of hereditary disease, to present his findings as objectively as possible. Factual knowledge is still scarce and theoretical speculations arising upon foundations of incomplete data must be treated with care, or indeed rejected outright. In the past clinicians were frequently criticised for a tendency to publish only those families which showed well-marked inherited anomalies, with the result that isolated examples tended to be neglected, and did not appear in the literature to the expected extent. The danger now developing is that inadequately worked out pedigrees will be placed on record in order to illustrate some preconceived theoretical situation, for example partial sex-linkage.

Abiotrophy is a term introduced by Sir William Gowers about fifty years ago to signify degeneration of tissues due to defective vitality. Hereditary optic atrophy, retinitis pigmentosa and certain forms of macular degeneration may be cited as examples. The author of this book has devoted much care and attention to the abiotrophic character of many genetic anomalies affecting the eye. He believes that it is not unlikely that some of the so-called senile degenerations are late abiotrophic manifestations, and that evidence is accumulating to show that senile cataract and primary glaucoma are essentially genetic affections.

The book is written with the zeal and enthusiasm of the advocate and the teacher. It is intended to arouse the interest of the clinical worker and it should attain this objective with ease. The selected bibliography is arranged at the end and follows the textual sequence. This makes for ease in reference and is a practice which might well be used more extensively. The illustrations and production are an attractive feature of the book.

W. J. B. RIDDELL.

METHUEN MONOGRAPH : The Measurement of Linkage in Heredity. By K. Mather, D.Sc., F.R.S. Second edition. London : Methuen. 1951.

It is very satisfactory that Professor Mather's small but closely packed monograph is again in print. The first edition was the only textbook entirely and explicitly devoted to the design of laboratory investigations in genetics and their statistical treatment, and it filled this role with distinction. Its especial merit lay in the successful fusion of two different and almost contradictory aspects. In the first place it had the character of a Laboratory Handbook in which designs of experiments (together with formulæ and computational procedures needed for their assessment) were provided " ready-made " (or in easily adaptable form) for the assistance of the research worker in a variety of situations. In addition, however, the principles of design and statistical interpretation were developed by particularly clear and simple reasoning in such a way as to bring out the reader's statistical horse-sense. This made it a book of exceptional value for the training of geneticists whether recruited from mathematics or biology. A mathematician of my acquaintance says that he first learnt statistics from it ; I myself was, and still am grateful for it, and I know it to have been of constant utility to many non-mathematical colleagues.

In the second edition the original text has been retained (with some extensions) so that the value of the monograph is undiminished. Some misprints should be noted which have survived without correction from the first edition : On page 100, 1936*a* should read 1949*a*. The item $(1+y'+2yy')$ appearing in the formula at the top of page 109 (and on

page 139) should read $\{1+y'+(s-3)yy'\}$. On page 124, a paragraph is duplicated. The item $S\{t(9-1)n_{at}\}$ on page 139 should be $S\{t(a-1)n_{at}\}$. On page 100, the author might profitably have added the remark that maximum precision is attained when the products A_{R_1} A_{R_2} and A_{C_1} A_{C_2} are brought most nearly to equality.

There are some major additions to the text, of which a very useful one is a section on Fisher's scoring method. Here it may be felt that the author has perhaps obscured a particular merit of this method by choosing in his worked example to calculate the information algebraically instead of numerically as score increment divided by difference in parameter values, despite the fact that he has already indicated the possibility of this procedure in an earlier section of Chapter VII. It is perhaps to be regretted as a lost opportunity that the whole of this chapter was not revised in order to make the arithmetical advantages and mental economy of scoring technique more explicit. None the less this chapter still holds its place as one of considerable utility.

The other important addition which the author has made, is a wholly admirable chapter on the estimation of population gene frequencies. Here the author shows very effectively how to exploit partitioned χ^2, and gives a full account of the modern technique of estimation when three alleles are involved.

A. R. G. OWEN.

THE PRINCIPLES OF HEREDITY. By L. H. Snyder. Fourth edition 1951. Boston : D. C. Heath & Co. $4.50.

The principles of heredity arise from the experiments and ideas of Mendel and Weismann, Darwin and Galton, Bateson and Morgan. The growth and nature of these principles are not widely known and the experts have actually been confused about them. Their confusion does not seem to detract from the value of the research work they do. It has, however, certain concealed consequences. It limits their outlook. It prevents genetics from attaining its natural scope and new genetic discoveries from being understood by those who might be expected to understand them.

Professor Snyder's *Principles of Heredity* is intended to introduce " beginning students " to genetics. It derives the principles to which its title refers from Mendel and Morgan. It avoids certain complications by omitting Darwin and Weismann and dismissing Bateson as one of the joint discoverers of linkage.

How Professor Snyder treats the legacy of Mendel and Morgan may be seen from one parenthetical sentence (p. 17). " Mendel did not use the word ' gene ' . . . his hypothetical ' factors ' behaved as today we know genes to behave. We shall, therefore, use ' gene ' in relating Mendel's work." In other words, if Mendel had used the word " factor " he would have meant what Professor Snyder means by the word " gene." Some may think that there is nothing wrong in introducing the word gene into a description of Mendel's experiments. Some may feel also that the word gene is so familiar to all of us that it requires no definition. But in fact Mendel spoke only of " characters," " series," " cells " and " elements " and Bateson spoke of " unit-characters " (without defining them) only later being driven to assume " determiners " and " factors " by the consideration of dominance, presence and absence, and interaction. And surely this is of some importance in understanding the great assumptions of principle