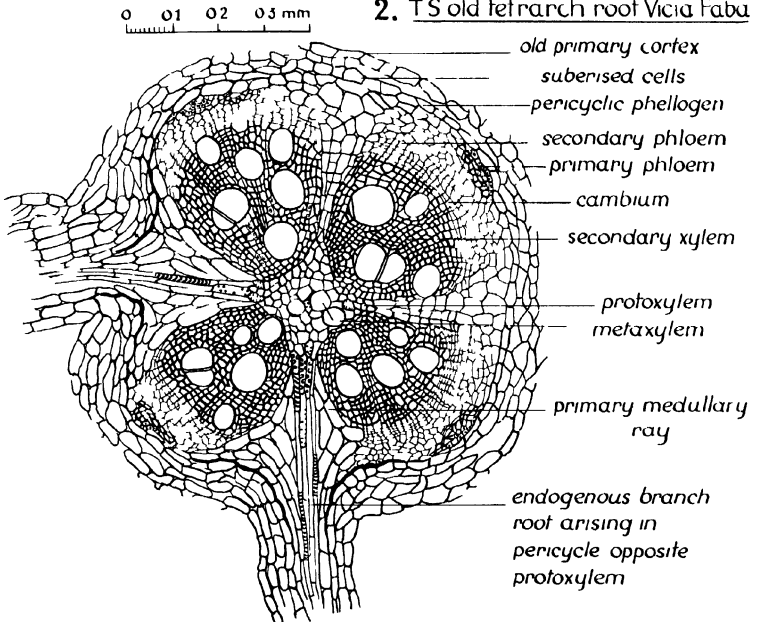


PLATE 38—ROOTS: SECONDARY GROWTH

1. T S old root *Pinus sylvestris*

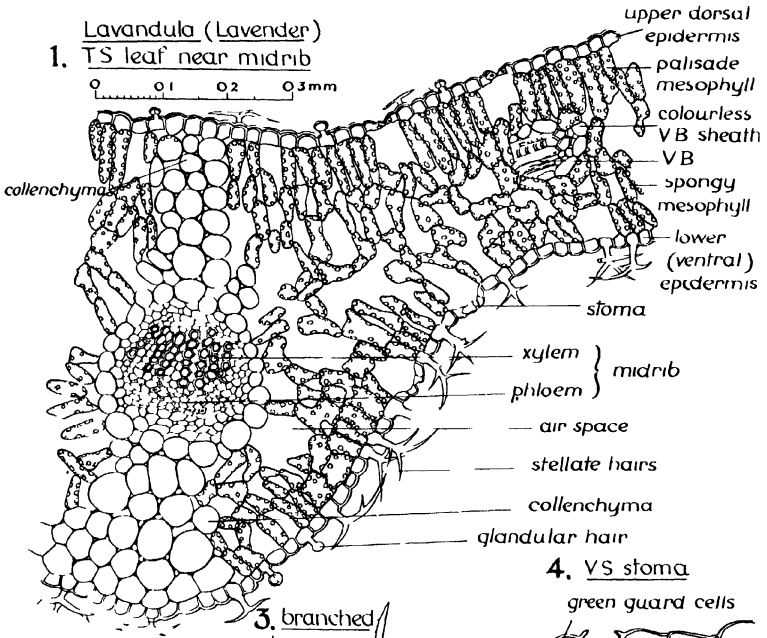


2. T S old tetrarch root *Vicia Fabu*

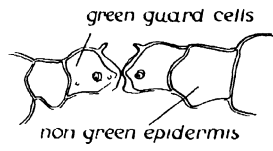


Lavandula (Lavender)
1. TS leaf near midrib

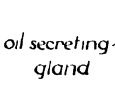
0 0.1 0.2 0.3mm



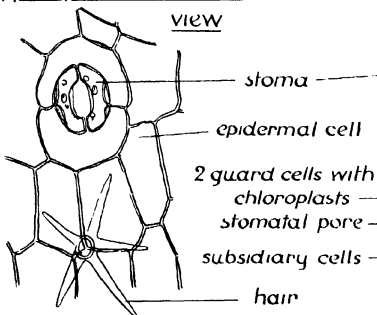
4. VS stoma



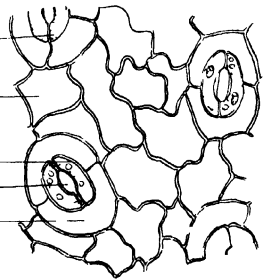
2. glandular hair



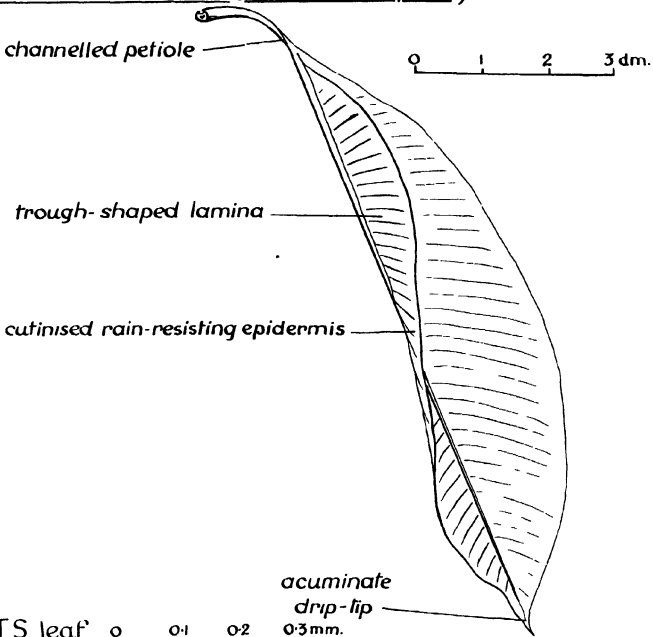
5. Upper epidermis surface view



6. Lower epidermis, surface view



1. Leaf of *Ficus elastica* (India rubber plant)



2. TS leaf

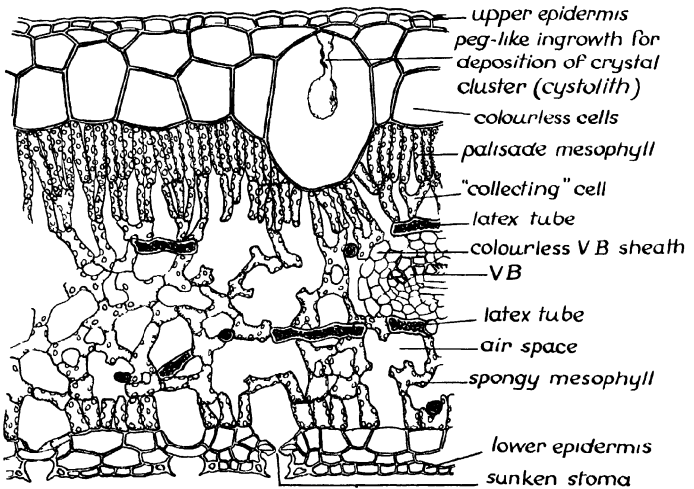
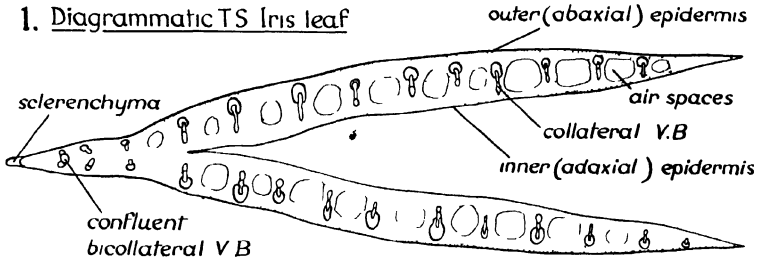
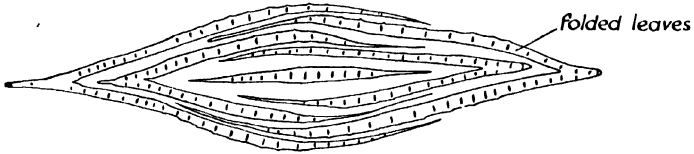


PLATE 41—DICOTYLEDONOUS LEAF : FICUS

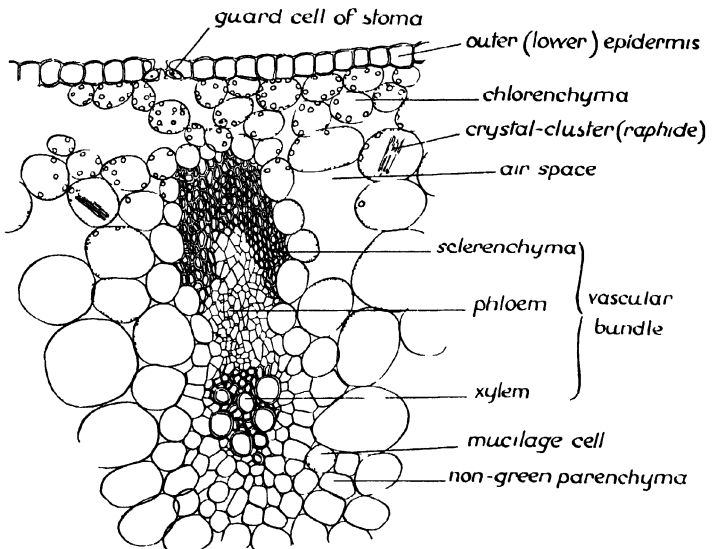
1. Diagrammatic TS Iris leaf



2. Diagrammatic TS leafy shoot



3. VS leaf through VB



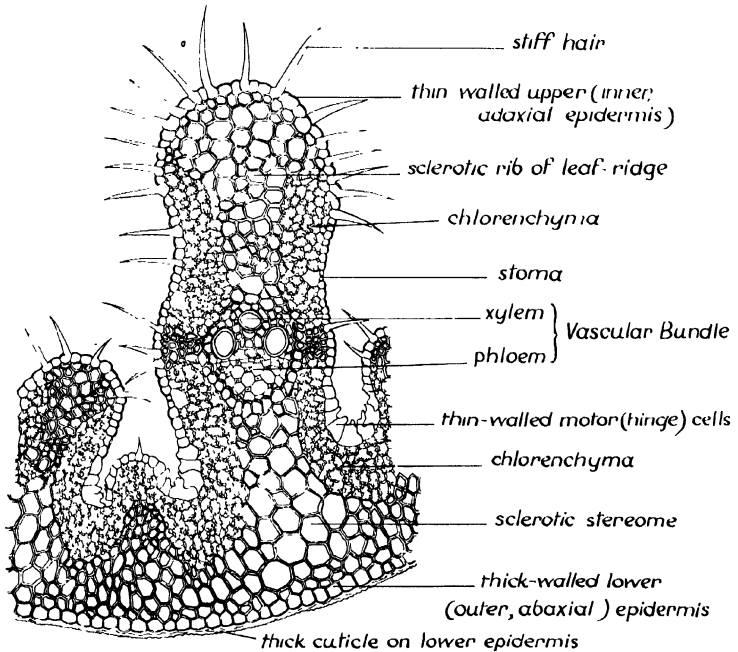
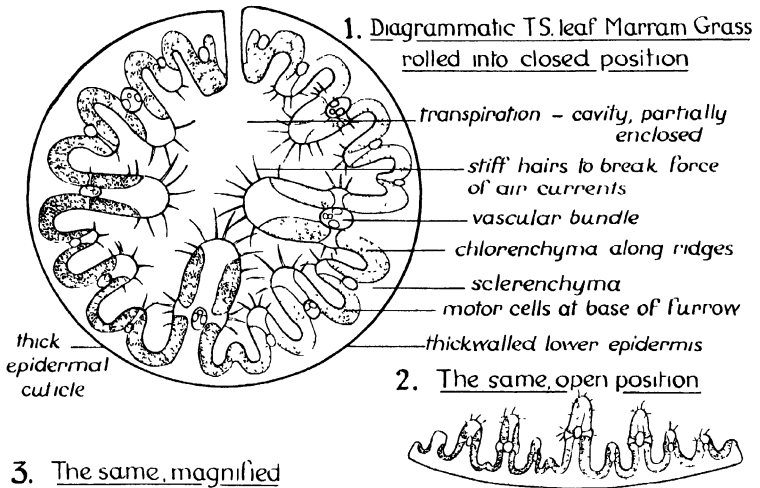
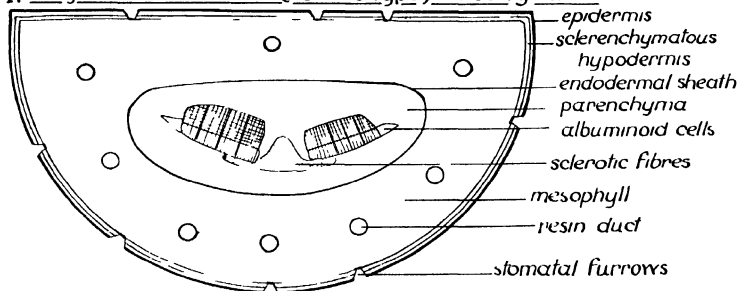


