illustrated by clear line drawings of a named species. The raw materials extracted from algae are treated (Heinz A. Hoppe), genus by genus, for the Chlorophyceae, Phaeophyceae and Rhodophyceae. Discussion on commercial products, substance by substance in alphabetical order, is given jointly by Heinz A. Hoppe and Otto J. Schmid and a final chapter on various groups of substances such as antibiotics, pigments and enzymes comes from Otto J. Schmid. The marked incoherence of this latter part of the book is accentuated by the interspersion of lists of references after each genus and substance, though there is a fair amount of cross-referencing. The actual lines on which research is progressing (and the title of the book suggests that this is part of its thesis) have to be gleaned from the references. Perhaps an opportunity has been missed to show how the chemistry and biology of marine algae are of mutual assistance. Even brief comments on aspects of this kind as, for example, the way in which work on polysaccharides of green algae is helping to guide ideas on the interrelationships between the orders, would have indicated the very fundamental and interesting channels being opened up through studies of commercially important products.

There is one point that needs particular emphasis. If contact is to be kept between algologists and industrialists and if physiological and chemical work is to be meaningful, great care must be taken over the correct identification of experimental material, and algae notoriously present difficulties in this direction. In spite of the emphasis during the past decade on nomenclature for algae, *Acrosiphonia arcta* is referred to as *Cladophora arcta* in the taxonomic section of the book and as *Spongomorpha arcta* in the section on raw materials, without any indication that the names refer to the same entity.

This criticism, however, does not detract from the value of the book as a most useful synopsis of both information and reference for the very rapidly expanding field of research concerned with an astonishing variety of algal products. The standard of production of the book is good. There are sixteen plates and some useful tables.

E. M. Burrows

DISEASES OF HIGHER PLANTS

Plant Pathology

By George N. Agrios. Pp. xiv + 629. (Academic Press: New York and London, July 1969.) 131*s*.

This book deals with diseases of higher plants caused by viruses, bacteria and fungi, by other higher plants, by nematodes and by unfavourable physical or chemical factors in the environment.

A short introduction leads to part one, about a third of the book, on general aspects of infectious diseases, an account which is limited essentially to diseases caused by bacteria and fungi, though there are occasional references to viruses. Successive chapters deal with variability in plant pathogens, the ways in which pathogens enter and damage plants, the major changes in metabolism that occur in diseased plants, the mechanisms and genetics of disease resistance, the effects of the environment on the development of disease and, lastly, with the various ways in which diseases are controlled with special emphasis on the use of chemicals.

These chapters range in length from about 10 to 40 pages. The very large amount of information that has been condensed into each of them has meant that certain problems have been over-simplified and that pathologists with special knowledge of these problems will take exception to some of the statements that are made. But this is almost inevitable in a book of this nature and it does not detract materially from the author's achievement in presenting a series of stimulating, readable and up to date summaries of the various fields that are covered.

Part two, about two thirds of the book, is concerned more with specific diseases. The two chapters on diseases caused by fungi and bacteria first describe general characteristics of these microorganisms and the diseases they cause and then give accounts of selected diseases. The first part of the chapter on diseases caused by viruses largely corresponds to the first part and diseases caused by bacteria and fungi. It, too, is followed by descriptions of specific diseases. The chapters on diseases caused by higher plants and by nematodes are along similar lines. The last chapter describes the more important ways in which physical and chemical factors in the environment can damage plants.

The book is well and attractively illustrated. The line figures of life-cycles of different pathogens are particularly good; each is an excellent summary of a lot of information. But the illustrations on the first page of each chapter are less informative and seem to have little purpose.

There are lists of selected references at the end of the various sections and a short list of general references at the end of the book. References are not given in the text. This may make for slightly easier reading, but it has obvious disadvantages especially for the inexperienced who may want to follow up particular lines of work. There is the further point that the lists themselves often do not contain any references to important and stimulating research. There are also some surprising omissions from the general list at the end of the book. The reader will have to look hard for references other than to work published in North America.

These are, however, relatively minor though irritating defects in a work that has so many other good features. The author set himself a very difficult task in writing a book with so wide a scope, but he has succeeded in producing a most attractive and stimulating survey of the whole field of plant pathology, and it is an excellent introduction to the subject.

R. K. S. Wood

LIVELY MAMMALS

The Life of Mammals

Vol. 1. By L. Harrison Matthews. (Weidenfeld and Nicolson Natural History.) Pp. 340 + 25 plates. (Weidenfeld and Nicolson: London, 1969.) 60*s*.

Those who have heard Dr Matthews's entertaining comments on new acquisitions and births at the Regent's Park Zoo, made at scientific meetings when he was scientific director of the Zoological Society of London, will remember his remarkable knowledge about many creatures. He has called on his fund of information for this first volume of what is really a series of essays on evolution, characteristics, general physiology and behaviour of mammals. It is not a textbook but is for the general reader interested in mammals. Care is taken to explain terms and concepts in simple language, in places so simple that there seems a tendency to state the obvious. Yet the reader is expected to visualize retia mirabilia but is not told where nor how large they are. The opportunity to enrich the text with lively asides is often taken. We learn why artillerymen keep their mouths open when firing their guns, what Jonas Hanway contributed for man to keep dry, why Leland Stanford employed Edward Muggeridge to photograph trotting horses, and about a goat born without forelimbs that stood on its hind legs and hopped.

There is more, however, than an attempt to outdo Baron Munchausen and his anthrophog. Three chapters discuss briefly the origin of mammals, what mammals are and the patterns of their construction. The phraseology may not be to everybody's liking, with the "tireless heart" doing "enormous work", with blood being "no ordinary fluid" and having its "postal system". The fourth chapter classifies mammals according to Simpson. Little is written about the Primates except to deflate the importance of