

The numerical value of a receptance depends on the frequency and a matrix of the receptances provides a complete account of the behaviour of the system in simple-harmonic stimulation. Each element of the receptance matrix may be specified as a function of frequency or by numerical tabulation. The great value of receptances lies in the fact that the behaviour of a composite system can be very readily calculated when the receptances of its components are known and this applies, in particular, to the calculation of the natural frequencies.

The book under review is an advance publication of tables to be included in a text-book by the same authors. After some brief general explanations, tables of receptances are given for the following cases: lateral vibrations of cords, torsional oscillations of shafts, longitudinal oscillations of rods, flexural vibrations of thin uniform beams. Since very many systems can be built from these elements, together with masses and springs, it is clear that the tables will be of great service to those concerned with the analysis of oscillating mechanical systems.

W. J. DUNCAN

A Textbook of Plant Virus Diseases

By Dr. Kenneth M. Smith. Second edition. Pp. vii+652. (London: J. and A. Churchill, Ltd., 1957.) 65s.

THE second edition of this book is virtually a new text which describes the three hundred or so known plant viruses and the diseases they cause. The alphabetical arrangement of these is greatly to be appreciated, and a system of cross-references to synonyms also assists the reader. There will probably, however, be few who will read it from cover to cover, for the treatment is encyclopædic. The volume will be an indispensable guide to the research worker, advisory officer, teacher or commercial grower with the requisite technical training.

A description is given of the properties of each virus and of its transmission. Then follows a consideration of the diseases it causes, its host range and its geographical distribution. Symptoms are illustrated as far as practicable on 94 half-tone illustrations, and there are further diagrams showing the wide host range of some viruses. The range of viruses considered is world wide, and includes all those described at the present time. A few of the more recently found ones are given in an addendum. Even the six hundred pages of text do not contain all the minutiae of present knowledge, and there is frequent reference to the bibliography which contains more than a thousand citations. An index of synonyms makes it possible to review quickly the whole range of viruses which attack a particular host. This is the most comprehensive book on plant virus diseases in the English language, and its up-to-date treatment should confer certain wider priorities until more new viruses are described.

JOHN GRAINGER

The Myology of the Whooping Crane *Grus americana*

By Harvey I. Fisher and Donald C. Goodman. (Illinois Biological Monographs, Vol. 24, No. 2.) Pp. viii+127. (Urbana, Ill.: University of Illinois Press, 1955.) Cloth, 3.50 dollars; Paper, 2.50 dollars.

FOR more than twenty years the whooping crane has been on the verge of extinction, although a remnant of thirty to forty manages to hold its own as a result of vigilant protection. The present study was

begun after two birds, which had unfortunately been shot during one month in 1952, became available for dissection, and it is an attempt to record the muscular anatomy of the species before the opportunity is, perhaps, lost for good. A third alcohol-preserved specimen was also dissected, in addition to material from related species.

Though there is a large literature on the comparative myology of birds, this is only the second species ever to receive complete treatment in a monograph, the other being the American raven, the subject of Shufeldt's classic study (1890). It is, of course, almost entirely a descriptive work, very competently executed, and illustrated by forty clear and detailed figures. The homology of bird muscles is full of difficult problems, and, though the authors have not made this their primary concern, they have paid close attention to innervation, and, by their carefully considered selection of names, have in fact made a very welcome and useful contribution towards clarifying the subject.

Two points of general interest are, first, the demonstration of considerable variations in anatomy, not only between different individuals but also between the two sides of the same subject (as in man); and second, the numbering of the digits in the bird's wing as 2, 3 and 4, in the tradition of Owen, and not 1, 2 and 3, as in practically all standard modern texts.

V. C. WYNNE-EDWARDS

General Botany

By Prof. William T. Taylor and Prof. Richard J. Weber. Pp. viii+376. (Princeton, N.J.: D. Van Nostrand Company, Inc.; London: Macmillan and Co., Ltd., 1956.) 42s. net.

THIS new work is an excellent introductory textbook. The authors have obviously made every effort to present a modern account, and constantly stimulate the interest of the reader by striking examples illustrating the practical importance of the subject. Although the book is probably insufficient in itself to cover the syllabus of most Intermediate B.Sc. courses in botany, it could be read with profit by all students at that level, and seems particularly suited to meet the needs of medical and pharmacy students. The writing is clear and concise, but the American idiom is occasionally strange to the English reader.

The subject-matter is well chosen, on the whole, and errors are comparatively few. Some of the physiological sections, such as those dealing with respiration and photosynthesis, are outstandingly good, but tropisms and plant hormones merit a fuller treatment. More space is devoted to the cryptogams than is usual in a book of this type. There are a short account of viruses and an interesting chapter on bacteria. The algae and fungi are described in some detail, but there is no mention of flagellate algae. The book concludes with chapters on genetics and plant evolution.

There will probably be some difference of opinion as to the quality of the illustrations. These are bold and artistic and are described on the dust-cover as "unexcelled", but many teachers of botany will consider that some of the morphological figures are over-diagrammatic, and that accuracy has been sacrificed to obtain a false clarity. This one serious defect of the book could easily be rectified, however, during any practical work undertaken by the student.

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