

# **THE ELEMENTS OF VEGETABLE HISTOLOGY**

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The elements of vegetable histology by C. W. Ballard

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**C. W. BALLARD**

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# THE ELEMENTS OF VEGETABLE HISTOLOGY

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## PREFACE

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A KNOWLEDGE of vegetable histology is the foundation for the studies of microscopic pharmacognosy and microanalysis of foods. It is so intimately related to the studies of plant morphology and plant biology that these subjects should be considered prerequisite or should parallel the course in plant histology.

This volume is intended for the beginner; and, in many instances, details have been omitted in order that the student may obtain a knowledge of general principles without being confused by the minutiae of the subject. Those intending to specialize in vegetable histology, pharmacognosy and microanalysis of foods will find a wealth of detail in the reference books noted in the Appendix.

The amount of laboratory work in vegetable histology performed by the student is necessarily governed by the amount of time at his disposal. Lectures should be abridged if necessary, in order that a greater amount of laboratory work may be accomplished, for in no other branch of science is the personal equation of such importance in the proper interpretation of findings. Microscope equipment for a class should be as nearly uniform as possible in order that the complications due to different magnifications may be eliminated.

The writer would indeed be remiss if he did not at this opportunity express his appreciation of the

influence of Dr. H. H. Rusby, Professor of Materia Medica, College of Pharmacy, Columbia University. Dr. Rusby's labors have been a source of inspiration; and association with him has been responsible for whatever measure of success the writer has attained in the field of microanalysis.

For constructive criticism and generous aid in revision of the manuscript, I am indebted to Fanchon Hart, Instructor in Materia Medica, College of Pharmacy, Columbia University, who by kindly help has greatly expedited the issuance of this manual.

Acknowledgment is also due the Bausch & Lomb Optical Co., E. Leitz and the Spencer Lens Co., for the use of illustrations and data from their several catalogues.

COLUMBIA UNIVERSITY,  
COLLEGE OF PHARMACY.  
November, 1920.

C. W. B.



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