answering the above questions, in so far as it can be regarded as consisting of 8 inbred populations and all possible F1 crosses between these. The records available are extremely comprehensive and provide effective environmental control, thus compensating as far as possible for the lack of experimental randomization of error. Consequently, the population can be analysed as a dialled cross.

Great care has been taken in detailing the collection of the data and their reliability, and the general discussion pertinent to this results in an absorbing account of the history and sociological structure of Hawaii itself. The conclusions reached are: (1) First generation hybrids between races in man are intermediate in size, mortality, and morbidity between the parental groups. (2) At the present time, human populations do not represent co-adapted genetic combinations which are disrupted by outcrossing.

It is unfortunate, however, that the authors have not seen fit to describe in greater detail the statistical methods applied, and that many of the conclusions reached appear to be dominated by a personal controversy.

MICHAEL OAKES


The first Session of the Congress was devoted to the detection of the heterozygous (female) carrier of the mutant X chromosome; 11 communications were received. Daughters of affected males are of necessity carriers, but daughters of carriers have an even chance of being carriers or normal. The papers presented dealt with attempts to identify the latter class of carrier by demonstrating a significant reduction of the blood-clotting factor deficient in affected males. Some participants believed that this could now be done. Communications in other Sessions included papers on the mutation rate and on genetic counselling.

G. I. C. INGRAM


This volume is mainly a collection of reprints of papers by the senior author; 52 contributions are grouped into 10 sections, of which the more significant are those dealing with blood groups of non-human primates, medico-legal aspects of blood grouping, erythroblastosis foetalis, and blood groups and disease. There are also useful sections on studies of individual blood groups. One advantage of having these papers presented as a collection is that the volume carries a subject index.

ARNOLD SORSBY


This book, by the pioneers of French human cytogenetics, describes human chromosome anomalies as causes of maldevelopment and disease. The first fifth of the text is devoted to a brief historical introduction by Turpin, to the description of techniques, and to a discussion of the normal chromosome complement by Lejeune. The rest of the book consists in the main of two blocks, the autosomal anomalies (chapters 4–8, by Lejeune) and the sex chromosome errors (chapters 9, 12, and 14, by Turpin). There are two further general chapters (13 and 15). The authors attribute to the introduction of hypotonic treatment of cells a major role, on the technical side, in the development of chromosome studies. Theoretical consideration concerning the origin of Down's syndrome, and the results of studies of anomalies of sex development led to early chromosome studies of these conditions and to the discoveries of their chromosomal origin. Chapters 2 and 3 on techniques and the normal complement outline procedures of microscopy and of chromosome identification and classification. The subsequent two chapters with trisomy 21, both primary and interchange, with various biological parameters of Down's syndrome, and with the other two autosomal trisomies, of numbers 13 and 18, each chromosome being defined as that which causes the characteristic disorder. There follows a chapter on the syndromes with excessive or deficient chromosome material, one on autosomal interchanges and one on chromosome changes in leukaemia and cancer. Numerical sex chromosome anomalies are considered next under the two clinical headings of ovarian and testicular dysgenesis. In the former group are included triplo-X females, as well as the various syndromes with ovarian dysgenesis (Turner's syndrome, etc.). In the latter is discussed the syndrome of Klinefelter, including the chromatin-negative variety, and other related disorders with numerical sex chromosome changes. Structural anomalies of the X and Y chromosomes, and their clinical correlates and true and pseudo-hermaphroditism, are discussed in two chapters. A short chapter (by Turpin) is devoted to monozygotic twins discordant for autosomal or sex chromosome complements. The two final chapters consider the origin and general effects of the sex chromosome anomalies (Turpin) and the biochemical dysfunctions found in subjects with chromosome changes, particularly with trisomy 21. This chapter is by H. Jerome.

This book is clearly written, well produced, and the standard of the illustrations, mainly karyotypes, is very high. There are almost a hundred pages of references which cover the field fully to the end of 1963 and, of necessity, less completely for 1964. Since the book was completed, there have unavoidably been a few changes as new knowledge has accumulated, particularly on autoradiography, on chromosome changes in spontaneous abortion, and on sex chromosome anomalies, but these
do not detract from its great value. It is an authoritative, readable, and informative account of the anomalies of the human chromosome and of their clinical results.

