

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 aetiology 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

largely fulfilled. Assuming a certain acquaintance with basic statistical methods, a wide variety of problems peculiar to assay work is introduced, and the appropriate analytical procedures are explained, illustrated and discussed. Thus there are chapters dealing with parallel line assays; slope ratio assays; quantal responses; symmetrical designs; efficiency, reliability and sensitivity; incomplete block designs; cross-over designs; use of concomitant information; combination of estimates, etc., etc. There is also a fairly extensive bibliography and seventeen appendix tables giving the distributions of t , χ^2 , Fisher-Behrens ratio and variance ratio, as well as all the usual tables of transformations, working values, ranges, and weighting coefficients, for probits, logits, angles and loglogs. A great many general statistical techniques are introduced into the text and full explanations are given of their application and interpretation. As a result, the book is a more or less self-contained handbook on the subject, valuable as a work of reference both to the practitioner of bioassay and to the student of the primarily statistical aspects. One useful feature is the inclusion of four suggested alternative selections of sections from the book designed to meet the needs of the professional statistician desiring a short course in biological assay, the non-mathematical user of assay, the reader requiring a general survey of the function of statistics in the subject, and the reader who is mainly interested in work with quantal responses.

The general excellence of *Statistical Method in Biological Assay* justifies, in the opinion of the reviewer, the somewhat high price. Because of its comprehensive treatment and lucid exposition, Dr Finney's book deserves to be widely read and to become a standard work of reference in the field of bioassay.

NORMAN T. J. BAILEY.

EVOLUTION IN THE GENUS *DROSOPHILA*. By J. T. Patterson and W. S. Stone. New York: The Macmillan Company. 1952. Pp. 1-599. \$8.50.

The evidence of evolutionary processes is at once more comprehensive and more significant in *Drosophila* than in any other group of animals or plants. It is derived from comparative anatomy, geographical distribution and ecology, combined with breeding and chromosome studies of many hundreds of species and of races in all parts of the world. This book is an account of the evidence accumulated, chiefly since 1910, to which the authors and their collaborators have so largely contributed.

Each of the different aspects of *Drosophila* evolution is considered in some detail and particularly later in relation to the bases of genetic isolation. In general the authors keep their eyes fixed on one problem at a time and they do not allow themselves to be distracted, by what seem irrelevant clues, from their appointed programme. This is a successful policy up to a point. But, beyond that point, the desire to solve problems which were envisaged at the beginning suppresses the tendency for new problems to push their way into the discussion.

Moreover, we find that, in keeping with this attitude, the text has been put together in detail as though from an index of notes or reprints classified chiefly under the names of authors. Nearly half the paragraphs begin with these names (sometimes three or four of them): the connexion between such paragraphs will not be clear to the reader unacquainted with the hundreds of interesting personalities mentioned. On a larger scale the order of the book is confused in another way. For example there are 56 pages of sporadic references to salivary gland chromosomes before