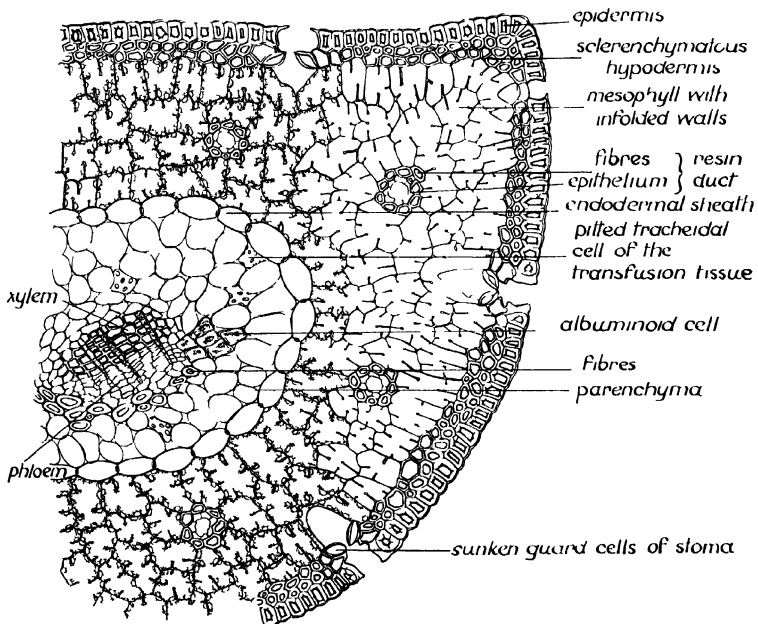
PLATE 43—XEROPHYTIC LEAF : PSAMMA

1. Diagrammatic TS leaf (centric type) *Pinus sylvestris*

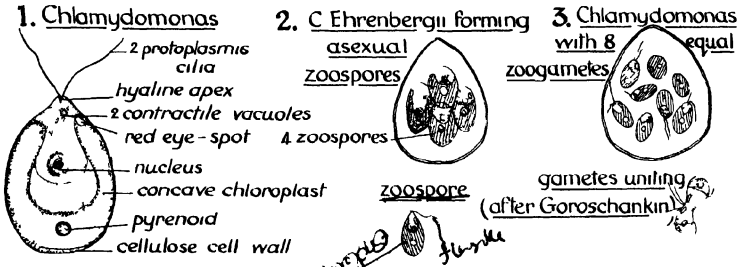


2. TS portion of leaf

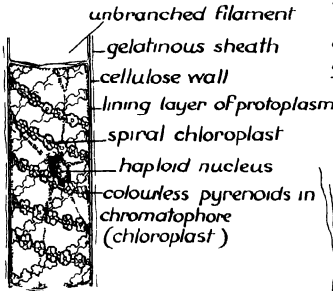
0 0.1 0.2 0.3mm



TAXONOMY OF CRYPTOGRAMS



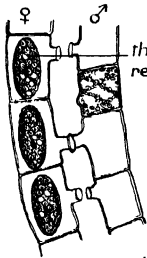
4. Spirogyra sp



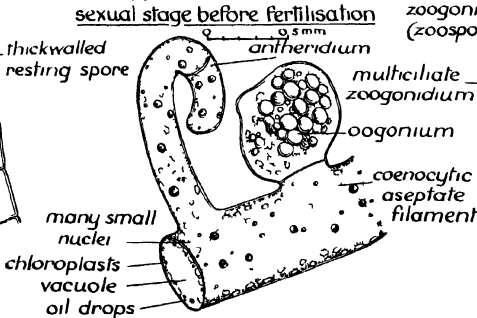
5. Spirogyra conjugating



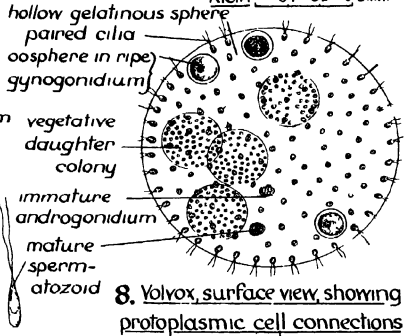
6. Spirogyra zygospores



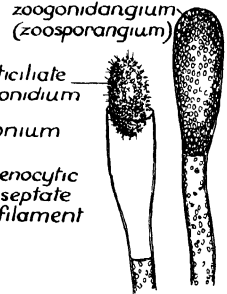
9. Vaucheria sessilis



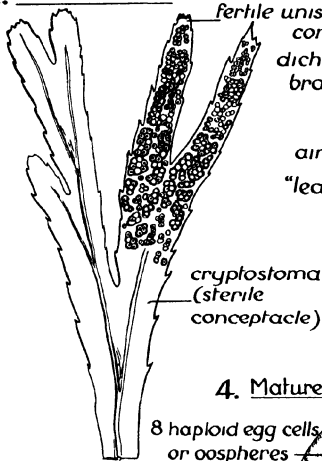
7. Volvox minor (after) diagrammatic Klein 0.1 0.2 0.5mm



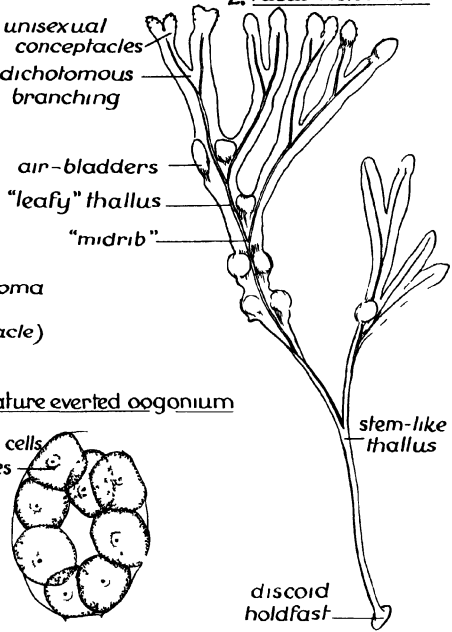
10. Vaucheria zoosporangia asexual stage



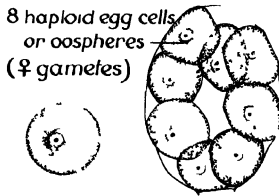
1. Fucus serratus



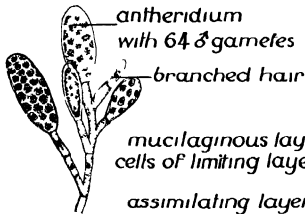
2. Fucus vesiculosus



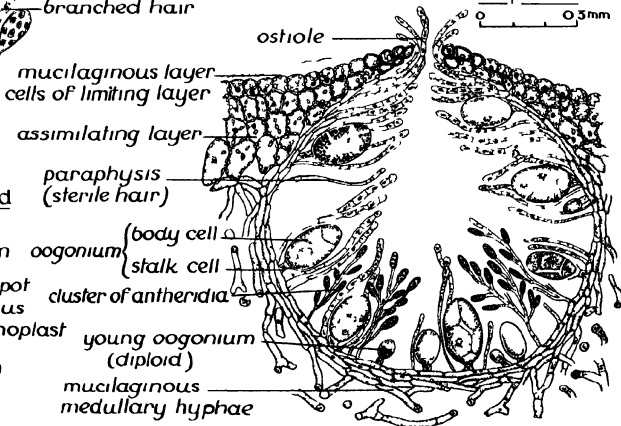
4. Mature everted oogonium



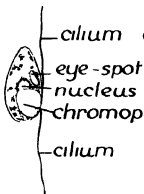
5. Antheridial branch



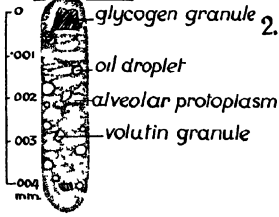
3. VS ♀ conceptacle of F spiralis



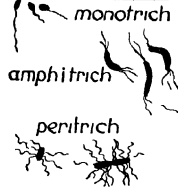
6. Mature spermatozoid



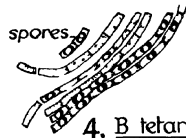
1. A bacillus



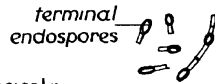
2. Bacterial ciliation



3. B anthracis

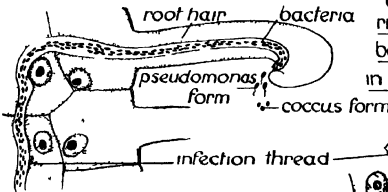


4. B tetani



Structure and life-history of Pseudomonas radiculicola (after Thornton) in symbiosis with leguminous plants

5. Soil cocci infest root hairs of lucerne

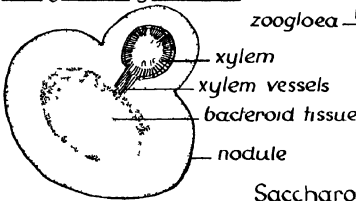


6. Infection thread gives rise to zoogloea, then bacteria multiply in cortical parenchyma

7. Nodules on Lupinus root



8. TS Lupinus root nodule with nitrogen-fixing bacteria



10. Banded rods from nodule



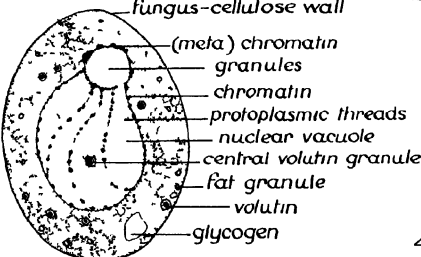
9. Bacteroids from nodule



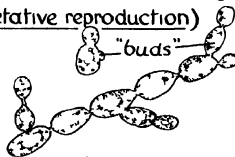
Saccharomyces

11. S cerevisiae (Brewer's Yeast)

after Wager 0.05 mm



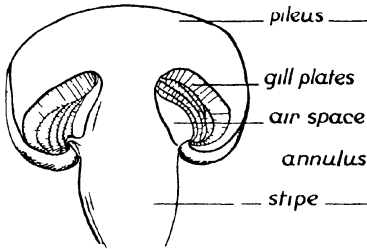
12. S cerevisiae showing gemmation or budding (vegetative reproduction)



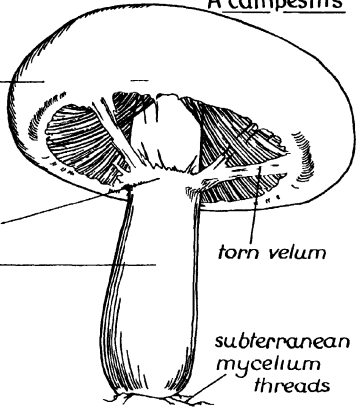
13. S cerevisiae showing asexual reproduction