P. E. Polani


This monograph, the second in a series on evolution by the Fischer Verlag, deals with evolutionary changes only in some comparative and theoretical sections. The text is mainly devoted to a clear and detailed description of the mitotic and male-meiotic structures of human and rodent (mouse, rat, hamster) chromosomes, and to the chromosomes of two insect species (Drosophila hydei and Locusta migratoria) and of a dioecious plant (Melandrium) —descriptions based mostly on the author's own studies and lavishly illustrated by his own photographs. As such it presents an excellent introduction into normal animal cytology, but it does not describe very fully the chromosomal aberrations of man.

An original feature of the book is a discussion in the last chapter on the role of chromosomal aberrations and of mutations and other related changes in anthropoid speciation. These are also speculations on the future chromosomal development of our species. These are illustrated by a series of hypothetical karyograms, showing a gradual reduction from the normal diploid number of 46 to 44, 42 and 40.

Separate bibliographies are arranged after the individual sections and there are additional references at the end of the book. There is no index, but there is a fairly detailed list of contents at the beginning of the book.

H. Kalmus


The contents of this book, which are papers read at the 23rd Symposium of the Society for the Study of Development and Growth, are not closely related to the title. The introductory chapter, which has the same title as the book, reviews the problems and is perhaps suitably speculative but even here most of the discussion is of basic molecular and cell metabolism mechanisms. Of the remaining chapters only that on genetic and functional mosaicism in the mouse, and that on genetic control and regulation of developmental pathways, are of a kind which the title of the book suggests.

The other chapters by distinguished authors are interesting and any elucidation of gene action and control of cellular differentiation in either the simplest or the most complex of organisms will lead to a better understanding of the developmental process. Further, the corpus of knowledge based on experimental findings in this field is so enormous that reviews by authorities are always welcome. There are, however, so many closely argued published papers of these types that no one can be expected to read and absorb them all. This volume was published in 1964 and the papers were presented earlier that year. In such circumstances the non-expert reader must wonder what is now out of date and what is still valid.

This is a well-produced and clearly illustrated book and all the subjects dealt with are well reviewed. These are, in addition to those already mentioned, structural patterns and the functional organization of chromosomes; chromosomal proteins (a most useful introduction); binding of actinomycin as a model for the complex-forming capacity of DNA; DNA replication sequences in higher animals; localized DNA synthesis in polytene chromosomes and its implications; chromosomal RNA and other nuclear RNA fractions; genetic repression of R action in maize; and macronuclear differentiation and subnuclear assortment in ciliates.

Clare Davison


This little book consists of a number of articles by various authors, each describing his or her own interest. The editor and author of an account of the green algae is Professor Maud Godward. The authors have been left to their own devices without interference from the editor, excepting, one assumes, a general directive as to form and content. The result is a description of the techniques used and observations made on the nuclear cytology of six of the major groups of algae. Four groups have been omitted for lack of extensive information about their chromosomes and one is only briefly mentioned. The layout of all the chapters follows a common pattern, so it is easy to make comparisons from one group to another, should one wish to do so. In every case the techniques have been described with great clarity so it should be possible for anyone wishing to do similar work to achieve comparable results. The main virtue of the book is the almost casual way in which the cytological virtuosity present in the algae is displayed. Some of the groups described are fairly humidum, and they offer nothing that cannot be seen better in angiosperms. One or two groups, however, have built a whole way of life on what might be described as an unusual cytology. The information given can only stimulate curiosity and a number of questions. For example, the meiotic problems posed by crossing-over in chromosomes with diffuse centromeres, the equational segregation at the first meiotic division in Spirogyra, the regulation of chromosome number and size in organisms where, because of diffused centromeres, chromosomes can fragment indefinitely and still segregate properly are all teasers. One must also mention the article by Dixon on the red algae. This is a scholarly treatment of a group of algae, which has apparently eluded or eluded the body of descriptive botanists and remained