

they are considerable—of this valuable and potentially extensible crop.

Dr. Child has dealt, in short, informative and readable chapters, with the history and botany of the crop, its cultural requirements, the importance of selection and breeding in the establishment of plantations, and with the many other problems of care, maintenance, fertilizing, processing and products. Pests, of quite diverse kinds, from insects to crabs, and diseases, which are often difficult to diagnose, which afflict the coconut, are described and illustrated. Indeed, a very considerable amount of information has been condensed into some two hundred odd pages. The book is helpfully illustrated by line drawings in the text and by photographic plates of good quality.

Especially in these days of expensive technical books, this volume impresses me as being really good value, both for the practical grower and the research reader. Nor is the coconut without its mythology and mystery: let the curious reader find out for himself about 'coconut pearls' to which a short appendix is devoted.

C. W. WARDLAW

MECHANISMS OF HORMONE ACTION

Actions of Hormones on Molecular Processes

Edited by Gerald Litwack and David Kritchevsky. Pp. xi + 583. (New York and London: John Wiley and Sons, Inc., 1964.) 128s.

THE editors are to be congratulated on their idea of collecting nineteen articles relating to the mechanism of hormone action at the molecular level, for interest in this subject has grown rapidly in recent years. The coverage of subjects is, naturally, not comprehensive, but their selection is a good one. The hormonal influence on transport across cell membranes is discussed by Riggs, and there then follow four articles on various aspects of thyroid hormone action. Gonadotrophins and the sex hormones are discussed in four chapters, while corticosteroids, insulin and the catecholamines merit three articles each. There is also a discussion of gastric and the duodenal hormones. It is of interest that in many of the articles the emphasis is on hormonal action mediated via messenger RNA synthesis.

The articles are excellently written accounts, serving as good reviews of the literature, and many of the authors have taken advantage of the opportunity offered by the editors to speculate. Such personal views are often useful if only in promoting thought and experiment to counter an unpopular opinion. The book is clearly printed, the figures are admirably clear, the type is pleasing to the eye, the index is useful and appears to be both comprehensively and sensibly compiled.

But, and this is an important qualification, there was obviously a delay of about two years between the time when most of the articles were written and that when the book was published. Such a delay may be of limited consequence in some subjects but in rapidly developing fields—and this book was clearly envisaged as being in one—a delay of this length can be disastrous. One of the contributors has added an addendum to his thoughtful, elegant and comprehensive chapter (which clearly took a great deal of work and thought to write), in which he says that during the delay between writing the chapter and reading the proofs (18 months) it had become a period piece and that to attempt to bring it up to date would entail expensive revision. He is perhaps a little too hard on himself, but it is difficult not to sympathize. When asked to contribute a review article, many scientists feel an obligation to do so in order to tie together the diffuse and voluminous literature on their subject or to put their own view. No doubt, too, we respond to the implied flattery of the invitation. A review article,

especially one which is a thoughtful selection and discussion of relevant papers, requires a great deal of hard work to write, and it is a great pity that the hard work should be, to an extent, wasted by delays in publication.

A. KORNER

MICHAEL FARADAY

Michael Faraday

By L. Pearce Williams. Pp. xvi + 531. (London: Chapman and Hall, Ltd., 1965.) 70s.

IN his warm and human biography of Michael Faraday, Prof. Williams has traced Faraday's development as a man and a scientist. After describing Faraday's early days, he has chapters on his education as a chemist and philosopher, and on the "Fallow Years" between 1820 and 1830 when he gave up his researches in order to devote himself to the interests of the Royal Institution, raising it in popular esteem and strengthening its financial position. Then came the great years of the discovery of electromagnetic induction, and the author describes the development and clarification of Faraday's conceptions in three chapters on "The Nature of Electricity".

The chapter on "Faraday in the World" is of particular interest because it contains an account of Faraday's study of the art of lecturing. He had as a first model Humphry Davy, a master of that art. "Faraday had been preparing himself to replace Davy for a decade and it was his ability to reach a lay audience which was, over the course of some thirty-seven years, to give the Royal Institution that popularity and financial security it had so long needed." Faraday's advice to a lecturer about the importance of speaking his discourse, not reading it, reveals his combination of courtesy and firmness in a delightful way, "as we are sure that you would do it better the less you read, so I venture to express a hope that you will not read more than you may find necessary for your own convenience".

Another fascinating chapter deals with the origin of the field theory. Prof. Williams enables us to follow Faraday's lines of thought by the frequent well-chosen extracts from his papers and diary. There is, however, a blemish in this chapter which ought to be corrected in a further edition. A series of figures on p. 439 *et seq.*, which purport to illustrate Faraday's ideas on the distortion of a magnetic field by paramagnetic and diamagnetic bodies, are false in that they represent lines of force with physically impossible contours. Faraday's original rough sketches (Experiment 10,832, April 1850, in his *Diary*) and the finished drawings (2,807, October 1850, in "Experimental Researches in Electricity") are beautifully executed even though Faraday had to extrapolate in exaggerating the effect of a diamagnetic. His intuition led him to their right form, although he had no mathematics. The pictures in the book, on the other hand, show the lines of force which disobey the laws Faraday had so brilliantly established. Then again, on p. 393, in referring to "the setting of his glass across the magnetic lines of force", the author appears to suggest that a diamagnetic rod sets itself at right angles to the force in a uniform magnetic field, whereas, of course, it sets itself in a parallel direction like a paramagnetic, a phenomenon so elegantly explained by Faraday's conception of a field as opposed to that of induced poles. The familiar experiment in which a bismuth rod sets itself across the magnetic gap is explained by the ends of the rod being drawn to places where the field is weaker.

A number of books have been written about Faraday, but in the present case the author must have consulted more of the original sources than any previous biographer, and the result is a very complete and scholarly record, which is a notable addition to our knowledge of nineteenth-century science.

W. L. BRAGG