

diverse, one would think, to attract young biologists once again towards the genetics of an agricultural plant. Current trends are well represented: the section on germplasm sources, for example, is largely devoted to isozyme polymorphisms, whilst electron microscopy of epidermal wax conformations in a mutant series (von Wettstein-Knowles), provides a novel approach to mechanisms conditioned by gene action.

On the other hand, readers conversant with barley breeding will not be surprised to learn that the largest section is that on genetics of disease and insect resistance. For decades the utilisation of resistance genes has been a major preoccupation of many breeders, but here host-parasite co-evolution provides a refreshing aspect of such work.

The presence of a section for the genetics of feeding quality, albeit comprising a single presentation on "Hiproly" high lysine barley (Munck, Karlsson and Hagberg), is surely significant. It complements a set of papers on malting quality, and though malting barley is probably declining in importance the advent of studies on completely new protein, enzyme and starch types indicates a future for research on specialised grains.

Looking ahead to the 1975 Symposium it is apparent that the group of current papers on hybrid barley already foreshadows a powerful influence. By that time considerable numbers of  $F_1$  hybrids will have been synthesised by several systems, and we can expect our knowledge of heterosis in inbreeders to have increased considerably. Furthermore, the "spin-off" from mechanisms developed primarily for hybrids will have been felt, so there could well be more contributions such as that by Ramage on the use of trisomics for chromosome mapping. We can also anticipate following up of subjects presented for the first time at a barley meeting. Mitochondrial heterosis (McDaniel) and Schooler's cytoplasmic male-sterility are just two themes that have led to some exasperation elsewhere, perhaps because of unfamiliarity with technique, and which we hope to see resolved.

The scope of this report is wide, and its contents absorbing. Without thorough familiarisation with this work *Barley Genetics III* will assume a daunting prospect.

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A FIRST COURSE IN STATISTICS. F. N. David. Charles Griffin & Co., 1971. Pp. 228. £1.90.

This is an excellent book to place in the hands of students who are about to encounter statistics for the first time. It will be particularly useful for first- and second-year students at colleges and universities who are taking courses in environmental biology, for most of the worked examples are taken from this general field and they are very realistic and representative of the statistical problems that arise.

The general approach is to use the standard tests of significance based on the normal distribution: the  $\chi^2$ -,  $t$ - and  $F$ -tests as described by Sir Ronald Fisher in *Statistical Methods for Research Workers*. It is a pity that the analysis of variance is not taken beyond the simple one-way classification, for the analysis of several factors and their interactions is often appropriate to the results of very simple biological experiments. However, the book is obviously intended to be nothing but a "first course" and the basic tests of

significance are certainly explained in clear simple English that makes it very easy to read. Indeed, in the clarity with which the calculations are described and their meanings explained this book could hardly be improved.

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**A PRIMER OF POPULATION BIOLOGY.** E. O. Wilson and W. H. Bossert. Sinauer Associates, Stamford, Connecticut, November 1971. Pp. 192. £1.70.

This book is really a primer of theoretical population biology. There is a chapter on population genetics which describes the simple theory of gene frequencies—the effects of mutation, migration and selection. Then in the next chapter the simple models of population growth, predator and prey cycles and competition are described. Finally there is an account of the most elementary aspects of MacArthur and Wilson's theory of species' equilibrium. The book will undoubtedly be useful to sixth-form students in schools and to students taking their first courses in population biology at colleges and universities. The elementary theory is explained with great clarity and in a way that could hardly frighten even the most nervous student when faced with mathematics. Unfortunately almost all the examples are artificial and are used merely to illustrate the arithmetic. Only in the discussion of the Lotka-Volterra equations of predator and prey cycles is there any description of what happens in nature and the laboratory: and hence why the equations are usually wrong. Elsewhere, and especially in the chapter on population genetics, the theory is presented with scarcely any discussion of the validity of its premises. The beginning student should therefore read this book in conjunction with more general texts on ecology and ecological genetics.

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**PLANT SPECIATION.** Verne Grant. Columbia University Press, New York and London, 1971. Pp. 435. \$15.00.

The title "Plant Speciation" might suggest that the book is mainly concerned with the processes by which species arise rather than with a description of the characteristics which distinguish existing species. It is, of course, impossible completely to separate these two aspects, for the criteria used to define species are dependent upon an understanding of the way in which they have arisen. This book begins with a section on the nature of species in which the author discusses the evolutionary concept of species as it can be applied to plants, where there is a high incidence of types which reproduce by self-fertilisation or apomixis and which, therefore, do not fit in neatly to the concept of a species as a potentially interbreeding group. Having considered, to my mind rather sketchily, the nature of reproductive isolating mechanisms he turns in the second part to divergence of species. He supports the view that probably all "primary" speciation has been allopatric while allowing that reinforcement of reproductive barriers can occur when species become sympatric.

The bulk of the book (pp. 150 to 386) is concerned with hybridisation