

**GRAY'S LESSONS IN BOTANY,
REVISED EDITION; THE
ELEMENTS OF BOTANY FOR
BEGINNERS AND FOR SCHOOLS**

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Gray's Lessons in Botany, Revised Edition; The Elements of Botany for Beginners and for Schools by Asa Gray

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ASA GRAY

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THE

ELEMENTS OF BOTANY

FOR BEGINNERS AND FOR SCHOOLS

BY ASA GRAY

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PREFACE.



THIS volume takes the place of the author's *LESSONS IN BOTANY AND VEGETABLE PHYSIOLOGY*, published over a quarter of a century ago. It is constructed on the same lines, and is a kind of new and much revised edition of that successful work. While in some respects more extended, it is also more concise and terse than its predecessor. This should the better fit it for its purpose now that competent teachers are common. They may in many cases develop paragraphs into lectures, and fully illustrate points which are barely, but it is hoped clearly, stated. Indeed, even for those without a teacher, it may be that a condensed is better than a diffuse exposition.

The book is adapted to the higher schools, "How Plants Grow and Behave" being the "Botany for Young People and Common Schools." It is intended to ground beginners in Structural Botany and the principles of vegetable life, mainly as concerns Flowering or Phanerogamous plants, with which botanical instruction should always begin; also to be a companion and interpreter to the *Manuals and Floras* by which the student threads his flowery way to a clear knowledge of the surrounding vegetable creation. Such a book, like a grammar, must needs abound in technical words, which thus arrayed may seem formidable; nevertheless, if rightly apprehended, this treatise should teach that the study of botany is not the learning of names and terms, but the acquisition of knowledge and ideas. No effort should be made to commit technical terms to memory. Any term used in describing a plant or explaining its structure can be looked up when it is wanted, and that should suffice. On the other hand, plans of

structure, types, adaptations, and modifications, once understood, are not readily forgotten ; and they give meaning and interest to the technical terms used in explaining them.

In these "Elements" naturally no mention has been made of certain terms and names which recent cryptogamically-minded botanists, with lack of proportion and just perspective, are endeavoring to introduce into phanerogamous botany, and which are not needed nor appropriate, even in more advanced works, for the adequate recognition of the ascertained analogies and homologies.

As this volume will be the grammar and dictionary to more than one or two Manuals, Floras, etc., the particular directions for procedure which were given in the "First Lessons" are now relegated to those works themselves, which in their new editions will provide the requisite explanations. On the other hand, in view of such extended use, the Glossary at the end of this book has been considerably enlarged. It will be found to include not merely the common terms of botanical description but also many which are unusual or obsolete ; yet any of them may now and then be encountered. Moreover, no small number of the Latin and Greek words which form the whole or part of the commoner specific names are added to this Glossary, some in an Anglicized, others in their Latin form. This may be helpful to students with small Latin and less Greek, in catching the meaning of a botanical name or term.

The illustrations in this volume are largely increased in number. They are mostly from the hand of Isaac Sprague.

It happens that the title chosen for this book is that of the author's earliest publication, in the year 1836, of which copies are rarely seen ; so that no inconvenience is likely to arise from the present use of the name.

ASA GRAY.

CAMBRIDGE, MASSACHUSETTS,
March, 1887.

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