

**THE NATURE AND WORK
OF PLANTS; AN
INTRODUCTION TO
THE STUDY OF BOTANY**

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The nature and work of plants; an introduction to the study of botany by Daniel Trembly
MacDougal

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THE NATURE AND WORK OF PLANTS

An Introduction to the Study of Botany

BY

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PREFACE

THE course outlined in this little book is essentially a study of the functions or action of the plant, and organs are considered chiefly as instruments for the performance of work, with but little attention to their morphology. It is believed that this method of introduction to the subject of botany will be best suited for beginners who have not at hand the facilities of a laboratory. In conformity with this idea, the use of technical terms has been restricted to the actual necessities of logical treatment, and the demonstrations have been developed by the simplest experimental methods.

Material.—The apparatus needed to carry out the work may be found in any household, with the exception of the hand lens, which may be purchased for less than a dollar; a glass which will magnify six to ten times will be sufficient. A supply of plant material is, of course, indispensable. Students having access to greenhouses will be able to

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secure specimens to illustrate the entire course without difficulty. If the plants of the woods and fields are to be used, as many observations as possible should be carried out in the summer, spring, and autumn, and a supply of roots, corms, tubers, bulbs, seeds, and fruits, should be collected for use during the winter season. Many of these may be preserved in the same manner as potatoes, and forced to grow when brought into a warm living-room in January or later. This may be done with the material used in the following paragraphs: 8, 10, 13, 19, 26, 38, 39, 43, 44, 45, 46, 47, 48, 50, 51, 53, 54, 77, 97, 106, 108, 109, 120, 129, 148, 165, 167, 168, 169, 180, 181, 182, 183, 184, 185, 195, 211, 212, 213, 214, 216, 217, 225, and 229.

Desirable material may be obtained from dealers in native plants if the student is unable to collect it himself. It is quite important that the plants used should be properly identified, and this may be done by the use of a manual of the flora of the region in which the work is done, which may be selected from the following list:—

Barrois and Brown, *Flora of the Northern States and Canada*, Charles Scribner's Sons, New York.

- GRAY, *Manual of Botany*, American Book Company, New York City.
- CHAPMAN, *Flora of the Southern States*, Cambridge Botanical Supply Company, Cambridge, Mass.
- COULTER, *Flora of Western Texas*, United States Department of Agriculture, Washington, D. C.
- GREENE, *Manual of Botany of the Region of San Francisco Bay*, Cusbery & Co., San Francisco.
- HOWELL, *Flora of Northwest America*.
- COULTER, *Manual of Rocky Mountain Botany*, American Book Company, New York City.
- GRAY, *Field, Forest, and Garden Botany*, American Book Company, New York City.

It will also be found profitable to read the discussions of the various subjects in the following works, which may also suggest further lines of experimentation: --

- KEENE and OLIVER, *Natural History of Plants*, Holt & Co., New York City.
- COULTER, *Plant Relations*, D. Appleton & Co., New York City.
- BARNES, *Plant Life*, Holt & Co., New York City.
- BAILEY, *Lessons with Plants*, Macmillan Company, New York City.
- ATKINSON, *Elementary Botany*, Holt & Co., New York City.
- MACDOUGAL, *Experimental Plant Physiology*, Holt & Co., New York City.
- ARTHUR and MACDOUGAL, *Living Plants and their Properties*, Morris & Wilson, Minneapolis.