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R. H. Yapp

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A JUNIOR BOOK FOR SCHOOLS

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BY
R. H. YAPP

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[More information](#)

PREFACE

IT has been said, and with more than an element of truth, that the least important part of education is the acquisition of knowledge. The facts of nature, as such, have an intense fascination for the nature-lover, yet the value of a mere knowledge of facts may easily be over-estimated. Facts are really tools, the value of which lies in the uses to which they may be put. Of far deeper importance, therefore, than the mere committing of facts to memory, is the acquisition of correct habits of study. Habits, that is, of patient and accurate observation, and of clear and logical interpretation and correlation of the facts observed. Facts may be forgotten, but habits remain.

In the hope that I might be able, in some measure, to second the efforts of teachers to help their pupils to acquire such habits, I have endeavoured to keep three chief aims before me in writing this book: (1) By employing as far as possible the inductive method, to make facts lead up to and illustrate principles. (2) To maintain a logical sequence in the arrangement of the subject-matter. This is why climbing plants are included in the chapter on "How Foliage Leaves get Light," and why the chapters dealing respectively with the movements of plants and with water plants follow that on respiration. (3) To make accuracy and thoroughness the key-note of the book, so far as the limits of space allowed.

The drawings (all of which are original), as well as the descriptions, have been made, as I hope those of pupils using this book will always be made, from actual specimens. Care

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R. H. Yapp
Frontmatter
[More information](#)

Preface

has been taken to make the drawings as accurate as possible. In most cases the specimen has been drawn in the position in which it occurred in nature (*e.g.* Figs. 99, 100 A, 120). Where underground parts are shown, the soil level has usually been indicated—this is often important (*cf.* Figs. 101–103). The month in which the drawing was made, and the magnification used, are recorded between brackets underneath most figures. The original drawings are on a much larger scale than that on which they could be reproduced in this book. It is advisable for the pupil to cultivate the habit of making drawings, especially those of small objects such as flowers, on a really large scale. This renders it far easier to record correctly not only the shape, but also the proportions, of the various parts, and the relations of these parts one to another.

As regards subject-matter, it need only be said that the aim has been to select matter suitable for beginners, and to avoid unnecessary overlap with courses taken at a later stage. The physiological experiments described are therefore for the most part simple, and qualitative rather than quantitative. The “out-of-doors” aspect of plant life has been emphasized, but all microscopic structure omitted. Chapters XVIII to XXI will, I hope, arouse interest in the sometimes neglected study of seasonal changes in plants. The book is intended to provide a sound course of instruction in the fundamental principles of Botany. It should be found amply sufficient for those preparing for the Preliminary and Junior Local Examinations of the University of Cambridge, or for similar examinations. For matriculation purposes it will probably need to be supplemented in certain directions.

It only remains gratefully to tender my thanks to friends who have helped me during the writing of this book. In the

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R. H. Yapp
Frontmatter
[More information](#)

Preface

vii

first place the book owes much to the many suggestions and sound criticisms of two of my former students, Miss M. M. Wells and Miss E. J. Rutledge, whose good judgment, and experience of the problems of actual school teaching, have enabled me to avoid many pitfalls into which I might otherwise have fallen. To Professor A. C. Seward, who long ago suggested the writing of this book, Dr Harold Wager, H.M.I., and Miss M. Scott I am also indebted for criticisms; also to Mr A. G. Tansley for permission to reproduce Fig. 70, from *The New Phytologist*, and to Dr Klintberg for kind assistance in proof-reading. And last but not least I wish to acknowledge the great help afforded by my wife, who has criticised my style, typed my MS., compiled the index, and given that encouragement without which, in the press of other duties, the book might never have been completed.

R. H. Y.

BOTANICAL DEPARTMENT,
UNIVERSITY OF BIRMINGHAM.
July, 1923.

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Frontmatter
[More information](#)

PREFACE TO THE SECOND EDITION

ORIGINALLY it had been intended to include the Latin as well as the English names of the chief plants mentioned, but the Latin names were finally omitted as perhaps unnecessary in an elementary book. Since publication, however, it has been suggested that the inclusion of at least some Latin names might be desirable. There is no doubt that familiarity with the scientific names of plants from an early stage is a help to those who may ultimately become more deeply interested in the study of Botany. An appendix has therefore been added, giving a number of English plant-names with their scientific equivalents, and a few of the more obvious derivations. The other changes in this edition consist of a number of minor corrections and additions in the text and index, and the introduction in Chapter XXVIII of a paragraph on the use of a "Flora."

I am again indebted to several of my friends, particularly to Professor Seward, for useful suggestions and criticisms; also to Professor J. O. Thomson for his kind help in connexion with the Latin derivations.

R. H. Y.

September, 1924.

PREFACE TO THE THIRD EDITION

IN this edition a few modifications and additions have been introduced, several of them as the result of suggestions by Miss M. M. Wells, to whom my thanks are due. The changes, however, are not of such a nature as to interfere with the use of this and previous editions side by side in the same school.

R. H. Y.

May, 1927.

Cambridge University Press

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

R. H. Yapp

Frontmatter

[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

Frontmatter

[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

Frontmatter

[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