Mesembryanthema (review)—"The written expression of an experience" is the phrase in which Dr. Schwantes describes his book,* which aims to convey "the endless pleasure that the author has had from the observation and rearing of these curious plants". That purpose Dr. Schwantes and his translator, Mrs. Vera Higgins, have triumphantly achieved. The naturalist-reader is indeed insensitive if he does not soon feel the urge to fill his greenhouse or window-sill with these captivating plants. And, of course, there is far more than this. Dr. Schwantes has made available his very considerable contributions to knowledge of the *Mesembryanthemaceae*.

The systematic botanist will find much valuable information in this volume, but he must quarry it himself for convenient use. He will regret that the tabulation of the genera is not accompanied by a key or even by synoptic characters. The greater part of the book (pp. 5–342) is descriptive of the plants themselves, of Dr. Schwantes' studies of capsule mechanisms and, very often, accounts of the natural habitats. This is not subject matter to be read quickly from end to end: there is enough of it for several meals with appropriate intervals, and taken this way the enthusiasm does not flag.

Outstanding features of *Mesembryanthemaceae* are the variety and complexity of the capsule and the mimetic resemblance to stones and rocks which so many of the species exhibit. Dr. Schwantes discusses these topics in chapters VI and VII, and is then led on, in chapter VIII, to some general reflexions on evolution. This is the weakest part of the book, for the author falls into the fundamental error of working only within his chosen group, and the extent of the problems leads him headlong into a mystic teleology (p. 378). Nothing is easier than to find phenomena which are incomprehensible in isolation. The comparative method is fundamental to scientific thought, and the net of experience must be cast wide if generalizations are to be soundly based.

The crux of the enigma of the capsule is the strange fact that in many species there are elaborate contrivances which effectively prevent the escape of at least some of the seeds. Apart from reference to the allied *Tetragonia expansa*, Dr. Schwantes gives no hint that seed-retention is a widespread phenomenon amongst desert plants. Yet Murbeck† found it so extensive in the Sahara as to justify the rather forbidding term synaptospermy. His observations can easily be extended to other parts of the world, amongst S.W. African examples are *Didelta* (*Compositae*) and *Neurada* (*Rosaceae*).

Dr. Schwantes' revelations of the structure and action of the capsule in *Mesembryanthemaceae* contribute invaluably to the whole fascinating study of plant reproduction in arid habitats. But the very scope of the problem is as yet scarcely seen, much less investigated. The view that evolution is purposive is, to say the least, premature.

* Flowering Stones and Mid-day Flowers: a book for plant and nature lovers on Mesembryanthemaceae. By Dr. G. Schwantes, translated by Vera Higgins. London, E. Benn Ltd. 1957. Pp. xix + 420, 8 plates in colour, 96 in monochrome, 50 text figures. Price 7 guineas.

† Murbeck, S. Beiträge zur Biologie der Wüstenpflanzen: II. Die Synaptospermie. *Lunds Universitets Årrskrift*, N. F. Avd. 2, Bd. 17, Nr. 1: 1920.

Information on many other items, such as leaf-dimorphism, window-leaves, pollination, self-sterile and self-fertile forms is scattered throughout this most stimulating book. It will be sad if the price restricts the number of readers.

B. L. BURTT.

A Synthetic Approach to Plant Pathology (review)*—In the early years of plant pathology plant diseases were studied at their simplest level—pathologists were chiefly concerned with identifying the organisms associated with diseased plants. While this type of research has continued through the years the disciplines of which plant pathologists have to take cognizance have widened enormously. Thus, as never before, the data of the meteorologist, geneticist and plant protection chemist, are of prime importance to the pathologist. From all these disciplines a vast array of information has accumulated but few attempts at a general appraisal have been made, the nearest approach is usually a rather apologetic introductory chapter in texts which then treat individual diseases in more detail.

In this volume the authors have attempted this major task of synthesis. In general, they have succeeded. They deal in turn with the economics of plant diseases, the pathogens, epidemiology and control measures. A most notable feature—foreign, it must be admitted, to most textbooks of plant pathology—is the lucidity of the text. This has been achieved partly by concentrating on major pathogens with full discussion of the problems involved, rather than obscuring the picture by citation of a confusion of examples. At the same time, the text bristles with a most refreshing number of unsolved problems pointing to future paths for research. In this respect the book fulfils the true purpose of synthesis, which is surely not just to sum known facts, but to appraise our knowledge and indicate new lines for investigation.

Nevertheless, there are some rather surprising omissions. Not even a paragraph is devoted to the problems of seed-borne diseases, nor have some of the special aspects of forest or soil-borne diseases been given the place their importance merits them. Space for this could certainly have been found, for example, by pruning out details in the chapter on important international diseases which are given elsewhere in the book.

So many textbooks of plant pathology are illustrated by poor copies of hacknied originals that the excellent illustrations add to the pleasure of reading this book. They have been carefully chosen and emphasize the authors' main thesis, that plant pathology has outgrown its infancy and that all the cognate disciplines must be considered. Certainly they set out most of the principles and problems for the perusal of student, teacher, and plant pathologist in this stimulating text.

D. M. HENDERSON

* Principles of Plant Pathology, by E. C. Stakman and J. G. Harrar. New York, Ronald Press Company. 1957. Pp. xi + 581, illus. Price 8 dollars.

Printed in Great Britain under the authority of HER MAJESTY'S STATIONERY OFFICE
by J. & J. Gray, Edinburgh. Wt. 75057 K4