

Cambridge University Press

978-1-107-61954-8 - Botany: A Junior Book for Schools

R. H. Yapp

Table of Contents

[More information](#)

CONTENTS

CHAP.	PAGE
I. THE GROUNDSEL, THE SYCAMORE AND THE COCK'S-FOOT GRASS	1
Comparison of vegetative parts of three types of Flowering Plants. All are built on the same general plan. Summary.	
II. FLOWERS AND FRUITS	13
Vegetative and reproductive organs. Comparison of flowers and fruits of the Dame's Violet and the Broad Bean.	
III. SEEDS	18
Structure of the seeds of Broad Bean, Sycamore, Ash and Maize. The embryo and its parts. Food stored in seeds. Endospermic and non-endospermic seeds.	
IV. THE GERMINATION OF SEEDS	23
Resting period. The behaviour of the parts of the embryo during the germination of Broad Bean, Sycamore and Maize. Epigeal and hypogeal germination. Cotyledons are leaves. What the food is used for.	
V. THE CONDITIONS NECESSARY FOR GERMINATION	30
How to find by experiment the conditions under which seeds will germinate. Etiolation. Respiration of germinating seeds. Gardening hints.	
VI. THE GROWTH OF PLANTS	36
How to measure growth. The materials of which plants are made.	
VII. ROOTS AND THEIR WORK	38
How a plant gets water and nourishment from the soil. Parts of a root. Two kinds of root-system. Origin of lateral roots. Arrangement of roots in the soil. Distinction between "what a root is" and "what a root does."	
VIII. THE SOIL	44
What soil is made of. Movements of water in soil. How soil has been made. Different kinds of soil. Cultivated soil.	
IX. THE TRANSPIRATION OF WATER	47
The water channels. What becomes of the water. Conditions which affect transpiration. Need for balancing the processes of absorption, conduction and transpiration.	
X. HOW PLANTS ECONOMIZE WATER	51
Small leaved plants. Rolled leaves. Spiny plants. Hairy plants. Water-storing plants. Habitats of plants.	

Cambridge University Press

978-1-107-61954-8 - Botany: A Junior Book for Schools

R. H. Yapp

Table of Contents

[More information](#)

x

Contents

CHAP.	PAGE
XI. HOW A GREEN LEAF MAKES FOOD FROM THE AIR . . .	56
The making of starch. Source of Carbon. How green plants affect the air. Photosynthesis. Light and chlorophyll. The leaf as a chemical factory.	
XII. LEAVES	61
Foliage leaves. The parts of a leaf. Simple and compound leaves. How to distinguish between scale leaves, bracts and stipules. Floral leaves. Distinction between "what a leaf is" and "what a leaf does."	
XIII. HOW FOLIAGE LEAVES GET LIGHT	68
Form of leaves. Arrangement of leaves on the stem. Movements of leaves. Leaf mosaics. Functions of stems. Competition. Climbing plants. Twiners. Tendril climbers. Hook scramblers. Root climbers. Gardening hints.	
XIV. THE WAYS IN WHICH A PLANT USES ITS FOOD	79
Growth. Respiration. Release of energy during respiration. What we mean by "respiration" and "food." Work done by plants. Comparison of photosynthesis and respiration.	
XV. THE MOVEMENTS OF PLANTS	83
Stimulus and response. "Sleep movements" of leaves. Daily movements of flowers. Growth movements. Effect of light, gravity and moisture. Other growth movements. Respiration provides the energy needed for movements.	
XVI. HOW PLANTS OBTAIN AIR	92
Land plants and water plants. Peculiarities of water plants; leaves, large air spaces. Conditions of life in water; water, salts, air supply, light. Marsh plants.	
XVII. OTHER WAYS OF OBTAINING FOOD	101
Parasites. Semi-parasites. Saprophytes. Insectivorous plants. Relations between animals and plants.	
XVIII. THE DIFFERENT FORMS OF PLANTS. I. HERBS	108
Herbs, shrubs and trees. Length of life. Rosette and creeping plants. Vegetative propagation. Food storage. Tubers, corms and bulbs. Use of stored food.	
XIX. THE DIFFERENT FORMS OF PLANTS. II. TREES AND SHRUBS	116
Trunks and twigs of trees. Branching of twigs. Winter buds. Bud-scales. Foliage leaves. Flowers. Timber. The life-processes of trees. Undergrowth.	
XX. HOW PLANTS PASS THE WINTER. I. TREES AND SHRUBS	126
Summer and winter. Leaf-fall. Recognition of trees. Artificial and natural pruning. Evergreens. Opening buds.	

Cambridge University Press

978-1-107-61954-8 - Botany: A Junior Book for Schools

R. H. Yapp

Table of Contents

[More information](#)*Contents*

xi

CHAP.	PAGE
XXI. HOW PLANTS PASS THE WINTER. II. HERBS	132
Annuals. Winter buds of biennials and perennials. Evergreen herbs. Winter and summer forms of leaves. Growth in winter. Woodland herbs; the Lesser Celandine, etc. Frost.	
XXII. THE FLOWER OF THE BUTTERCUP	138
Reproduction. Flower of the Creeping Buttercup. Recording observations; floral diagrams and longitudinal sections. Pollination. Pollen. Fruits and seeds. Fertilization. What a flower is.	
XXIII. OTHER FLOWERS	145
Essential and non-essential organs of flower. Perianth. Stamens. Carpels. Placentation. Carpels are leaves. How ovules are sheltered. Floral receptacle.	
XXIV. CROSS- AND SELF-POLLINATION	152
Cross- and self-pollination. Cross-pollination by wind. Cross-pollination by insects; Heath, Primrose, Speedwell, Dandelion. Times of ripening of stamens and stigmas. Advantages of cross-pollination.	
XXV. POLLINATION CONTINUED. INFLORESCENCES	161
How flowers attract insects. Nectaries. The insect visitors. Bees. Pollination mechanisms. Inflorescences; raceme, spike, catkin, corymb, umbel, capitulum; cymose inflorescences.	
XXVI. FRUITS AND THE MIGRATIONS OF PLANTS	169
The fruit. Seed-dispersal; competition amongst seedlings. Agents of dispersal. Changes during ripening. Fruits which are dry when ripe. Separation of seeds. One-seeded dry fruits. "Split-fruits." Dry fruits with more than one seed.	
XXVII. FRUITS AND THE MIGRATIONS OF PLANTS—CONTINUED	176
The dispersal of the seeds of dry fruits. "Sling-fruits." Dispersal by wind. Dispersal by water. Dispersal by animals. Succulent fruits, and the dispersal of their seeds. False fruits.	
XXVIII. THE RELATIONSHIPS OF FLOWERING PLANTS	185
Species, genus, family. Dicotyledons and Monocotyledons. The Buttercup, Wallflower, Bean and Pea, Rose, Parsnip, Primrose, Dead Nettle, Snapdragon and Daisy families. The Lily, Daffodil and Iris families. The use of "a Flora."	
APPENDIX: THE NAMES OF PLANTS	195
INDEX	199