a replacement for other textbooks of a more conventional kind. But as a supplement to them, and as a guide and stimulus to critical thinking, it will be invaluable.

J. R. S. FINCHAM
The Department of Genetics, The University, Leeds 2

GENETIC DIVERSITY AND HUMAN BEHAVIOUR. Edited by J. N. Spuhler. Viking Fund Publication in Anthropology No. 45, Wenner-Gren Foundation for Anthropological Research, Inc., 1967.

Understandably enough, symposia are increasingly being used in preference to books and monographs for summarising and reviewing recent developments in science. There are however problems in publishing symposia, particularly ones of completeness, coherence, integration and style, which are not easy to overcome, especially when multi-disciplinary themes are being considered. The best types of symposia are those such as are organised by the Wenner-Gren Foundation, in which a small group of people with a broad common interest but who for geographical reasons, and perhaps nowadays more importantly, academic reasons would not normally meet, assemble to discuss at length pre-circulated draft papers. If completeness and integration cannot be achieved under these circumstances, it is unlikely that they will be under any other.

The present volume consists of sixteen of the twenty contributions to one of these Wenner-Gren symposia and is as fine an introduction as can be found at the moment to the biological and genetic view of human behaviour. Nevertheless, partly because of differences in approach but mainly, one suspects, because of the intrinsic nature of the subject and the little that has certainly been established, the book does tend to lack an overall coherence. Further, some of the contributions are general essays, others extensive reviews, and yet others practically primary research papers.

To particularise, there are two papers on the relevance of general genetic principles to the analysis of behavioural variation, one by T. Dobzhansky and the other by J. M. Thoday. T. Dobzhansky, in considering the nature of variability and the social as well as the biological implications of the so-called " classical " and " balance " theories of population structure goes, as usual, to the heart of the problem, and Thoday not only provides as excellent a brief summary as one will find on selection and its relevance to human behaviour but also makes some very apposite remarks about the analysis of traits such as I.Q. A number of contributions, and especially those by J. Hirsch, G. E. McClearn, D. A. Rodgers, D. D. Thiessen and D. A. Rodgers, and S. G. Vandenberg, deal specifically with the problems arising in attempts to partition behavioural variation into genetic and environmental components. The analysis of any form of the quantitative variation which is so ubiquitous within and between human populations is inordinately complex and even when dealing with much more easily measured attributes than behavioural ones, very little progress has been made. The prime evidence for considering within population variability comes, of course, from family studies and twin studies and the results of such studies for a number of behavioural attributes are reviewed by these authors. Particularly worthy of mention is a most valuable review by Vandenberg of the results of twin

studies. None of the contributors gets involved with the sterile and meaningless controversy about the so-called relative importance of hereditary and environmental factors, but in some of the discussions it would seem that the problems associated with environmental-genotype interaction are not as thoroughly recognised as they should be. Further, in some contributions, and despite a most cogent warning by Thoday, there is a tendency to consider heritability estimates as having some absolute value, and the fact that these estimates relate solely to the precise genotypic and environmental variation which are sampled in a study, at times at least appears to have been overlooked. When one comes to consider the problem of inter-population variation, a topic which is dealt with in this volume by R. Guttman, mainly in methodological terms of so-called culture-free/culture-dependent behaviour tests, the difficulties become even greater. For many attributes, it would seem indeed that the situation is beyond analysis since socio-cultural inheritance and biological inheritance are interdependent and run in strict parallel. There is also much discussion in these contributions of the type of character human behaviourists should study for genetic purposes and some useful guide-lines are laid down. Unfortunately the situation seems to resolve itself into either choosing characters whose analysis may be tractable, but which from a social point of view are of little interest, or in taking culturally important characters whose analysis is beset with pitfalls.

The aforementioned papers represent the core of the volume, but the others are equally interesting and important. H. Kalmus provides a fascinating contribution on sense perception and behaviour which contains much unusual information such as, for instance, the high frequency of myopia among impressionist painters; and H. Papoušek reviews work on genetics and child development, much of which has been done in Czechoslovakia and other Eastern European countries and is not as well known in the West as it should be. There is also a quite excellent contribution on the relation of behavioural, genetic and neuroendocrine factors to thyroid function by D. A. Hamburg and D. T. Lunde and in the long term it seems likely that it will be at the physiological and biochemical levels that the most penetrating genetic analysis of human behavioural variation takes place.

Some evolutionary perspective to the theme is given in a contribution by G. Kurth on the implications of primate palaeontology for behaviour, and the interesting relationships between morphological variation and behaviour are considered by G. Lindzey. F. Keiter offers a somewhat unusual contribution entitled " Human Genetics and the Theme Pattern of Human Life ".

Whereas most of the contributions, as already indicated, deal with the genetics of behavioural variation, the contribution by J. N. Spuhler looks at the situation the other way around in considering the effects of behaviour on determining mating patterns in human poulations. This excellent study which itself breaks much new ground is of importance to anyone concerned with the investigation of inbreeding and assortative mating in human populations.

The book is concluded by a general appraisal of the symposium by E. W. Caspari which itself is the best review available for the book as a whole. Caspari himself is not pessimistic about the immediate future of genetic studies of human behaviour and rightly points to the developments of statistical techniques, particularly of multivariate analysis, which have greatly

increased the armoury of the behavioural geneticist. This reviewer is less confident about the rate of progress which will be made, but there can be no doubt that this valuable book, despite the limitations mentioned earlier, will help considerably in furthering research.

G. AINSWORTH HARRISON

Anthropology Laboratory Dept. of Human Anatomy
South Parks Rd., Oxford OXI3QX

BOOKS RECEIVED

GENIUS AND CREATIVE INTELLIGENCE. Nathaniel D. Mttron Hirsch. Philosophical Library. Pp. 339. $10.00. 1969.

SPECIFIC SURVIVAL—Abridgement by G. Pantel (15 pages) 1969. Published by The Triangle at 4s.

CYTOGENETICAL AND EMBRYOLOGICAL RESEARCH ON CROSSES BETWEEN *HORDEUM VULGARE* AND *H. BULBOSUM*. W. Lange. Centre of Agriculture Publishing and Documentation, Netherlands, 1969. Pp. 162. Dfl. 14,50.