REPLICATION AND RECOMBINATION OF GENETIC MATERIAL. Ed. W. J. Peacock and R. D. Brock. Australian Academy of Science, Canberra. 1968. Pp. 276. \$5.50.

At the end of August, 1967, an International Conference, sponsored by the Australian Academy of Science, was held in Canberra. Under the general heading of the "Replication and Recombination of Genetic Material", the topics included within the meeting extended over a wide area. The 24 chapters, contributed by some of the more well-known names in their fields, range from studies on replicating RNA molecules to a consideration of the biochemical and genetic autonomy of chloroplasts; from a discussion of differences in chromosome size between related plant species to a review of genetic recombination in fungi.

The volume begins with an impressive summary by Spiegelman of his work on the *in vitro* replication of viral RNA molecules. It ends with a useful review on the genetic control of recombination in *Drosophila* by Lindsley, Sandler, Nicoletti and Trippa. Catcheside summarises his findings with mutants affecting recombination in *Neurospora*, while Meselson reports on the demonstration of reciprocal recombination in prophage *lambda*. Thomas, Marc Rhoades and MacHattie discuss their findings on the molecular genetics of viral DNA, illustrated with clear electron micrographs of circular DNA molecules. Marcus Rhoades, in a consideration of the cytological basis of crossing-over, demonstrates an unambiguous correlation between the completeness or efficiency of chromosome pairing and recombination frequency in maize.

In common with the proceedings of other International Conferences of this type, the quality and length of the papers contributed is variable, but the emphasis is on being concise and informative. Some include new information, unpublished elsewhere; others concentrate on summarising or reviewing previously published information. It is to be expected that some of the findings included in such rapidly advancing fields will now be supplemented or out-dated. But all geneticists interested in these topics will wish to consult this book and all can expect to find something of interest for the effort.

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AN INTRODUCTION TO HORMONE SYSTEMS

HORMONES, CELLS AND ORGANISMS. P. C. and A. G. Clegg. Heinemann, London. 1969. Pp. 214. 35s.

This book provides a clear and well-thought-out introduction to many of the questions which currently interest endocrinologists. The way that hormones act, and the way that they are controlled, are illustrated with examples from a number of homeostatic systems. The hormonal systems regulating the metabolism of glucose, the metabolism of electrolytes, and that of water are considered in detail. The book also gives a clear description of the roles of hormones in the integration of digestive processes, in reproduction, and in the response of mammals to stress. Throughout the book the importance of understanding the mechanisms of action of hormones is emphasised. The current theories, including the one which states that hormones act on the

genetic material, are carefully discussed. The book is completed with a well-chosen bibliography and a short index.

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SELECTED TOPICS IN MEDICAL GENETICS. Ed. Cyril A. Clarke. Oxford Monographs on Medical Genetics, Oxford University Press. 1960. 80s.

All the contributors to this volume in the Oxford Series of Monographs on Medical Genetics are or have been members of the Liverpool University Medical School. The topics chosen are those of special interest to this Department of Medicine. In an introductory chapter Clarke discusses some of the pitfalls in medical genetics: biased ascertainment, giving erroneous segregation ratios and an appearance of anticipation; heterogeneity of apparently similar clinical entities; phenocopies; the difficulty of choosing proper controls; environmental causes of familial aggregation. Clarke also writes on polymorphism, a topic of special interest to the Liverpool School through the influence of Sheppard; he goes thoroughly into the difficult and inconclusive evidence on the mechanisms which maintain the blood type polymorphisms.

Another topic of special interest is pharmacogenetics, especially drug-detected polymorphisms, admirably described by Price Evans. He distinguishes between the polymorphisms of drug metabolism depending on specific enzymes concerned in the transformation of the drug, such as suxametonium sensitivity and slow and rapid inactivation of isoniazid, and polymorphisms of the effect of drugs on biochemical or physiological mechanisms, for example the effect of primaquine on glucose degeneration in red cells. Disorders of protein synthesis are discussed by Weatherall who has a special interest in the thalassaemias. It is interesting to see how the haemoglobinopathies are not only providing in man confirmation of the genetic code, but that understanding is also developing of the specific aminoacid changes to the stability of the haemoglobin molecule. The clinical manifestation of compound heterozygotes of the genes for β haemoglobinopathies with β thalassaemias are elegantly predictable. Homozygosity for α thalassaemias is now known to be a common cause of intrauterine death in south-east Asia.

Immunogenetics and the immunity deficiency syndromes are comprehensively discussed by Harris and Woodrow. It is interesting to see in an article written so recently that there is still some puzzlement as to why sibs of the patient are more often successful donors of kidneys than are their parents. In this field of immunogenetics, the practical solution of the problem of haemolytic disease of the new born is a remarkable achievement of the Liverpool School. In the series now reported, only 1 mother in 240 developed antibodies in a second pregnancy after protection by anti-D after the first pregnancy, where 30 would have been expected to do so.

There are shorter sections on several fields where progress has been made, such as the XYY syndrome, chromosomes in relation to abortion and porphyrias. The book provides an admirable refresher course on recent developments.

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