The papers are grouped under the following general headings: replication of nucleic acids (including work on DNA and RNA polymerases); intermediates in DNA synthesis (with much on the significance of ligase action); repair of DNA; genetics of replication; structure of replicating DNA (with the concept that DNA can be circular as well as linear); origins of replication; bacterial mating; replication and the cell membrane; replication of temperate viruses and its regulation. The volume is rounded off by a summary by Hotchkiss on 'Metabolism and growth of gene substance: 1968'; this should be widely read. He points out that *x*-ray analysis is valuable for the structure of DNA in all its forms, but is less helpful for understanding the protein of the essential DNA-protein complexes because of the readiness with which the protein molecule 'breathes, unfolds and changes in water . . .'. His survey highlights the importance of polynucleotide ligases in joining breaks in single strands of DNA, and how they interact with the polymerases; he also emphasizes differences between what is observed in the test-tube and what occurs in life. Indeed, it is sobering for an old-fashioned geneticist to see how much 'genetics' is based on bacteria, viruses, and bacteriophage, which, in the old sense, had no 'honest' chromosomes until the new Genetics redefined the gene. Now, with such volumes as this, we know a great deal about 'the gene' (new currency); I wonder whether we know much more than we did about the 'old gene', which sat on a chromosome in a mammalian or plant cell, and showed position effect and true recombination?

J. CHAYEN

Progress in Medical Genetics. Volume VI. Edited by Arthur Steinberg and Alexander G. Bearn. (Pp. viii + 288; figures + tables. 150s) London: William Heinemann Medical Books. 1969.

As authoritative up-to-date reviews of various aspects of medical genetics, this series has now become well established, and the present volume maintains a high standard of scholarship.

D. H. Carr reviews the present state of chromosomal abnormalities in clinical medicine. Clearly such a review, in the space allowed, could not be exhaustive and the author has therefore concentrated on the most significant contributions. Carr has been responsible for much of the work on chromosome abnormalities in spontaneous abortions and this subject is dealt with in some depth. As the author points out, in view of the high abortion rate of chromosomally abnormal zygotes before the 16th week of gestation, it is perhaps questionable whether or not amniocentesis for the purposes of antenatal diagnosis should be attempted sooner than this. Carr also discusses the recent interesting observation that certain types of chromosomal abnormality (polyploidy and XO) are particularly frequent among abortions of women who become pregnant shortly after discontinuing oral contraception.

The review of the genetics of the gastro-intestinal system by R. B. McConnell clearly illustrates that simple Mendelian principles cannot explain the familial incidences of many of these disorders. The association between gastro-intestinal pathology and the blood groups is reviewed in detail, and what is so far known about genetic factors in Hirschsprung's disease, Crohn's disease, ulcerative colitis, and the various types of polyposis is also discussed. In contrast to the gastro-intestinal disorders, the biochemical mechanisms underlying many of the hereditary disorders of the thyroid gland have now been identified. However, in G. R. Fraser's review of this subject it is clear that there are still many unsolved problems. The pathogenesis of the majority of thyroid abnormalities is extremely complex involving both genetic and enviromental factors, and there is so far no satisfactory explanation for the fact that all forms of thyroid disease are more frequent or more severe in females than in males.

Immune mechanisms directed either to one's own antigens or to foreign antigens are reviewed, respectively, by P. J. Fialkow (genetic aspects of autoimmunity) and F. H. Bach (genetic and practical considerations of histocompatibility in man). Both these chapters are thought provoking. On the one hand Fialkow discusses the increased frequency of tissue-specific antibodies in affected individuals and their relatives with various so-called autoimmune diseases (perhaps a better term would be 'autosensitive'). Bach considers possible genetic interpretations for the results of leucocyte typing studies in families.

Jacob and Monod in 1961 proposed a theory, based on their work on bacteria, which emphasized the importance of regulatory genes in controlling gene activity. J. C. Dreyfus considers in detail the application of these ideas to human genetics, and concludes that the vast majority of hereditary biochemical disorders in man are due to mutations of *structural* genes. Dreyfus found only two diseases which might be attributed to control gene mutations: the erythrocytic porphyrias which might be due to a regulator negative mutation, and von Willebrand's disease which might be due to a super-repressor type mutation.

In a final chapter, E. Eggermont reviews the genetics of intestinal carbohydrate intolerance. Sucrose intolerance with a deficiency of sucrase as well as isomaltase, maltase, and γ-amylase is perhaps comparable to oroticaciduria in which there is a deficiency of orotidylic acid pyrophosphorylase, and decarboxylase. Both these disorders might be interpreted as being due to operon mutations and this is discussed by J. C. Dreyfus.

This book can be unreservedly recommended to anyone interested in medical genetics.

A. E. H. EMERY

The Chromosome Disorders. An Introduction for Clinicians. 2nd ed. By G. H. Valentine. (Pp. xiv + 172; 86 figures. 35s.) London: William Heinemann Medical Books. 1969.

This is the second edition of that highly readable little book on human cytogenetics aimed at the clinician and