REVIEWS

GENETIC RESISTANCE TO DISEASE IN DOMESTIC ANIMALS. By F. B. Hutt. London: Constable. 1958. Pp. xii + 198. 35s.

Most textbooks on animal breeding, as Professor Hutt points out, make little or nothing of the possibilities of breeding for disease resistance. Now that he has marshalled much of the available evidence in a convenient and highly readable form, the significance of the omission can be assessed. He refers briefly to a wide range of subjects including lethal genes, adaptation to environment, aberrant metabolism, and disease resistance in large and small animals. At its worst the evidence is anecdotal; at its best, convincing. Some of it is open to conflicting interpretations.

Professor Hutt's argument for more attention to breeding for disease resistance rests heavily on his own and his colleagues' work with poultry in which, aided by a high reproductive rate, they have successfully demonstrated the practical value of genetic selection. For all his enthusiasm, however, he does not wish to pretend that, for livestock other than poultry, the factual basis for action is good. Observations and experiments have been mostly inadequate and sporadic. The reputation of the Romney Marsh sheep for resisting stomach worms, for example, appears to be supported only by five lambs in California. Nevertheless, ample reasons are found for supposing that genetic variation in susceptibility to disease occurs in all classes of livestock. The question is whether attempts should be made to exploit it. Conspicuous genetical errors of metabolism and development can be left to natural selection to oppose, aided, if need be, by culling relatives of the abnormal; but Professor Hutt thinks this will not do for the whole of the long catalogue of diseases against which veterinarians contend with vaccines, antibiotics, hygiene, indiscriminating slaughter and faith. His brave shouting in the poultry house, however, dwindles to whistling in the darkness of the sheepfold. If scrapie and mastitis have to be adduced as examples of diseases that might be controlled by breeding methods appropriate to leucosis in fowls, the present weakness of the case is evident.

A good deal more work on most diseases is needed before a competent choice for a long-term policy for any of them can be made from the techniques of prevention, slaughter, treatment and breeding.

The book is attractively produced, and an excellent investment.

H. P. DONALD.

PLANT BREEDING AND CYTOGENETICS. By F. C. Elliott. McGraw-Hill Publishing Co. Ltd. 1958. Pp. 1-395. 66s.

In this volume the author has attempted to outline and describe the nuclear and reproductive mechanisms which control variability and the way in which they have been used to improve crop plants. Firstly, genetic mechanisms covering chromosome mechanics, recombination and breeding systems are described. Two chapters deal with the techniques involved in

the manipulation of progenies following crossing and selection. The problem of breeding for disease resistance is treated briefly in a separate chapter. The last part of the book is concerned with the testing and release of new selections and with the organisation of plant improvement programmes. This latter section is unrelated to the rest of the text and it is difficult to see why it was included in the present work.

The author deals with an impressively wide field, and presents a bewildering array of facts and quotations which are fully documented. Some of the material, in particular the achievements derived from the use of polyploids, artificial mutations and chromosome substitution, appears in book form for the first time and the coverage given to it will be generally appreciated. In attempting a complete survey of the literature the author has, however, produced a form of review in which the fundamental principles have been buried within semi-digested quotations and references. Where a fully illustrated explanation of basic laws is expected, one finds the treatment given here to be very thin and superficial. In the section on incompatibility, for example, the sporophytic mechanism merits only a paragraph and the subject is dismissed with the statement: "A great complexity of incompatibility relationships is possible because of the variability of allelic interactions" (page 30). Apomictic mechanisms are treated in the same summary fashion and the reader is referred to other authors for examples, for details, as well as for the historical development of the subject.

On countless occasions the reader is led to the very edge of the subject-matter only to find that what is really important is not here at all but elsewhere. For differences in recombination between central and marginal populations one is invited to see Carson, 1955; for the several doubled flowers already in commercial trade channels one must consult Emsweller, 1948, and for the important evolutionary consequences that accrue from changes in population size under the various environments encountered by a species, one has to read Ford, 1955. Similar instances occur with such regularity that the text frequently becomes no more than an index to the literature. Had the facts been more thoroughly digested and the principles of the subject separated from the opinions of various authors, this unfortunate presentation could have been avoided and the work might have attained the level of a textbook.

WATKIN WILLIAMS.

VARIABLES RELATED TO HUMAN BREAST CANCER. By V. E. Anderson *et al.* London. Minnesota University Press, Oxford University Press. 1958. Pp. xiii + 172. 32s.

An account of a study of familial incidence of breast cancer in Minnesota. No one-egg twins were included in the study but, instead, a table is given to show what results would have been obtained from one-egg twins if they had been studied. This table is based on assumptions that such twins would show complete concordance in presence or absence of breast cancer but no more concordance than random pairs in the general population of patients in the time of onset. The authors seem to have overlooked the available evidence which bears on these assumptions, and indeed invalidates them.

Altogether this study is not well conceived and it is not surprising that, after prolonged exertions, the authors fail to reach any serious conclusion.

C. D. D.