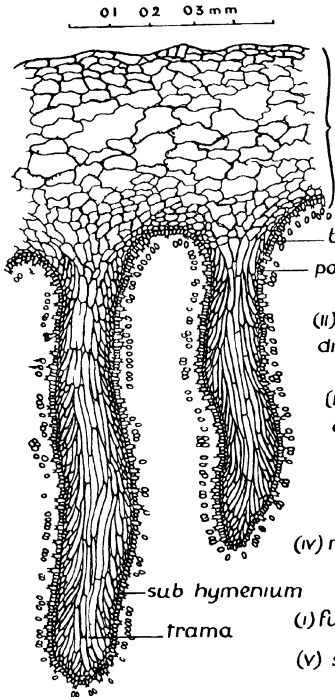
2. Radial L S young mushroom



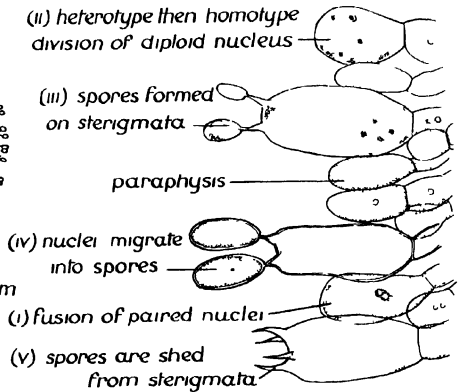
1. Reproductive head of *A. campestris*



3. Tangential L S gill plate



4. Portion of hymenium showing development of basidia



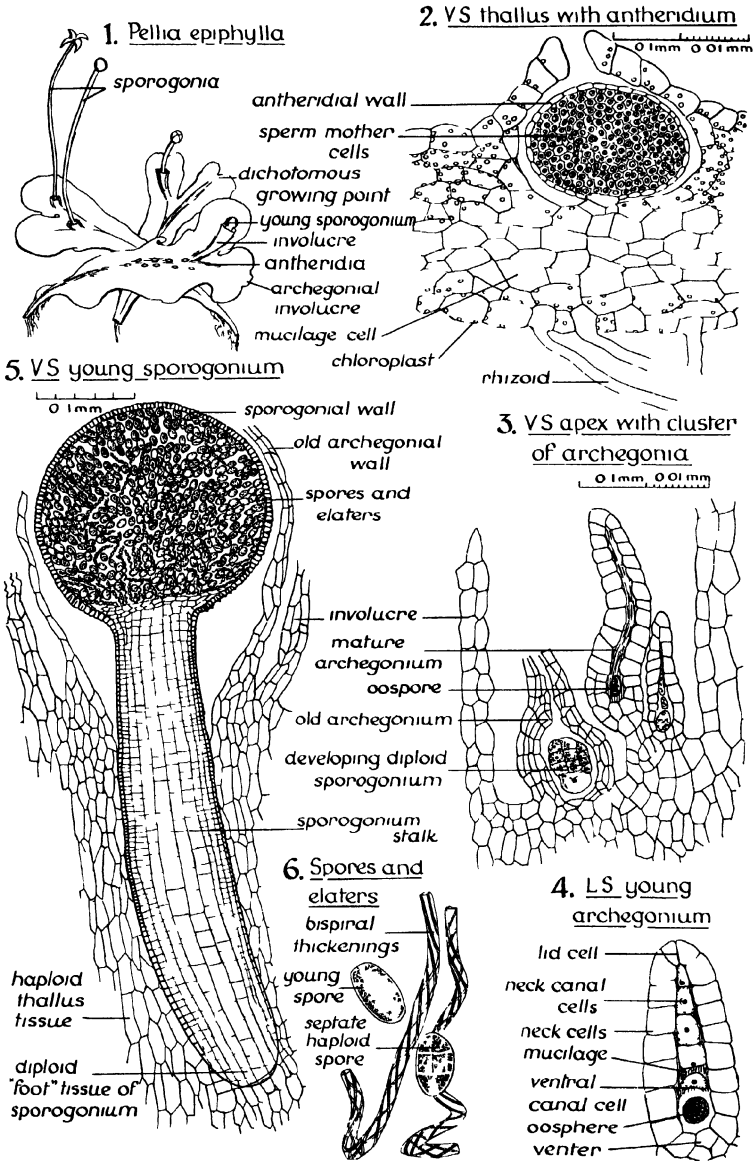


PLATE 49—HEPATICÆ : PELLIA

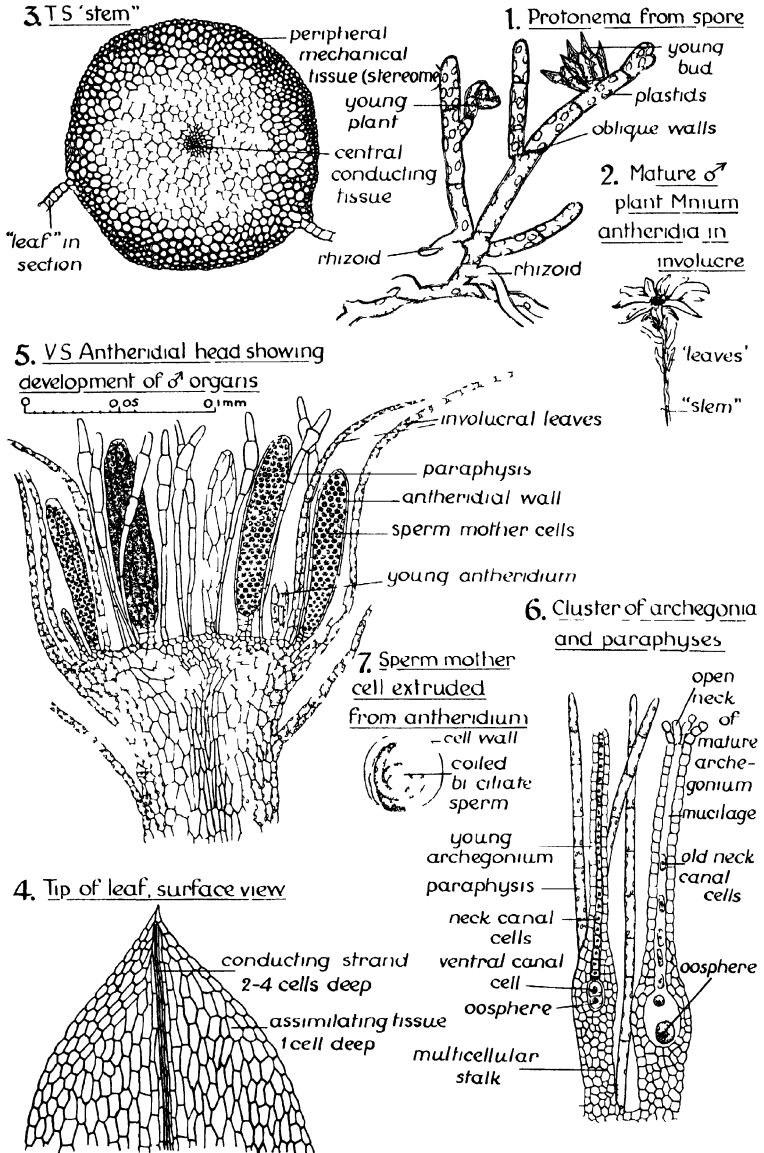


PLATE 50—MUSCI: FUNARIA

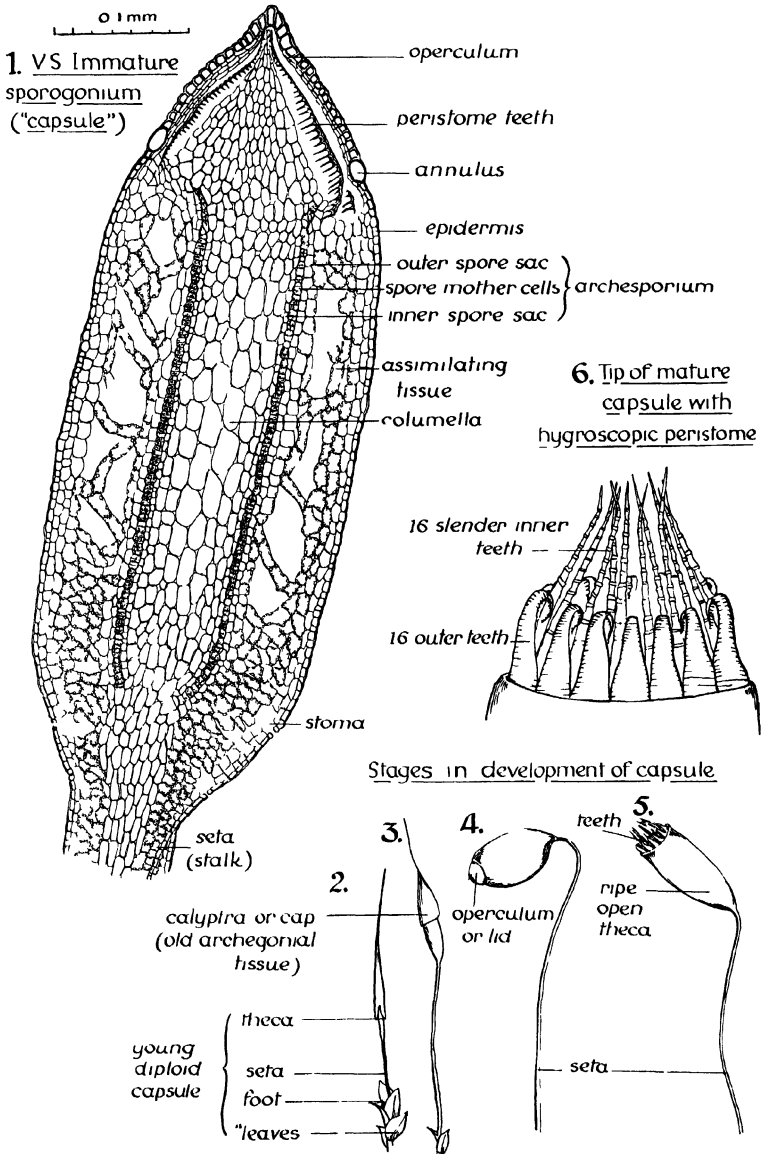
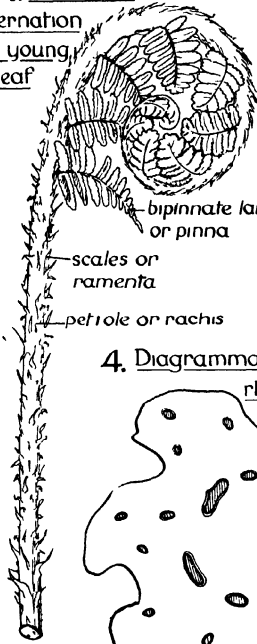
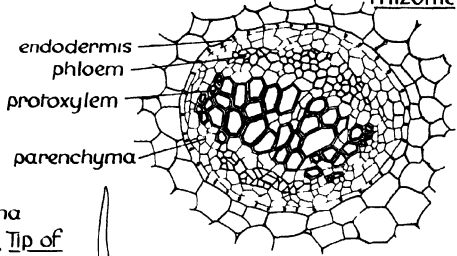


PLATE 51—MUSCI: FUNARIA—Continued

1. Circinnate
venation
in young
leaf



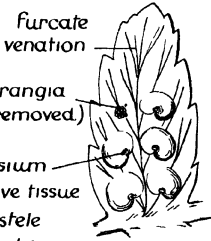
2. T S vascular strand from
rhizome



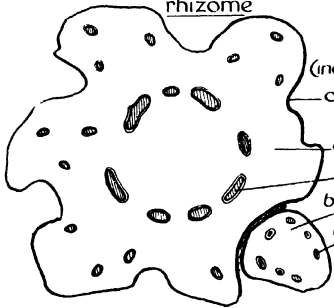
3. Tip of
ramentum



5. Single pinnule, of
sporophyll, under side



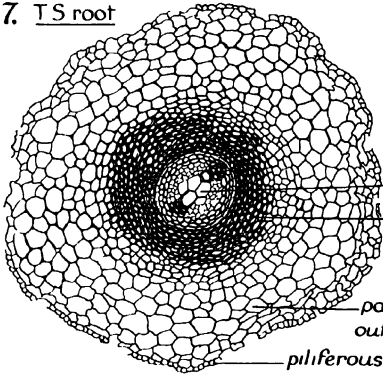
4. Diagrammatic T S
rhizome



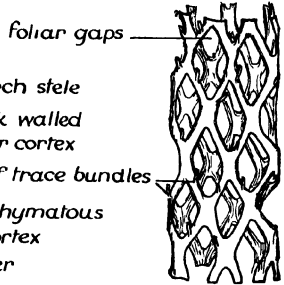
6. End of scalariform
tracheid

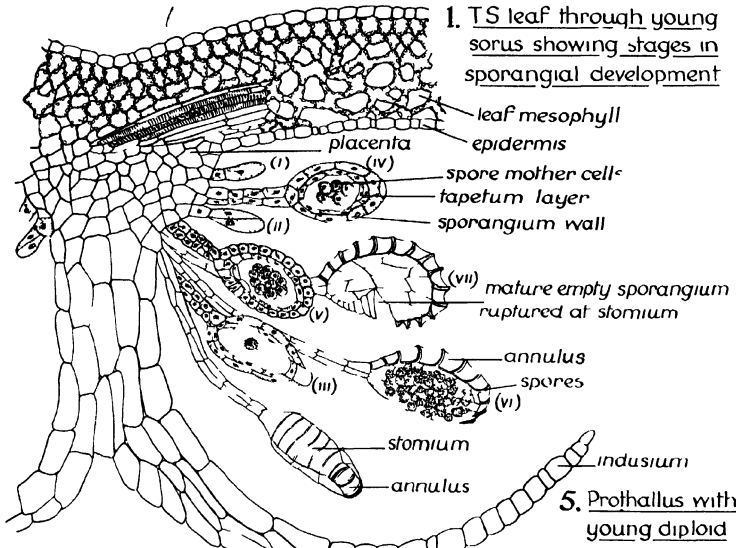


7. T S root



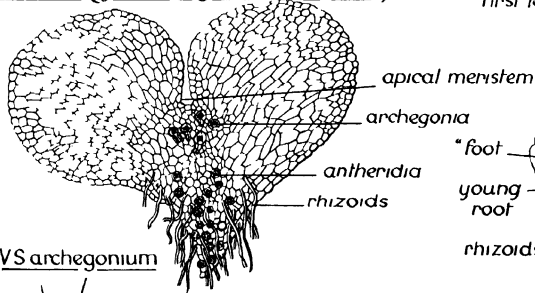
8. Dissection of
stele from
rhizome



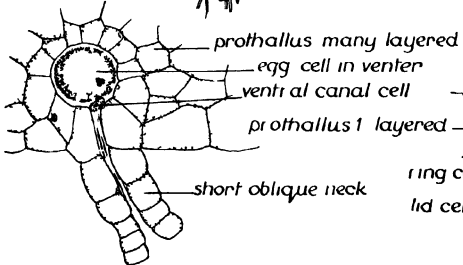


1. TS leaf through young sorus showing stages in sporangial development

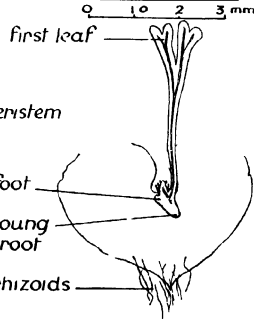
2. Mature prothallus underside (gametophyte stage haploid)



