

**HANDBOOK OF PLANT
MORPHOLOGY,
BEING THE HANDBOOK
OF PLANT DISSECTION**

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Handbook of plant morphology, being the Handbook of plant dissection by J. C. Arthur & Charles R. Barnes & John M. Coulter

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J. C. ARTHUR & CHARLES R. BARNES & JOHN M. COULTER

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HANDBOOK

OF

PLANT MORPHOLOGY

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HANDBOOK OF PLANT DISSECTION

BY
J. C. ARTHUR, CHARLES R. BARNES
AND JOHN M. COULTER

REVISED AND REWRITTEN
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ANNOUNCEMENT.

SINCE 1886, when the *Handbook of Plant Dissection* was published, both the methods of laboratory work and knowledge of the plant kingdom have very materially changed. The authors thought that any demand for the book would have disappeared long since, but continued sales have forced them to the conclusion that in justice to the subject and also to themselves a revision is necessary. In morphological instruction the very detailed study of a few types has given place to a study of the most significant features of a considerable number of types; and the accumulation of somewhat unrelated facts has been succeeded by the attempt to organize the facts into a connected account of the evolution of the plant kingdom.

An adequate revision, therefore, meant a complete rewriting, and this the original authors were unable to undertake. Accordingly they have delegated it to one whose contact with laboratory work in elementary morphology is fresher and has proved to be in every way successful.

The book is a new one, although developed in accordance with the old plans, and it will far more worthily

supply the demand that seems to exist than could an edition long since out of date.

J. C. ARTHUR.

C. R. BARNES.

J. M. COULTER.

March 10, 1904.

AUTHOR'S PREFACE.

IN the preparation of these outlines it is recognized that a given set of directions is not completely adequate for the work of any two teachers, nor even for one teacher's use during two consecutive years. A good instructor is the chief determinant in a course of study. In his hands the materials, the laboratory, and the book become efficient in the presentation of the subject. To his students the laboratory guide serves as an outline to which he makes additions as determined by the immediate needs of his own class. It is rather generally recognized that a course of study in botany may be made much stronger if a well-organized plan is placed before the students, since a good instructor can make requisite eliminations and additions to fit his peculiar needs, and all by means of the laboratory guide may have the advantage of the accumulated experience of others. The wide field of usefulness that was filled by *Plant Dissection* furnishes abundant evidence as to the value of a good laboratory guide. It was in response to a belief that a new book which embodies the general arrangement and some of the important principles of the old one will be correspondingly useful, that the authors of *Plant Dissection* suggested the preparation of this work.

The outlines here included, subject to variations necessitated by peculiarities of local environment, have been used by the writer in courses given in the University of Chicago, the Biological Station of the University of Indiana, and the Eastern Illinois State Normal School. In addition to this test of use the manuscript has been read and improved in very important ways by the authors of *Plant Dissection*, and by Professor F. E. Lloyd of Teachers College, New York, and Professor F. L. Stevens of the State Agricultural College, Raleigh, N. C., to all of whom grateful acknowledgments are made.

OTIS W. CALDWELL.

THE EASTERN ILLINOIS STATE NORMAL SCHOOL,
October 5, 1904.

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