

to record the history of this field, "Chromosomes and Cancer" is fundamentally forward-looking and the last section with its theme of synthesis between theory and clinical practice gives a clear indication of the direction of future developments for which this book will provide a valuable launching platform.

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**MOLECULAR VIROLOGY.** T. H. Pennington and D. A. Ritchie. Chapman and Hall, London, 1975. Pp 64+23 figures + tables. £1.30.

This title in the *Outline Studies in Biology* series covers the anatomy, intracellular activities and genetics of viruses from a strictly molecular standpoint. There is also a short final chapter on tumour virology. The chapters on the structure of viruses and the sequence of events following infection, from penetration to lysis, are concisely and authoritatively written. They make absorbing and informative reading. These two chapters include accounts of genome structure, genetic organisation of the genome and nucleic acid replication. The section on genetics concentrates on mutation, the mapping of viral genomes and recombination, but is not nearly so well presented. It does not consider, for instance, the contribution of studies on T4 bacteriophage to our understanding of the fine structure of the gene or the genetic code, except rather obliquely in passing. The problems of mapping are given more extensive coverage but the three quarters of a page on "*functional or complementation analysis*", while throwing in all the key words like *intergenic complementation*, *intragenic complementation* and *unity of function*, contains barely a word of explanation and will doubtless generate more confusion than clarification. The students' response to this book may well be to read it in the book shop and then put the money saved towards one of the several excellent text books listed in the "suggestions for further reading".

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**CYTOGENETICS OF MAN AND OTHER ANIMALS.** A. McDermott. Chapman and Hall, London, 1975. Pp. 64+60 text figures. £1.30.

This book is one of several in the *Outline Studies in Biology* series edited by J. A. Ashworth. The title is rather pretentious for a book of only 64 pages which, when the space for figures and the 254 references is set aside, reduces to a mere 31 pages of script. Even so the net has been cast really wide to catch undergraduates and graduates in genetics, biology and medicine as well as practising clinicians. The seven chapters of this "concise and comprehensive account of human and animal cytogenetics" provide "a foundation for self help in the achievement of successful examination results" embracing the mechanism of inheritance, advances in techniques, chromosome mutations, cytogenetics in medicine, heterochromatin and evolutionary aspects of chromosomes! Readers will need all the self-help they can get. In the semi-diagrammatic representation of mitosis the prophase chromosomes appear in an unreplicated form and attached to the nuclear membrane at their

centromeres and at both ends. The metaphase diagram shows a metacentric and a sub-metacentric. The nucleus was clearly haploid but this is not stated. There are some more bearable, albeit brief parts as in chapter 3 where we find an account of how the thymidine kinase locus in man was mapped using a combination of cell hybridisation, fluorescent banding and virus induced deletion techniques. In the section on chromosome abnormalities it is instructive to learn that "small ears with an angular, overhanging helix" is one of the afflictions characteristic of Down's Syndrome. In chapter 6 there is a new spelling for euchromatin—fuchromaten (!) and some speculations about the function of constitutive heterochromatin. In the last chapter there are some good photographs of karyotypes reminding us how close we still are to the chimpanzee.

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**RACIAL VARIATION IN MAN.** Institute of Biology Symposium No. 22. Edited by F. J. Ebling. Institute of Biology, London. Pp. 245+xx. £9.50.

This symposium, on one of the most controversial and sensitive of topics, could hardly fail to be interesting, though geneticists may find the interest rather unevenly spread and some of the articles difficult to get to grips with. For example, Edmund Leach, on "Cultural Components of the Concept of Race", makes a number of interesting and some provocative remarks, but it is difficult to catch his general drift, unless it is that race is a tricky thing to define. He does not, however, doubt that Swedes can be reliably distinguished from Africans. Again, A. E. Bottoms and P. Wiles, in their paper on "Race, Crime and Violence", appear to be saying, in effect, that criminality is not a good racial marker—a point with which few would disagree. Eric Sunderland gives a straightforward account of gene frequencies in different human populations, while Newton Morton writes most interestingly on inter-racial crosses. But for most readers there is no doubt that the centre of interest of this volume lies in the group of papers bearing on the "race-I.Q." controversy.

Newton Morton is not directly concerned with I.Q. but contributes the highly relevant point that the only way of investigating the genetic basis of group differences is to study hybrids. Other approaches are, he says, "at best heuristic and at worst fatal". This is the problem of Arthur Jensen, whose long and detailed paper is an attempt to rule out, or at least to make improbable, alternatives to a genetic basis for the mean I.Q. difference between blacks and whites in the U.S.A. Without significant data from crosses, he stresses failures to find evidence *against* the genetic hypothesis. For example, he fails to identify any environmental influences operating *within* groups which have effects as great as the observed mean difference *between* groups. Then he finds that the racial groups do not differ in the test items which they find most or least difficult, and he takes this as evidence against cultural background as the decisive factor. His case is persuasive, and one cannot help thinking that many respected and widely accepted hypotheses in less sensitive fields rest on evidence which is logically no tighter than that which Jensen offers. But the determined opponent of the genetic hypothesis is not absolutely compelled to accept any of it. And how