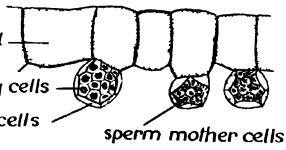
3. VS archegonium



5. Prothallus with young diploid plant attached



4. VS antheridia



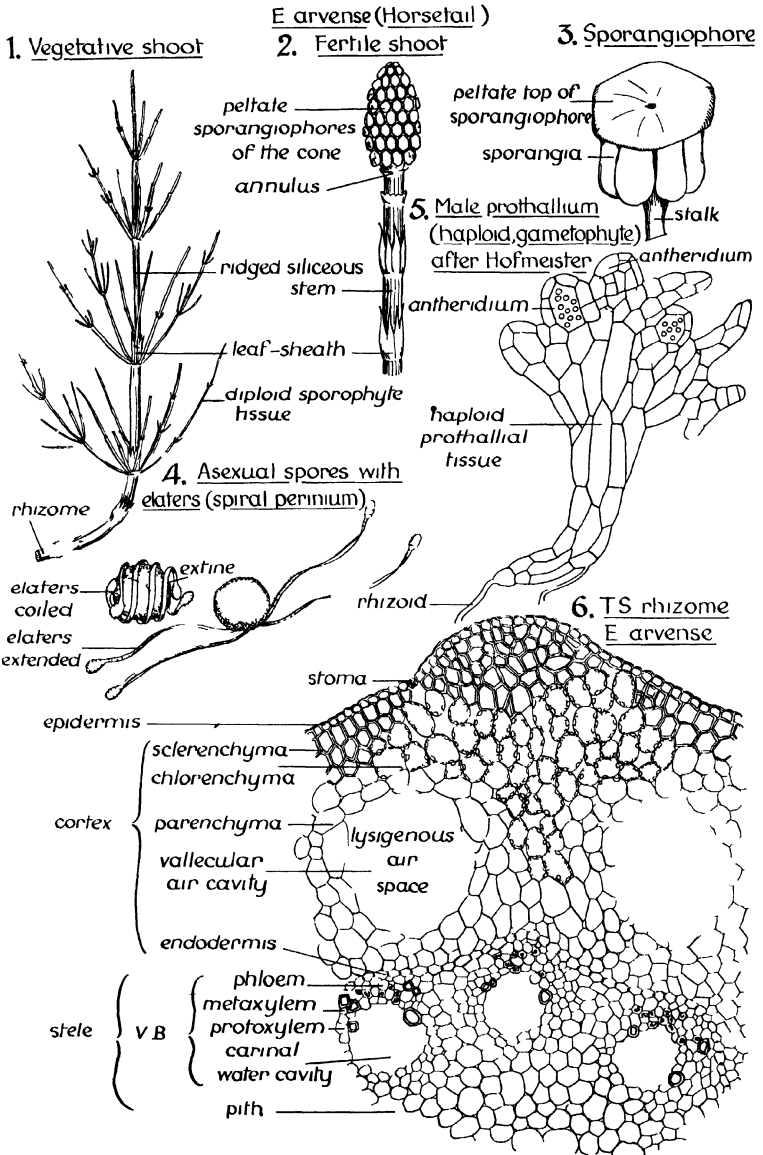
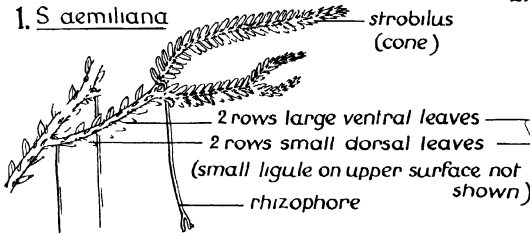
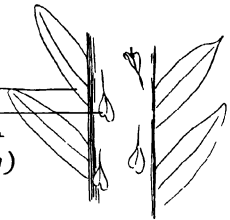


PLATE 54—EQUISETALES : EQUISETUM

1. S. aemiliana

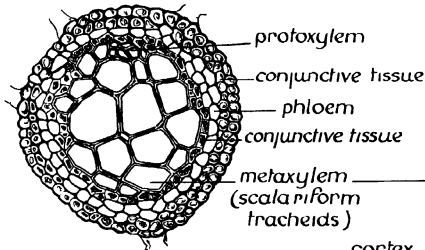


2. Part of shoot of the same, magnified



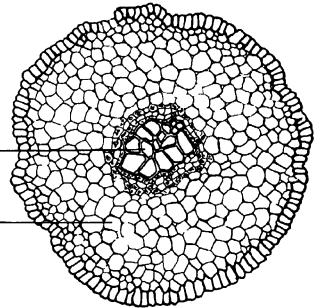
3. TS stele of stem

0 01 mm



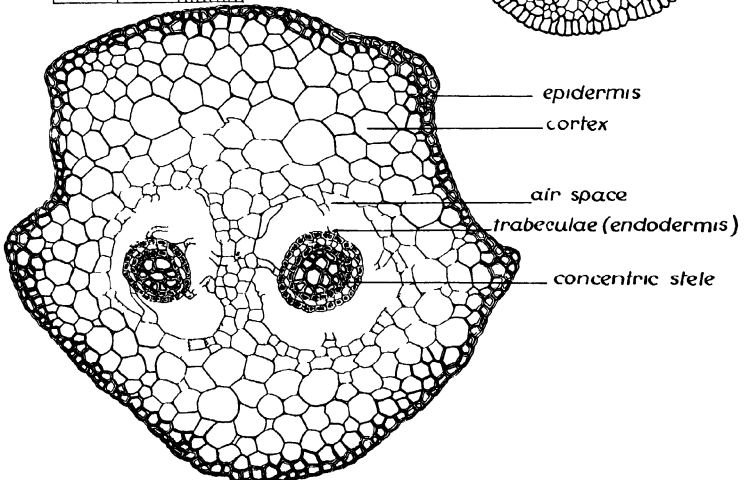
4. TS rhizophore

0 01 mm

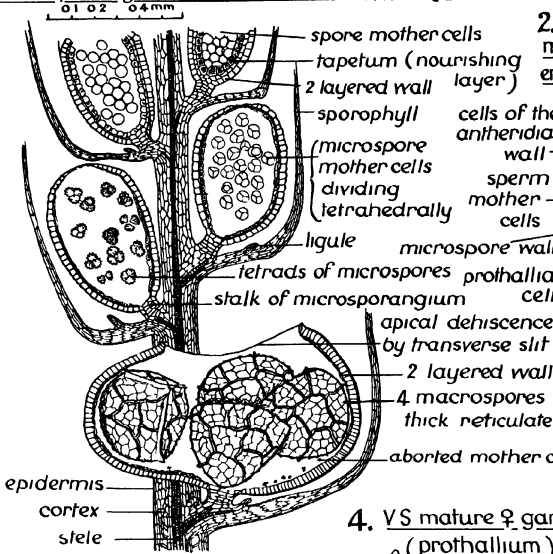


5. TS polystelic stem

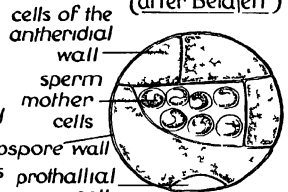
0 1 mm 0 01 mm



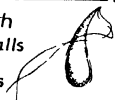
1. Diagrammatic VS strobilus with several microsporangia and a basal macrosporangium



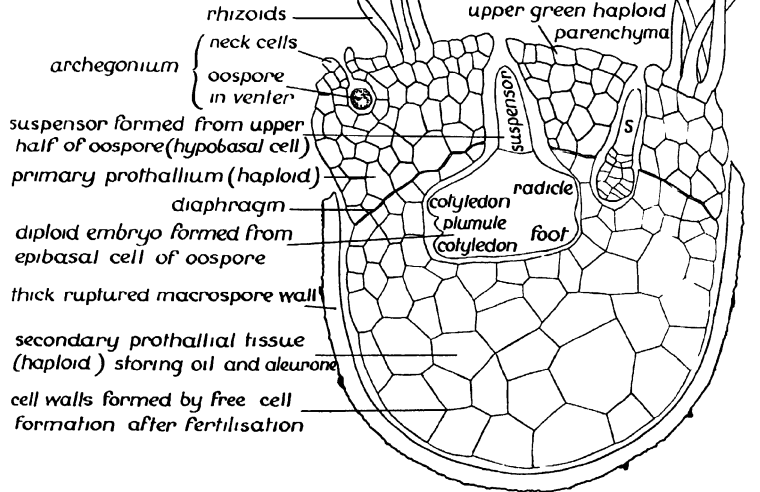
2. Lateral view of mature ♂ gametophyte enclosed in microspore (after Belajeff)



3. Biciliate spermatozoid (after Belajeff)



4. VS mature ♀ gametophyte (prothallium) partially enclosed in macrospore (after Pfeffer)



TAXONOMY OF PHANEROGAMS

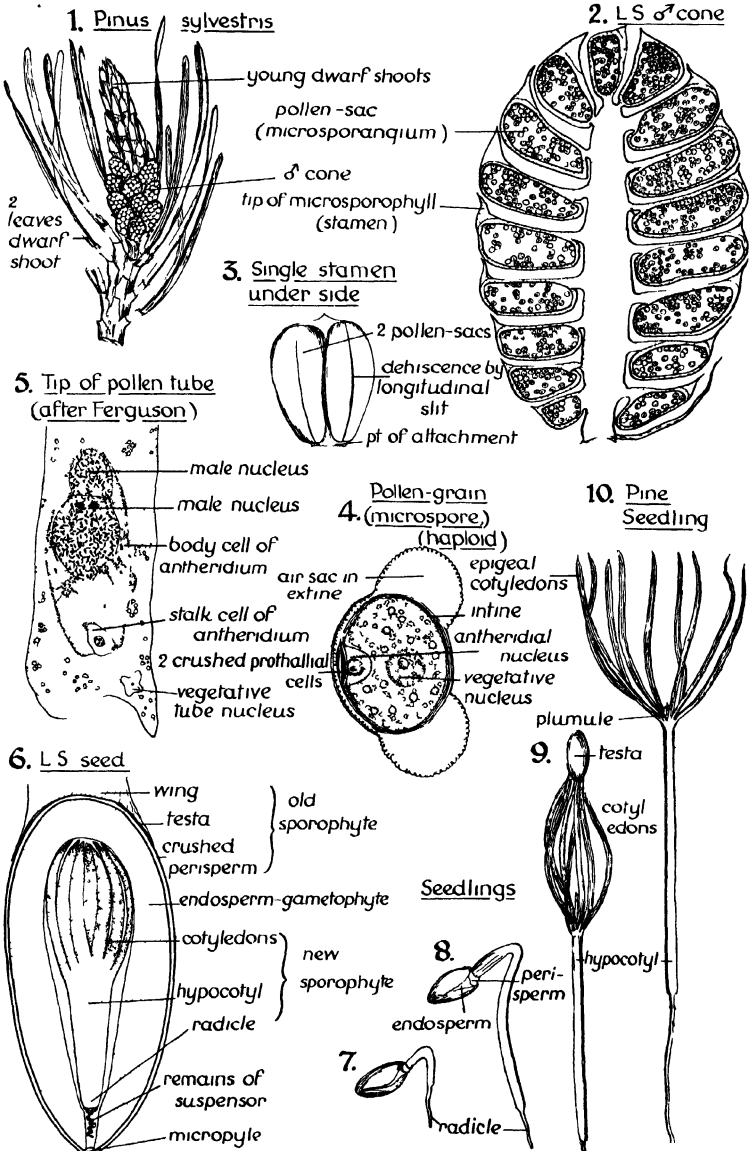
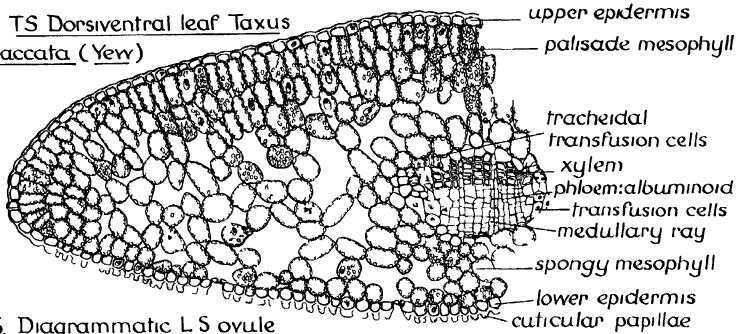
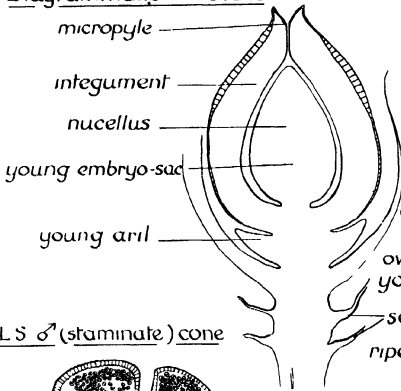


PLATE 59—CONIFERALES: PINUS—Continued

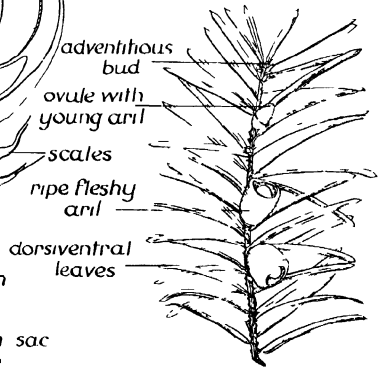
1. TS Dorsiventral leaf Taxus baccata (Yew)



