

REVIEWS

QUANTITATIVE INHERITANCE. Papers read at a colloquium held at the Institute of Animal Genetics, Edinburgh University, under the auspices of the Agricultural Research Council, 4th to 6th April 1950. Her Majesty's Stationery Office, London, 1952. Price 20s. net.

It was enterprising of the Agricultural Research Council to organise and to publish the contributions to this symposium on *Quantitative Inheritance*. Nearly all the contributors stress the importance of quantitative characters in evolution and in animal and plant improvement, and this represents a real advance from the attitude of the first generation of geneticists, about 1910, though it is no novelty for the present generation.

Like most such occasions, this discussion suffered to some extent from the reiteration by the older hands of opinions of which they have ceased to be critical, and by the naive misapprehensions of the newcomers. Nevertheless, some material of interest has been gathered.

Attention may be drawn to the short paper by L. L. Cavalli, "An analysis of linkage in quantitative inheritance" using the methods and material of K. Mather. Instructive also is Mather's gentle but effective reproof of the extravagances of a purely negative contribution by B. Woolf.

The paper, however, from which most can be learnt, and which is the chief justification for the publication, is that of Mather and Vines on "The inheritance of height and flowering time in a cross of *Nicotiana rustica*." This sets out fully and usefully the analysis up to the fourth generation, with a valuable discussion of those factors, such as scaling, which help to make the analysis more accurate.

R. A. F.

HEREDITY IN UTERINE CANCER. By Douglas P. Murphy. Harvard University Press (London : Geoffrey Cumberlege). 1952. Pp. xi+128. 16s.

Although geneticists on the whole incline to the view that a predisposition to cancer is inherited, the opinions held by many authorities who have studied the subject are somewhat diverse. With the possible exception of the work of Brøbeck, the existing literature seems to lack any really satisfactorily comprehensive data on the familial occurrence of cancer, involving in particular an adequate series of controls. The present book describes the methods and results of an enquiry whose purpose was to make good this deficiency. It is concerned with the occurrence of cancer among the female relatives of 201 women suffering from cancer of the uterine cervix and of 215 controls. In the first section of the book the literature is reviewed and discussed, and emphasis is laid on the need for a new survey. The second section deals with the materials and methods employed, and is a model of clarity and precision. Full details are given of the purpose of the investigation, the use made of a pilot study, the selection of both the cancer and control probands, the methods of obtaining and handling the clinical and social information required, personnel employed, and so on. The results achieved are elaborated in the third section and discussed in the fourth. Certain details of the administrative background and the questionnaires used are presented in appendices.

The general conclusions of the survey are that hereditary factors do influence the frequency of occurrence of uterine cancer, though the effect is small. Thus the ratio of cases of uterine cancer to all cases of cancer was 26 per cent. in the female relatives of cancer probands, compared

with about 15 per cent. in the relatives of the control probands. Again, 3.2 per cent. of the mothers and aunts of cancer probands were recorded as having cancer of the uterus, compared with 1.4 per cent. of the mothers and aunts of the controls. The total prevalence of cancer at some site did not differ between the cancer and control families. Finally, excluding the proband-mother relationships, it is shown that 9 per cent. of the mothers of non-cancerous daughters had cancer in some site, compared with a figure of 17 per cent. for mothers of daughters with cancer irrespective of site; whereas only 9 per cent. of the mothers of the cervical cancer probands had cancer in some site. This seems to imply that genetic factors other than those concerned with uterine cancer affect the occurrence of cancer elsewhere.

The chief criticism which must be made of the treatment is that most of the tables presented are simple one-way analyses of material relating either to the cancer family groups or to the control family groups. No attempt has been made to examine two- or three-way tables. This is important as there are, for example, marked differences in the economic and educational levels of the cancer probands compared with the controls (and perhaps their families as well). Thus some of the apparent differences in the prevalence of cancer referred to above might be ascribable to purely environmental factors. However, in spite of this qualification, it is true to say that Dr Murphy's book does make an extremely useful contribution to the study of the ætiology of cancer, and is well worth the serious attention of clinicians and geneticists alike.

NORMAN T. J. BAILEY.

STATISTICAL METHOD IN BIOLOGICAL ASSAY. By D. J. Finney. Griffen. 1952. xix+661 pp. 68s.

Frequently it happens, whether from necessity or convenience, that we wish to measure the potency of some substance or stimulus, which may be chemical, physical, psychological, etc., by means of the effects produced in living subjects. This is the field of biological assay, which, at least so far as quantitative methods are concerned, is extremely susceptible of considerable statistical development. The great advances of recent years in both the scope of bioassay itself and in the statistical design and analysis of the experimental procedures have been evolved mainly in relation to pharmacology. Thus one of the most convenient accounts of the statistical methods available was, until the publication of the present book, the third chapter (occupying more than a third of the whole volume) by Dr Finney in the second edition of *Biological Standardization* by Burn, Finney and Goodwin. However, there are immediate applications to other subjects like psychology or physiology, where, using similar experimental methods, interest is centred in the living subjects, rather than in the stimuli themselves. Again, methods of analysis may be used elsewhere because of similarities in the underlying mathematical model. There is for example the application of the modified form of probit analysis, used when there is an independent source of natural mortality, to the problem of estimating the average age of onset of a chronic disease from its prevalence in different age groups.

In the present book Dr Finney has, in his own words, "attempted to provide a comprehensive account of designs and statistical analyses for biological assays, both as a textbook for the student of statistics and as a work of reference for the practitioner of bioassay." This aim has been