

baroque.

A second group of theories deal with useful treatments of the MIF and Jerne plaque assays, the latter showing that several assumptions commonly made by experimentalists are probably wrong. Some common cook-book analysis—for example, of antibody affinity—is omitted. A third group deal with local phenomena: B cell triggering, cell recruitment (including a particularly elegant treatment of lymphocyte traffic), and antibody fit. Inman's handling of the antibody frequency relationship improves on but

omits reference to my earlier work.

The weakest part comes from the experimentalists, who should have provided balanced reviews. Dual recognition is not as obscure as Burnet and Dutton make out, but does provide a problem for helper factors which Feldmann skips. The networkers have yet to take up Raff's challenge (*Nature*, 265, 205; 1977).

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Barley handbook

Barley. By D. E. Briggs. Pp. 612. (Chapman and Hall: London, 1978.) £25.

BARLEY is one of those crops, like wheat or cotton, with a fascinating biology and a complicated technology to match. Dennis Briggs makes a valiant attempt at a monographic treatment of all aspects of this, the world's fourth most important cereal crop. His book is a useful addition to the literature, although almost inevitably it suffers from unevenness.

The book begins with chapters on the morphology of the vegetative and reproductive plant. These are welcome, although it is unfortunate that the relevance and quality of some of the diagrams, often taken from rather elderly works, is doubtful; a page of illustrations of types of hood found in barley seems excessive, and better drawings, or even scanning electron micrographs, of the developing ear would have been valuable. The origin and classification of barley is discussed in a brief chapter and barley genetics are considered as a prelude to a chapter on crop improvement. To a non-specialist the treatment seems rather superficial, but a great deal of the recent literature is quoted, and this is a feature of the book as a whole.

Three chapters on barley biochemistry, grain quality and germination, and growth of the barley plant occupy about a third of the book. They are informative and give a comprehensive picture of almost every aspect of barley development and metabolism, at the price of being rather unselective and presenting biochemical pathways in somewhat exhaustive detail.

Agricultural aspects of the barley crop take up five chapters. That on agricultural practices and yield is brief and on occasions rather trivial. It is complemented by chapters on weeds, pests and diseases, and problems of

storage. Here one looks in vain for data on estimates of crop losses due to plant and insect pests, but perhaps in consolation we are given a formidable list of diseases carried by the rat. This rather unsatisfactory section also includes a chapter on production and harvesting machinery which is of doubtful value. No-one is going to go

Diatomic molecules

Diatomic Molecules: Results of Ab Initio Calculations. By R. S. Mulliken and W. C. Ermler. Pp. 197. (Academic: New York, San Francisco and London, 1978.) \$19.50.

It seems churlish to greet any publication which has Robert Mullikan as an author with something less than total enthusiasm. His contributions to molecular physics have been truly monumental and his personality has inspired affection in those who know the man and his work. The choice of topic for this book again raises high expectations.

Diatomic molecules have always been wonderful model systems on which to base and test theories. Their spectroscopy is so rich and the results are so accurate and unambiguous that they have always attracted high calibre experimentalists as well as theoreticians. Nor is their importance declining: far from it, as the advent of lasers has provided tools for even more subtle experiments. The diatomic molecule has been the subject of vast numbers of experiments and its importance breaks out from the vicious circle of experiments being done for theoreticians who do calculations to explain experiments. Two-atom molecules are of wider interest, because of their key roles in interstellar molecule formation, atmospheric physics, energy transfer mechanisms and in the development of new laser systems.

The time is clearly ripe for a major

to this book to be informed on types of ploughs, drills or combine harvesters.

The final part of the work deals with the many uses of this crop. Here the author returns to surer ground and the chapter on barley as animal and human food contains many interesting facts. The mysteries of malting are made reasonably clear in a brief but direct chapter and the book ends with a survey of the uses of barley malt, including the making of vinegar and more potable liquids.

At the price few individuals are likely to purchase this book. However, despite its shortcomings it is a work which should find a place in all laboratories dealing with cereals. It is to be hoped, however, that library copies do not show the blurred print which marred parts of the review copy.

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work on all aspects of the physics and chemistry of diatomic molecules. This is not that book, but any such publication might well be dedicated to Robert S. Mulliken.

The actual work under review provides a survey and analysis of computational studies of the electronic structure of ground and excited states of diatomic molecules. It is neither a student text nor a full monograph. It commences with a useful summary of theory which can largely be found in a number of other texts and which is probably too condensed for the novice and too familiar for the expert. Succeeding chapters treat one-electron molecules, two- to four-electron molecules, hydrides and finally homopolar and heteropolar species.

Electron correlation is emphasised as are charge distributions, but the other molecular properties which are the object of *ab initio* calculation are only given a cursory treatment. The bibliography contains some 1976 references but in the text an important 1974 paper is described as 'recent'.

Perhaps the combination of distinguished authors and important topics raises expectations which are bound to be disappointed. The book will be welcomed by the small band of theoreticians who work on diatomic molecules but will probably miss the potentially wider audience. It might just provoke someone to write or edit the major tome on all aspects of diatomics.

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