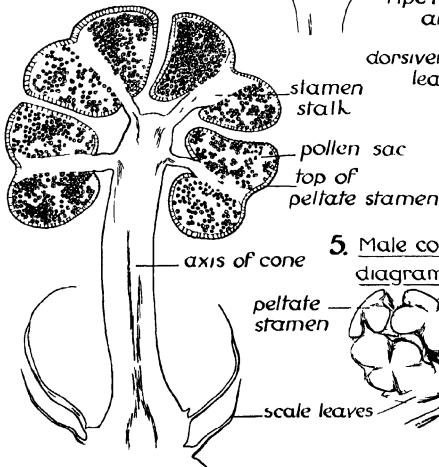
3. Diagrammatic L S ovule



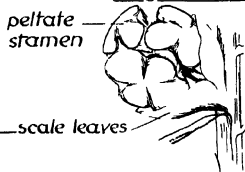
2. Taxus shoot ♀ plant



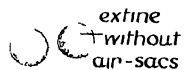
4. L S ♂ (staminate) cone



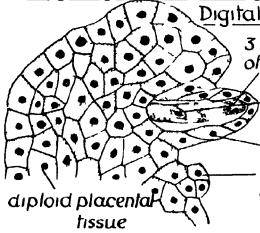
5. Male cone, diagrammatic



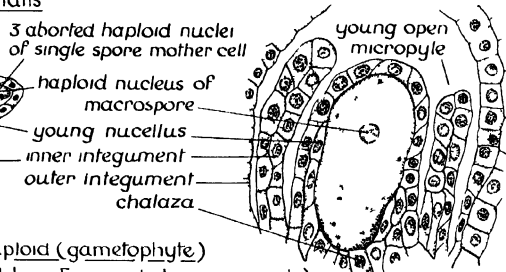
6. Pollen-grains



1. LS young macrosporangium

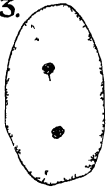


2. VS Liliun megaspore



Development of haploid (gametophyte) phases in embryo-sac of Liliun From a photo micrograph

3.



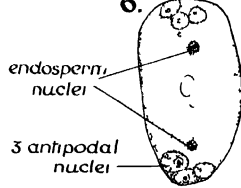
4.



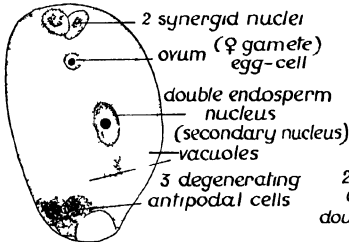
5.



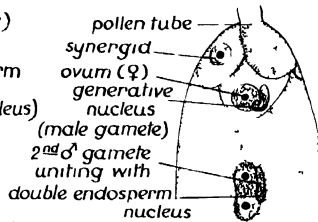
6.



7. Embryo-sac of Calltha before fertilisation

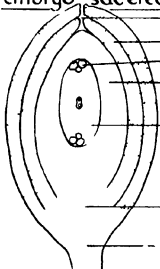


8. Lilium embryo-sac at fertilisation (after Strasburger)

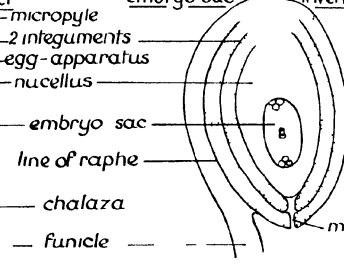


Types of macrosporangia (ovules)

9. Orthotropous embryo-sac erect



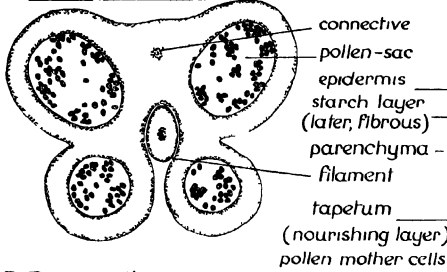
10. Anatropous embryo sac



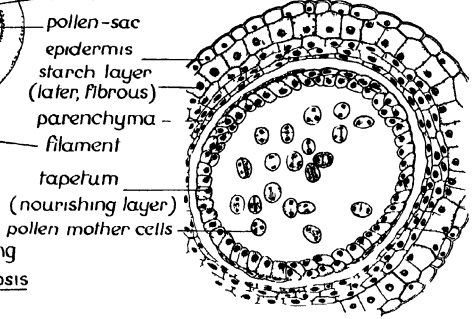
11. Campylotropous embryo-sac curved



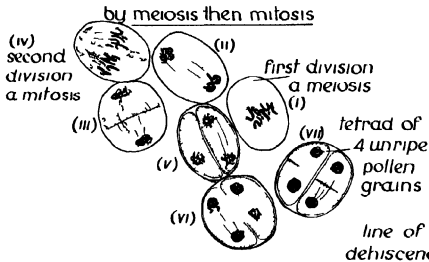
1. TS unripe anthers Lilium



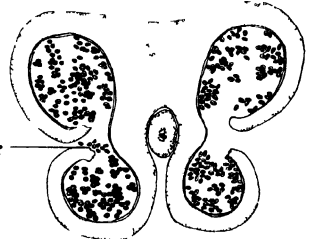
2. TS single pollen-sac (microsporangium)



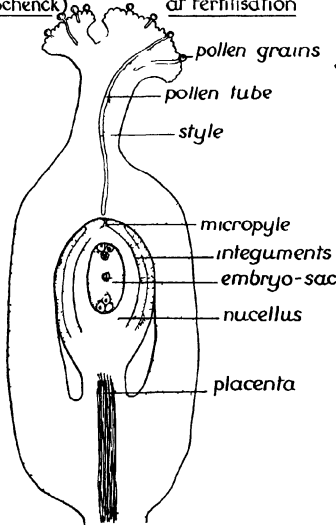
3. Pollen mother cells dividing



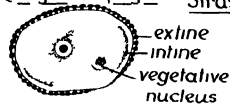
4. TS ripe anthers Lilium



8. L S ovary of Polygonum Convolvulus (after Schenck) at fertilisation

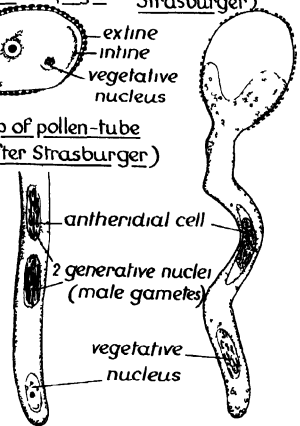


5. Pollen-grain (♂ gametophyte)

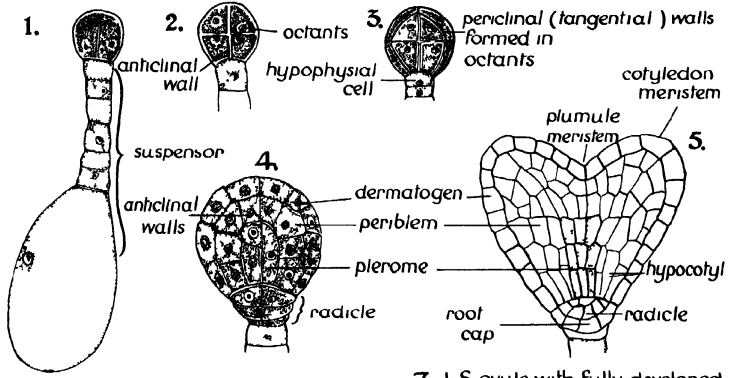


6. Pollen-grain germinating (after Strasburger)

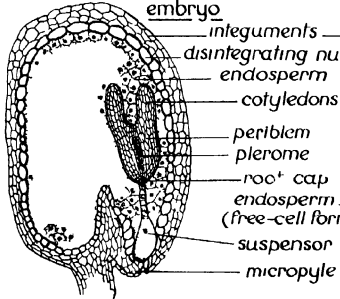
7. Tip of pollen-tube (after Strasburger)



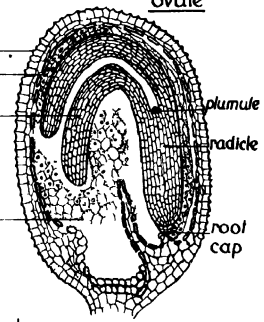
Development of Dicotyledonous embryo (Capsella)



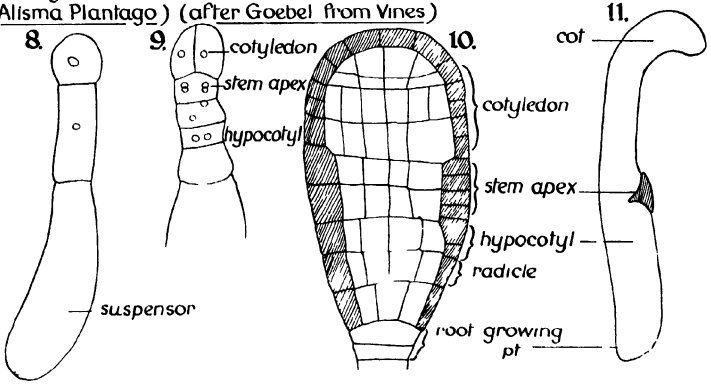
6. L.S Capsella ovule with young embryo



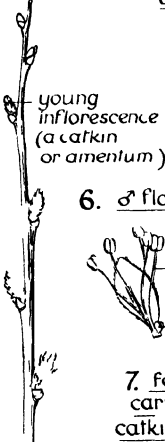
7. L.S ovule with fully developed ovule



Diagrammatic development of Monocotyledonous embryo (Alisma Plantago) (after Goebel from Vines)



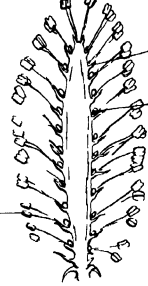
1. *Salix caprea*
(Goat Willow)



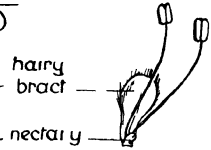
2. male
catkin



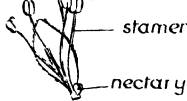
3. L.S ♂ catkin
(staminate)



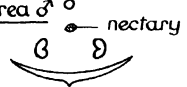
4. ♂ flower
S caprea



6. ♂ flower of
S pentandra



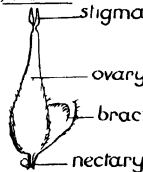
5. Floral diagram,
S caprea ♂



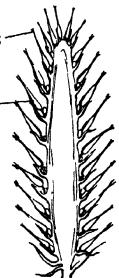
7. Female (♀)
carpellary
catkin *Salix*



8. carpellary
(♀) flower



9. L.S ♀ catkin



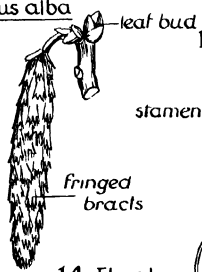
11. Ripe capsule
S caprea



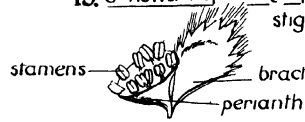
10. Floral Diagram
S caprea ♀



12. Young catkin
Populus alba



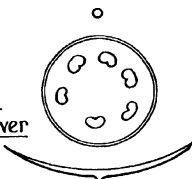
13. ♂ flower *Populus* (Poplar)



15. ♀ flower *Populus*



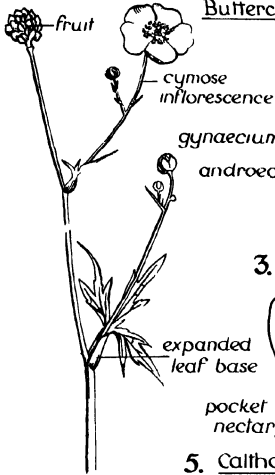
14. Floral
diagram ♂ flower
Populus



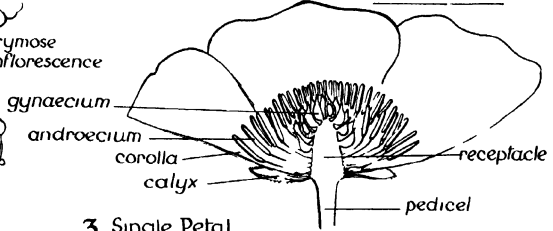
16. Plumed seed
Populus



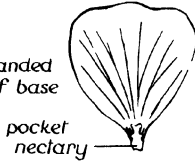
1. Ranunculus repens (Creeping Buttercup)



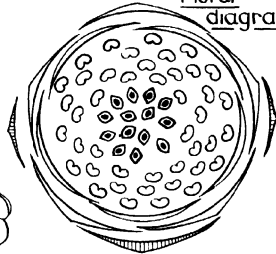
2. Longitudinal section flower
Ranunculus



3. Single Petal

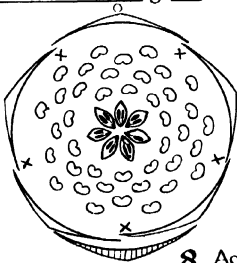


4. R. repens
Floral diagram

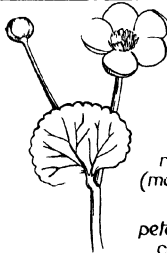


6.

