

**APPLIED ECONOMIC
BOTANY, BASED UPON
ACTUAL AGRICULTURAL
AND GARDENING PROJECTS**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649127948

Applied economic botany, based upon actual agricultural and gardening projects by Melville
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MELVILLE THURSTON COOK

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LIPPINCOTT'S
FARM LIFE TEXT SERIES

EDITED BY
KARY C. DAVIS, PH.D. (CORNELL)

APPLIED
ECONOMIC BOTANY

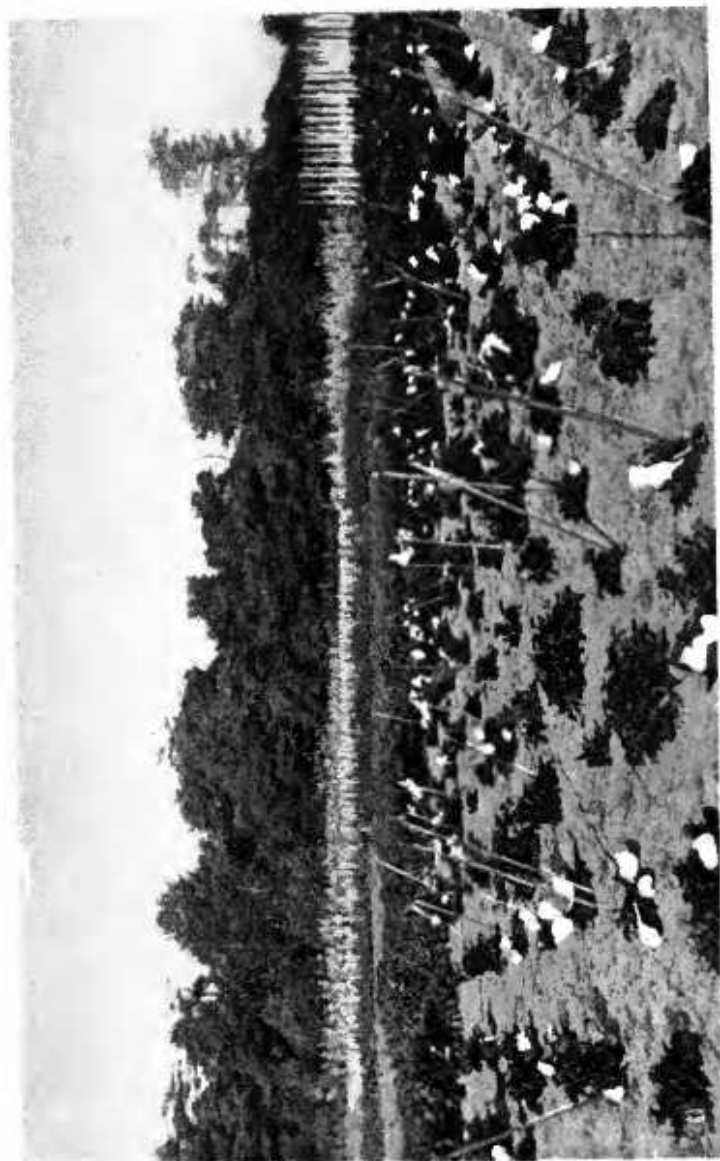
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RUTGERS COLLEGE, NEW BRUNSWICK, N. J.

142 ILLUSTRATIONS



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PHILADELPHIA AND LONDON
J. B. LIPPINCOTT COMPANY

PREFACE

THERE are already so many text-books on botany that the author has long hesitated to present another to the educational public. The study of botany has developed very rapidly in the past quarter of a century and as a result we have a great variety of text-books representing an almost equally great variety of methods of presenting the subject. Yet, we meet with a continuous series of complaints against the poorly adapted secondary text-books for teaching in secondary schools, technical schools and colleges. The teacher in the secondary school says that text-books are written by college professors who do not understand the problems involved in secondary education; the teacher in the technical school complains because the students from the secondary schools cannot correlate the botany with related subjects; the college professors complain because of the mechanical methods used in the secondary schools which discourage rather than encourage further study of the subject by those who enter college.

Having served for a time as a high-school teacher, the author has some realization of the difficulties of the secondary schools. As a college professor he has some appreciation of the keen disappointment felt by those who conduct the Freshman entrance examinations, and who try to teach botany to the college students that come to college with ideas of botany obtained from their training in the secondary schools. By experience, he has learned that the results of the entrance examinations are fully as unsatisfactory when the questions are prepared by the high-school teachers as when prepared by himself.

The placing of the responsibility for this condition is a

problem not easily solved. But the writer is inclined to believe that the secondary school is trying to do too much, trying to do work beyond the pupils, trying to do work that should be left for the college. We give the pupils compound microscopes, which is much like giving them a complete set of surveying instruments for use in the study of elementary arithmetic. We try to teach facts when we should teach fundamental principles, close observation and accuracy. We try to teach scientific names when we should teach simple methods of experimental work.

In this little work the author has aimed at three things, *viz.*: (1) A brief statement of the recognized facts and principles concerning plants and plant growth usually given in text-books for secondary schools. (2) A list of simple exercises and suggestions for observations which the pupil can conduct without great difficulty and which will demonstrate many of the statements given in the book. (3) A list of questions which are intended to be suggestive to the pupils and to encourage further studies.

The title, "Applied Economic Botany," implies first, that it is intended as a guide to experimental work in the study of plants, such as should be carried on in any high school, and second, that it is intended as a preliminary work to the agricultural studies which are now recognized in many high schools.

The author has endeavored to make the work so flexible that it may be used in schools regardless of the amount of time devoted to the subject, the available laboratory space and equipment. The author has also been mindful of the fact that the course in botany in the secondary school should meet the needs of very different classes of pupils—those who study it as one of the requirements of the curriculum and to whom it must be primarily a cultural subject, those who study it as a preparation to agriculture and horticulture, and those who may use it

to fulfill one of the college entrance requirements. The same course can and should serve all of these purposes in the same manner that the courses in mathematics and English literature serve those who go direct from the secondary schools into the trades, or business houses, or professions, or to college.

The manuscript has been submitted to both high-school teachers and college professors for criticisms and suggestions and many changes have been made in an effort to meet the requirements of both classes of teachers, although the general plan of the work has not been changed.

Many of the illustrations in this book are purely diagrammatic and are intended as guides and not completed work to be copied by the pupil; many others are from drawings made by the author's students and are such as can be readily made by most high-school pupils.

A text-book in botany is a guide, and it is neither necessary nor desirable that the class should follow it in all details. The teacher should select such exercises in this or other books as may suit the purpose and should make such variations and additions as may be desirable. Supplementary reading along the lines of plant geography, and economic botany, observations in field, forest and stream, and home studies in the growing of plants should be encouraged. The success or failure of the course in botany is more dependent on the teacher than on the books, laboratories and equipment. *A good teacher is more necessary than books, laboratories and equipment.* The acquirement of industry, enthusiasm, methods of work, self-reliance, close observation and accuracy on the part of the pupils are much more desirable than much of the so-called knowledge that consists of disconnected or questionable facts.

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