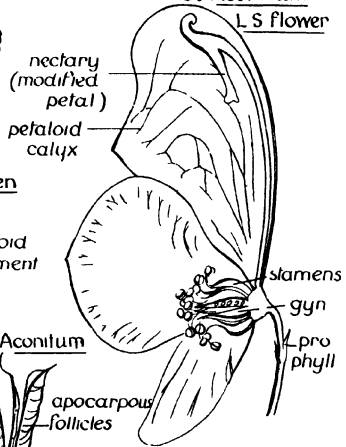
Caltha floral diagram



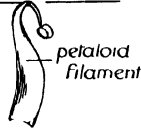
5. Caltha palustris
(Marsh Marigold)



9. Aconitum
L.S flower



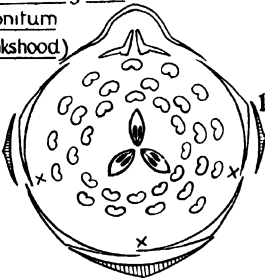
8. Aconitum stamen



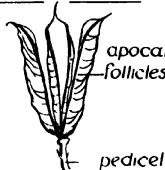
7.

Floral diagram

Aconitum
(Monkshood)



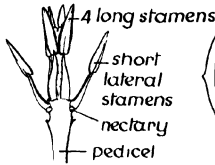
10. Fruits of Aconitum



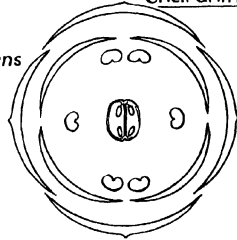
1. Cheiranthus cheiri
(Wallflower)



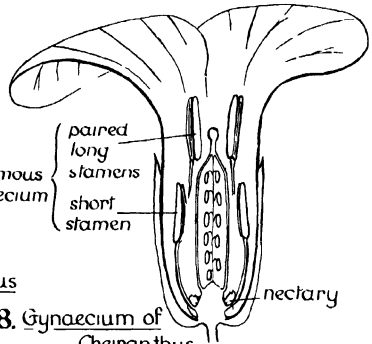
2. Androecium of Cheiranthus



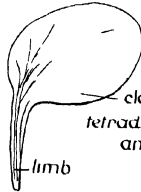
3. Floral diagram of Cheiranthus



5. L S flower of Cheiranthus



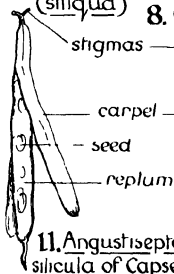
4. Petal of Cheiranthus



6. Tap-root of Cheiranthus



7. Fruit of Cheiranthus (siliqua)



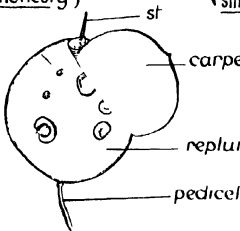
8. Gynaecium of Cheiranthus



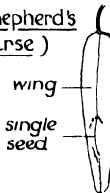
9. Fruit of Raphanus (Radish)
a loment
aceous
siliqua



10. Latisepal silicula of Lunaria (Honesty)

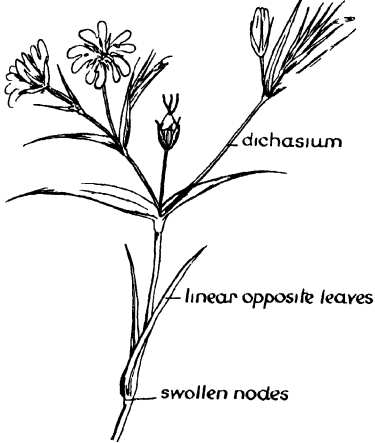


11. Angustisepal silicula of Capsella (Shepherd's purse)

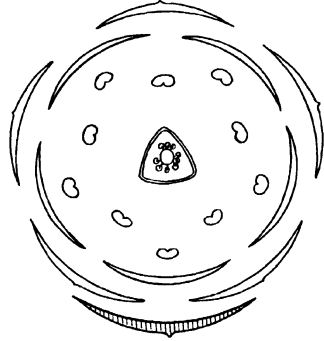


12. Winged fruit of Isatis (Woad)

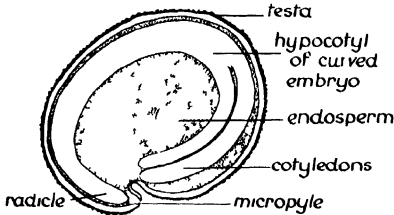
1. Greater Stitchwort (Stellaria Holostea)



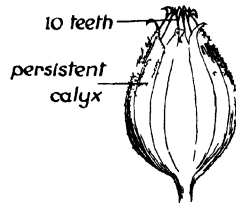
2. Floral Diagram



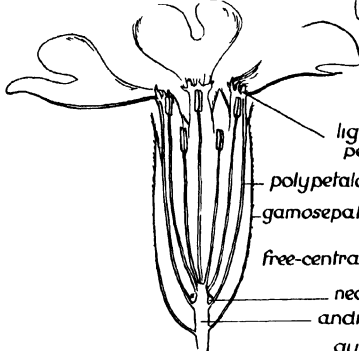
3. L.S campylotropous seed Stellaria



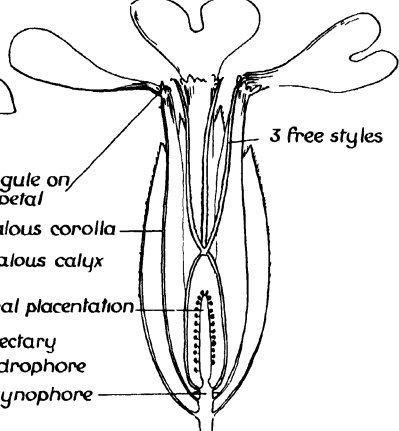
4. L. Lychnis dioica (Red Campion) ripening capsule



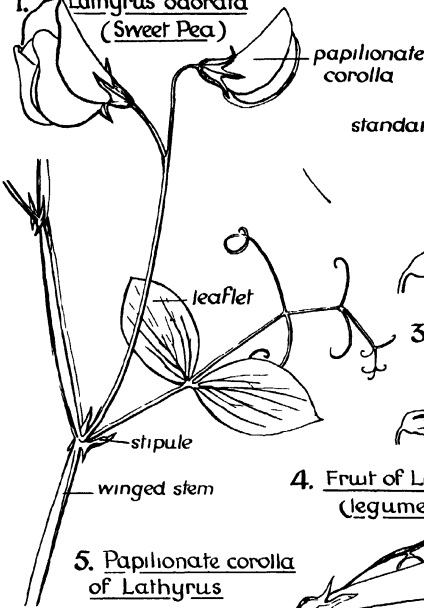
5. L.S staminate flower L. dioica



6. L.S carpellary flower L. dioica

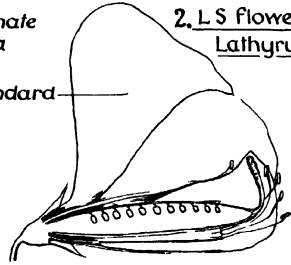


1. Lathyrus odorata
(Sweet Pea)



2. L.S Flower of
Lathyrus

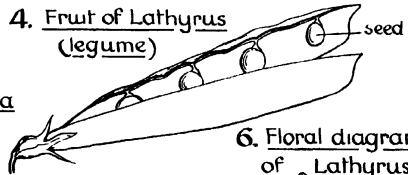
standard



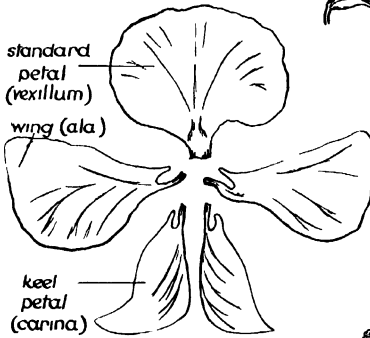
3. Diadelphous androecium
of Lathyrus



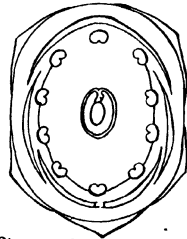
4. Fruit of Lathyrus
(legume)



5. Papilionate corolla
of Lathyrus



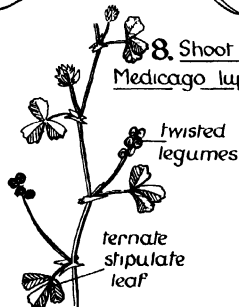
6. Floral diagram
of Lathyrus



7. Fruit of Aocacia
(lomentum)



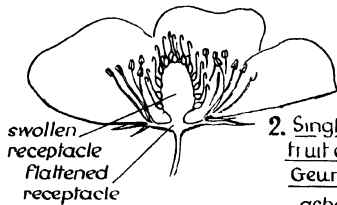
8. Shoot of
Medicago lupulina (Medick)



9. Medicago
Twisted
legume



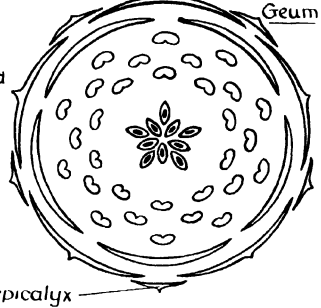
1. L.S flower Geum urbanum (Wood Aven)



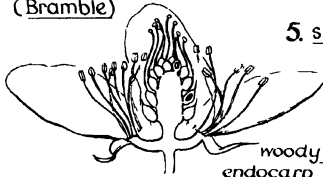
2. Single fruit of Geum
achene



3. Floral diagram



4. L.S flower Rubus fruticosus (Bramble)



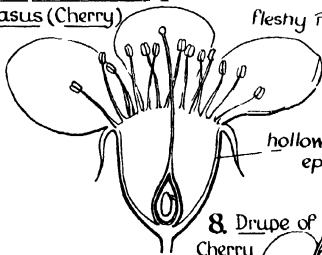
5. single drupelet of Rubus



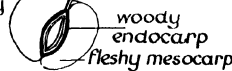
6. L.S flower of Spiraea



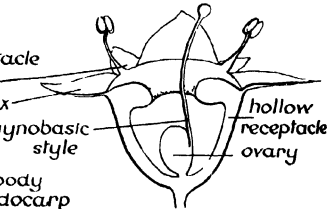
7. L.S flower Prunus cerasus (Cherry)



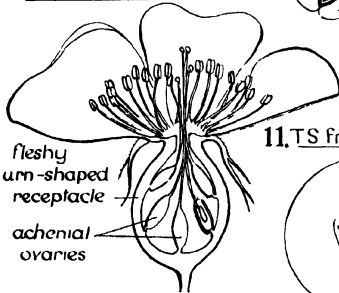
8. Drupe of Cherry



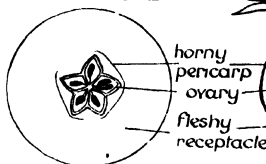
9. L.S flower of Alchemilla (Lady's Mantle)



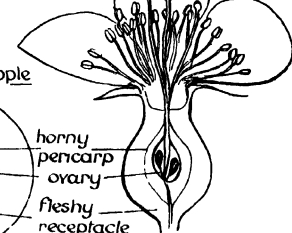
10. L.S flower of Rosa



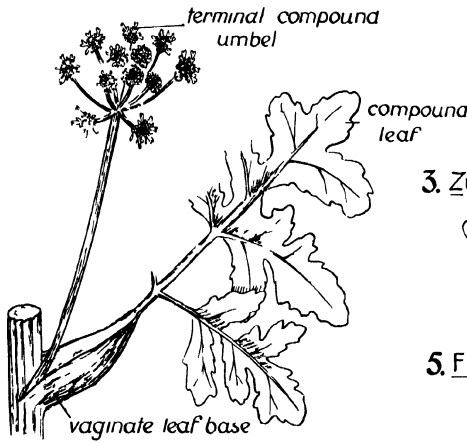
11. T.S fruit of apple



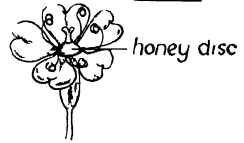
12. L.S Flower of Pyrus malus (apple)



1. Cowparsnip (*Heracleum*)



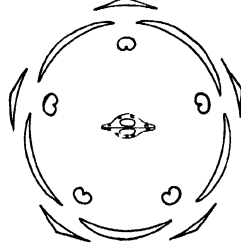
2. Actinomorphic central flower



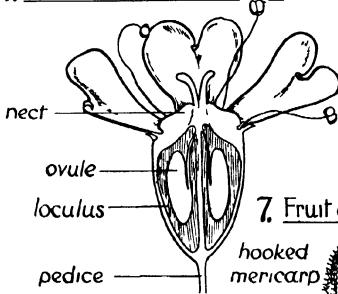
3. Zygomorphic outer flower



5. Floral diagram



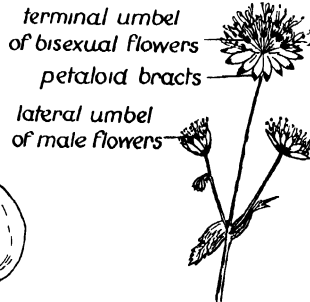
4. L.S. flower of *Heracleum*



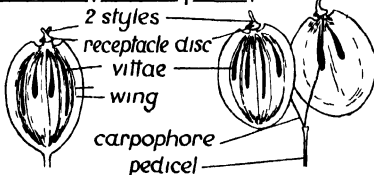
7. Fruit of Carrot



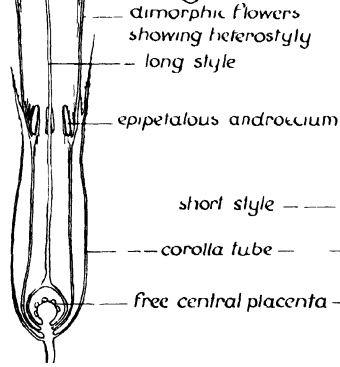
8. *Astrantia*



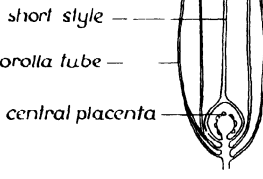
6. Cremocarp of Cowparsnip



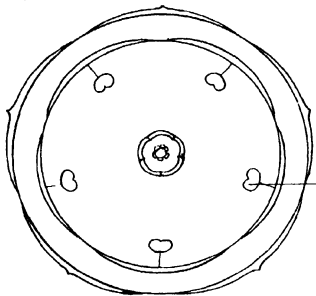
1. Primula vulgaris
(Primrose) L.S. pin
eyed flower



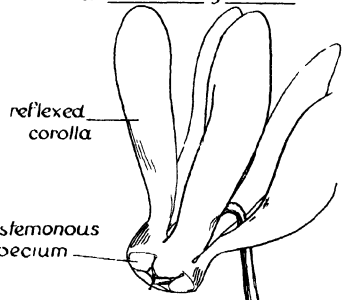
2. P. vulgaris
L.S.
thrum-eyed flower



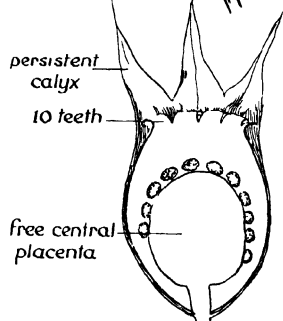
3. Floral diagram
Primula



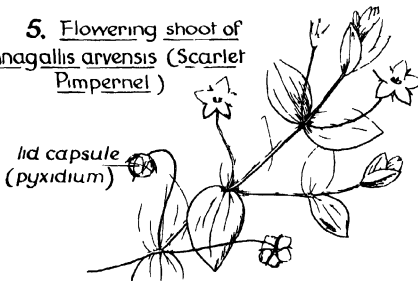
4. Flower of Cyclamen



6. L.S. fruit Primula



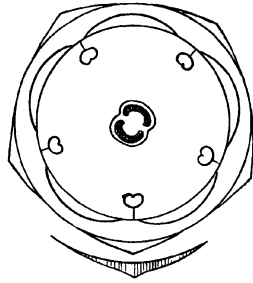
5. Flowering shoot of
Anagallis arvensis (Scarlet
Pimpernel)



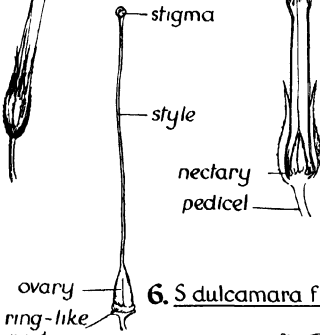


2. L.S. Nicotiana flower

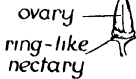
3. Floral diagram



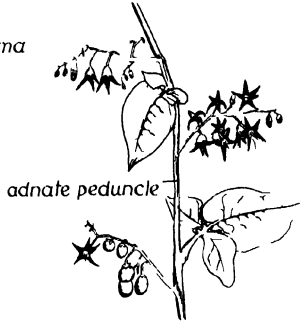
4. Gynaecium



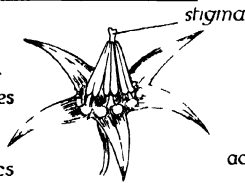
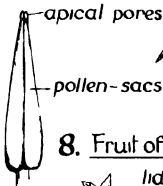
7. Solanum dulcamara (Bittersweet)



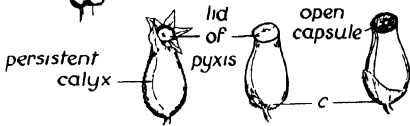
6. S. dulcamara flower



5. Stamen of Solanum



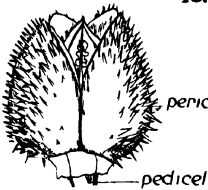
8. Fruit of Hyoscyamus



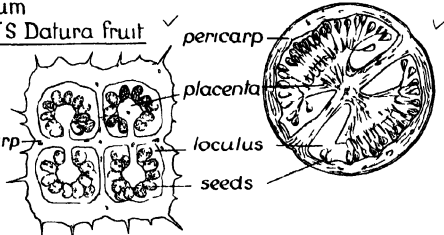
11. Tomato fruit (Solanum lycopersicum)

Transverse section

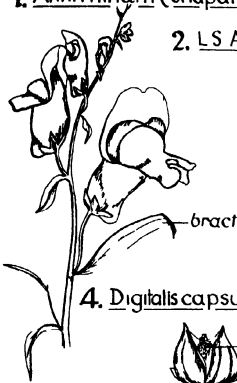
9. Fruit of Datura Stramonium



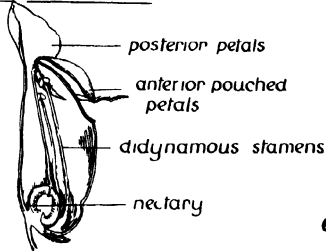
10. TS Datura fruit



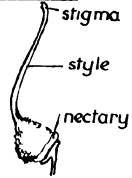
1. Antirrhinum (Snapdragon)



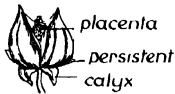
2. L.S Antirrhinum flower



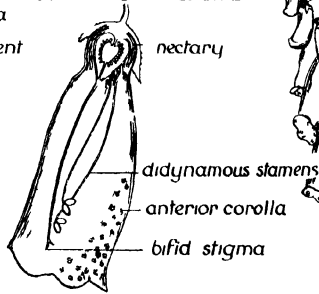
3. Gynaecium



4. Digitalis capsule



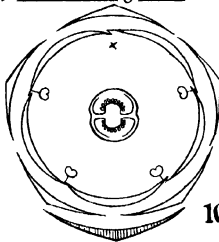
5. L.S Digitalis flower



6. Digitalis (Foxglove)



7. Floral diagram



10. Scrophularia (Figwort)

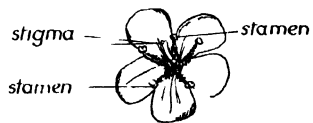
8. Veronica (Speedwell)



epipetalous staminode

style

12. Verbascum (Mullein)

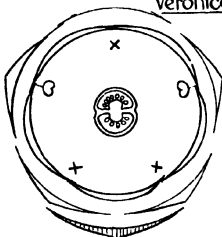


stigma

stamen

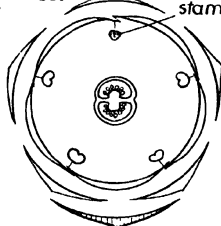
9. Floral diagram

Veronica

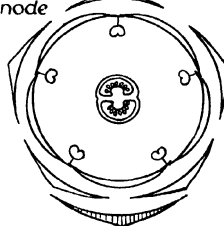


11. Scrophularia

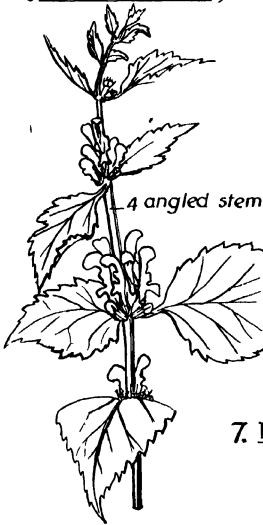
staminode



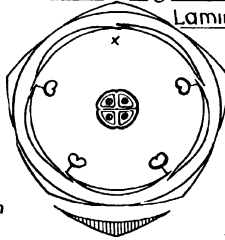
13. Verbascum



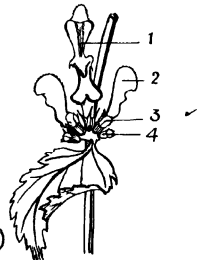
1. Lamium album
(White Dead Nettle)



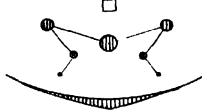
2. Floral Diagram of Lamium



3. Axillary cyme of Lamium



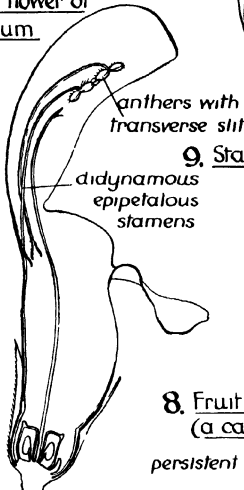
4. Diagram of portion of inflorescence (a verticillaster)



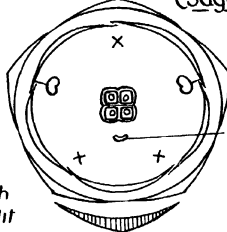
5. Gynaecium of Lamium



6. L.S flower of Lamium

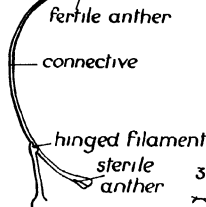


7. Floral diagram of Salvia (Sage)

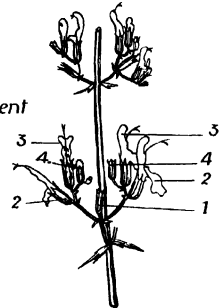


anterior nectary

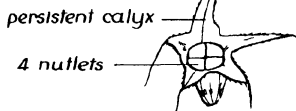
9. Stamen of Salvia pratensis



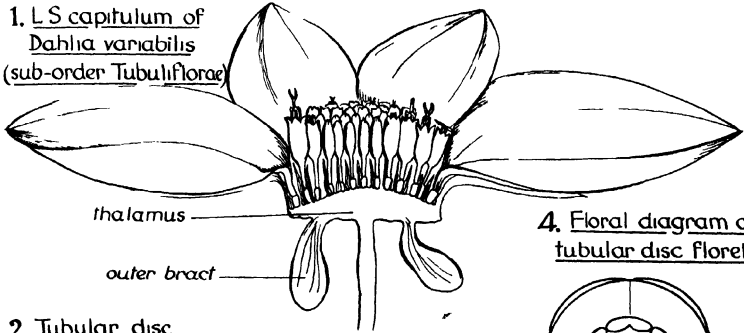
10. Inflorescence (a verticillaster) of Nepeta cataria



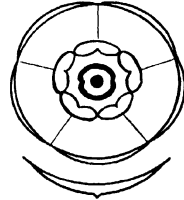
8. Fruit of Lamium (a carcerulus)



1. L.S capitulum of
Dahlia variabilis
(sub-order Tubuliflorae)



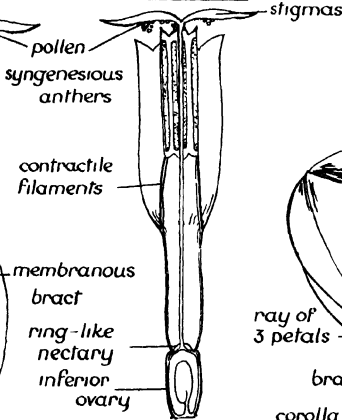
4. Floral diagram of
tubular disc floret



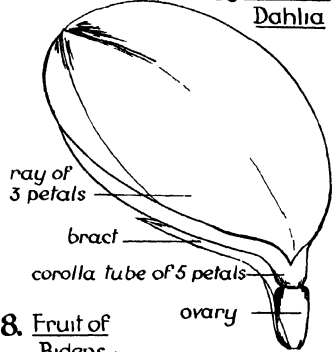
2. Tubular disc
floret



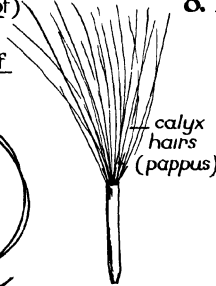
3. L.S. disc floret



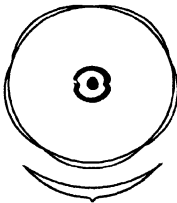
5. Outer ray floret of
Dahlia



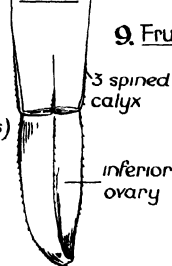
7. Cypselæ of Tussilago
(coltsfoot)



6. Floral diagram of
ray floret Dahlia



8. Fruit of
Bidens



9. Fruit of Helianthus
(sunflower)



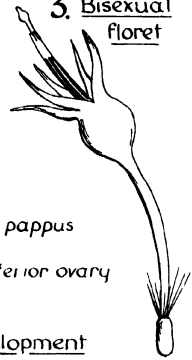
1. Centaurea cyanea (Cornflower)



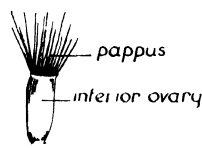
2. Sterile (neuter) floret



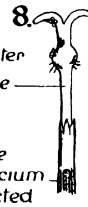
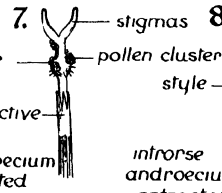
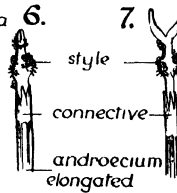
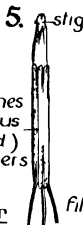
3. Bisexual floret



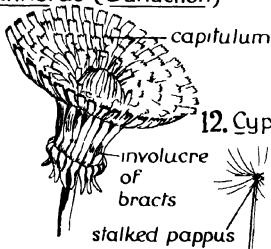
4. Fruit



Stages in floral development



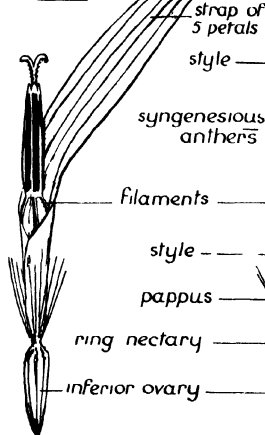
9. Taraxacum officinale: Suborder Liguliflorae (Dandelion)



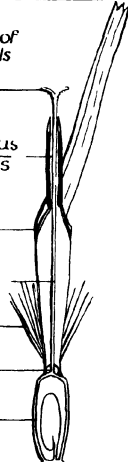
12. Cypsela



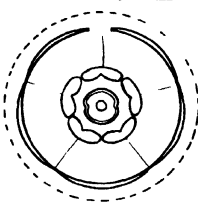
10. Ligulate (strap) floret



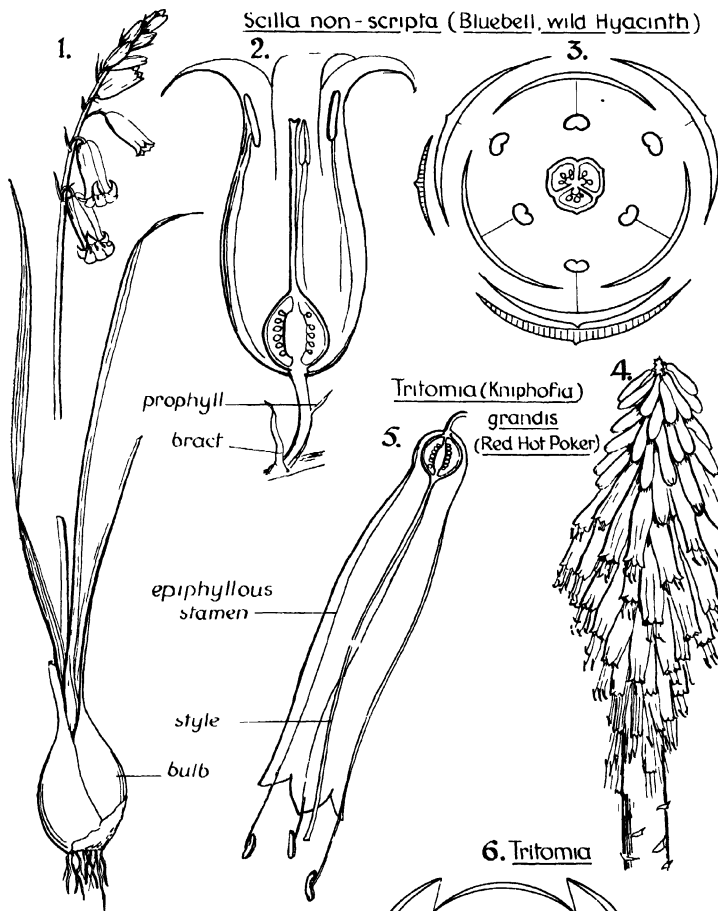
11. LS Floret



13. Floral diagram



Scilla non-scripta (Bluebell, wild Hyacinth)



prophyll
bract

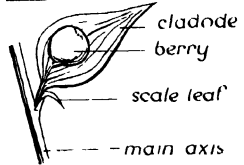
epiphyllous
stamen

style

bulb

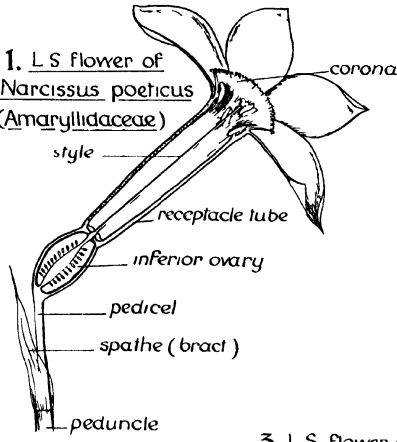
Tritomia (Kniphofia)
grandis
(Red Hot Poker)

7. Ruscus (Butcher's Broom)

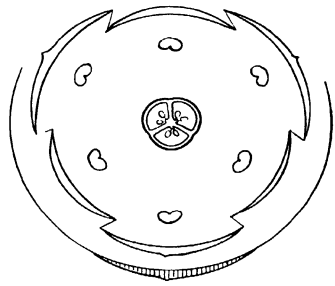


cladode
berry
scale leaf
main axis

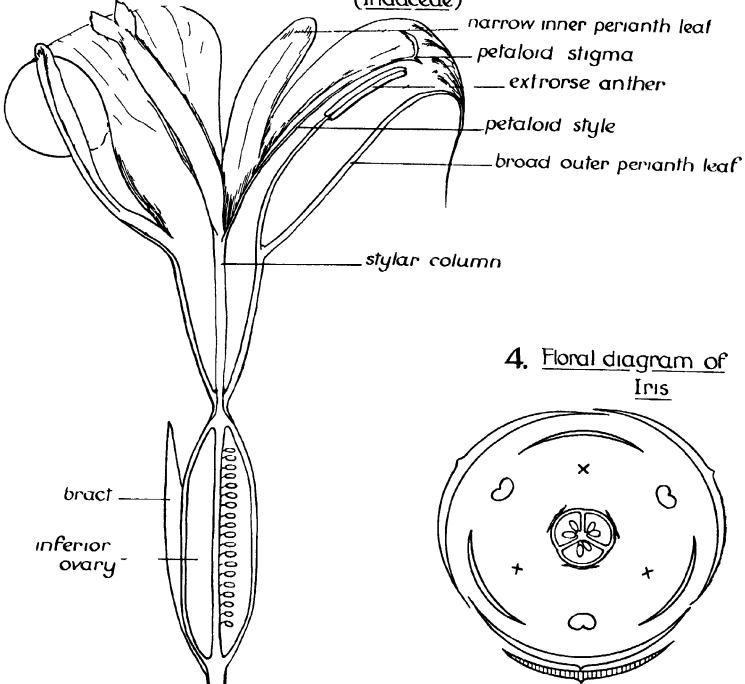
1. L.S flower of *Narcissus poeticus* (Amaryllidaceae)



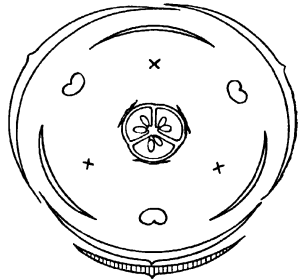
2. Floral diagram *Narcissus*



3. L.S flower of *Iris pseudacorus* (Yellow Flag) (Iridaceae)

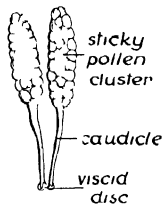


4. Floral diagram of *Iris*

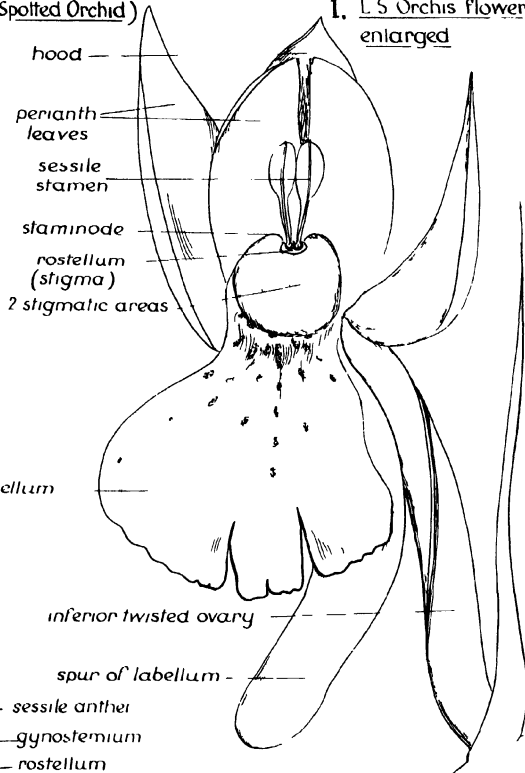


Orchis maculata (Spotted Orchid)

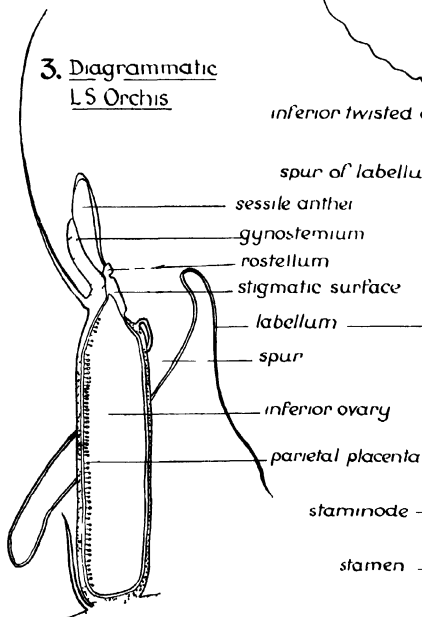
2. Pollinia from 2 sessile anthers



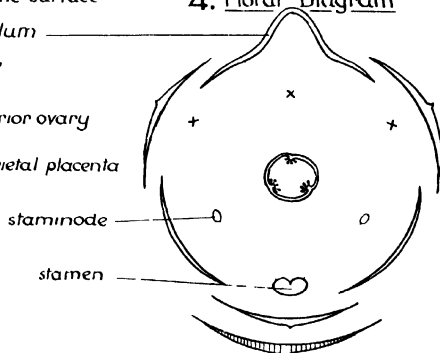
1. L.S. Orchis flower enlarged



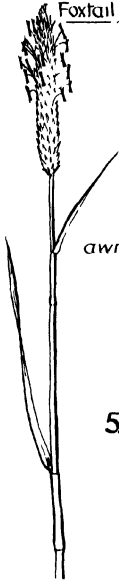
3. Diagrammatic L.S. Orchis



4. Floral Diagram



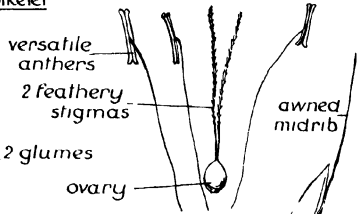
1. Alopecurus pratense (Meadow Foxtail)



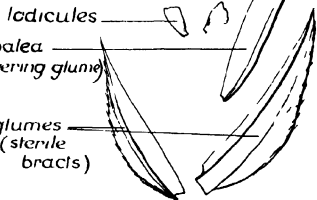
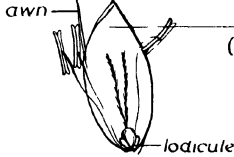
2. One flowered spikelet of Alopecurus



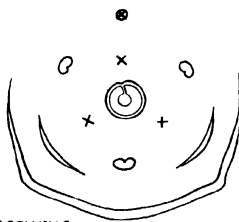
4. Dissection of spikelet, Alopecurus



3. Single flower



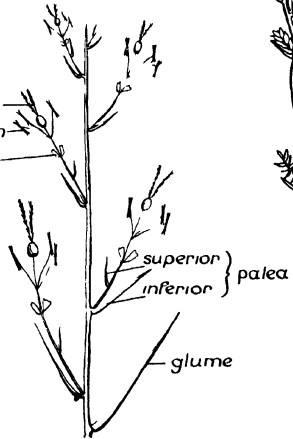
5. Floral diagram Alopecurus



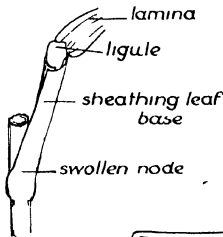
9. Lolium perenne (False Rye)



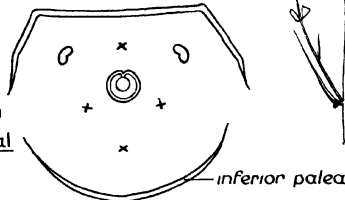
8. Diagram of Lolium spikelet



6. Node of Alopecurus



7. Floral diagram of Anthoxanthum (Sweet Vernal Grass)



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