

**Diseases of the Fundus Oculi.** By Arnold Sorsby. (Pp. viii + 221; illustrated. £15·00.) London: Butterworth. 1976.

Ever since the ophthalmoscope was introduced in 1850, the appearance of the fundus oculi has fascinated not only ophthalmologists, but also physicians and surgeons. Numerous textbooks and atlases have been published in the 125 years that have elapsed since Helmholtz first examined the fundus in a living subject, and this recent publication is an interesting addition to the already large literature on the subject. At a time when fluorescein angiography dominates the examination of the fundus, a book that hardly mentions this valuable technique is certainly unusual, and indicates the particular interests of the author, a pioneer in the subject of ophthalmic genetics, and an acknowledged authority on medical ophthalmology.

In this book the author describes the fundus appearances in many developmental anomalies and acquired affections, as well as in conditions primarily involving the optic nerve. It is inevitable that the reviewer should study carefully the section on developmental anomalies, an area in which the author has made significant contributions. There is an enormous amount of information in the 100 pages of this section, much of which has been previously published, but now collected together under one cover. This is not a section for the novice, for much of it demonstrates the idiosyncracies of the author and requires background knowledge in order to separate current thought from the author's views. Several examples of this will be given. The use of the term 'retinal aplasia' is confusing, being applied both to a condition (or group of conditions) where babies are born blind with ophthalmoscopically normal fundi, and who eventually develop changes of typical or atypical retinitis pigmentosa (R.P.), and also to a heterogeneous group of systemic abnormalities associated with 'atypical R.P.'. The section on 'congenital total detachment' is confused, lumping together conditions that are known to be different, such as Norrie's disease (the widely accepted name, despite what Sorsby says), Reese's retinal dysplasia, and Coats' disease. The section on R.P. is out of date and takes no account of work that has been published over the past few years. The emphasis on the importance of the tapetal reflex in heterozygous females with X-linked R.P. is unfortunate; this is an unhelpful sign of the heterozygous state. Doyne's choroiditis is an interesting historical name, but dominant drusen is the better term. The classification of the mucopolysaccharidoses is several years out of date. The emphasis on the difference between recessive

and intermediate X-linked inheritance is probably not now justified.

These, and other aspects of the book, would have been acceptable in a book published 10 or 15 years ago, but not today. This remains, however, an interesting book, highlighting the particular interests of the author who has done so much to develop the subject of ophthalmic genetics.

BARRIE JAY

**Control of Gene Expression.** By N. Maclean. (Pp. xi + 288; 21 figures + 6 tables. £7·80; \$19.75.) London, New York, San Francisco: Academic Press. 1976.

Although there is some information about how the control of gene expression is accomplished in prokaryotic systems, very little is known about this process in higher organisms. The problem of genetic control mechanisms has a direct application to medical genetics because it seems likely that many inherited disorders result from mutations of genes involved in regulation of protein synthesis. The only clues that we have regarding gene regulation in man and higher organisms are fragmentary and, as the author of this book points out, are derived from so many different fields that it is hard for the worker in any particular area to keep abreast with the total output of knowledge in this important subject. As an approach to this problem Dr Maclean has attempted to review the experimental systems currently being used to investigate gene regulation in a very wide field of disciplines. Clearly this is no mean task.

The first chapter deals with the possible mechanisms of gene expression at various levels of differentiation from transcription through to translation and the final assembly of proteins within cells. There follows a brief account of the control of gene expression in prokaryotes and then a more detailed section dealing with different experimental systems involving single proteins which are being used to study gene action in higher organisms. The latter include the immunoglobulins, lactic dehydrogenase, haemoglobin, lens crystallins, milk proteins, and so on. The next section deals with the control of more complex systems such as yeast and muscle and then describes some of the lessons which have been learned from the recently-developed techniques of nuclear transplantation and microinjection. Further sections deal with some problems of embryology, and control models in various protozoa, hydra, and *Drosophila*. These are followed by a general account of the involvement of different forms of RNA in gene expression. There is a final section on chromo-

some structure, chromatin, and the hormonal control of gene expression.

Dr Maclean writes with enthusiasm and has arranged his material in a style which is easy to read. He explains difficult concepts clearly and because he tabulates a lot of his material and summarizes difficult areas well the book is particularly easy to read. It might, therefore, have considerable appeal to students and research graduates entering this difficult field. This must depend, of course, on how well the author has managed to synthesize and balance the information from the wide area that he has attempted to cover, and when examined in this light this reviewer has certain reservations.

It is perhaps invidious to examine in detail any particular section of a book that covers such a broad field but since the author says that he has dealt with haemoglobin in some detail as it is his particular area of interest, perhaps it would be fair to look at this topic more closely. Unfortunately there are many faults with this section both in emphasis and fact. The account of the control of haemoglobin synthesis and erythroid differentiation is rather disjointed and the references cited are often out of date and seem to have been selected on rather an *ad hoc* basis. Much of the exciting information about the organization of the human haemoglobin genes and about the structure and function of human messenger RNA is not dealt with at all. Most of what is known about the control of human haemoglobin production has come from the study of abnormal haemoglobin synthesis and this is not mentioned. Furthermore, on page 74 it says that the genes for human  $\beta$  and  $\alpha$  chains are closely linked when it has been known for many years that these genes must be at some considerable distance apart and are probably on separate chromosomes. On page 59 we read that substantial production of fetal haemoglobin may be induced in adult life by sudden anaemia or 'even by pregnancy'. On page 70 it says that  $\beta$  globin is only released from polysomes in the presence of  $\alpha$  globin; there is, of course, abundant evidence that this is not the case. On page 88 a 1963 paper is quoted as presenting evidence for linkage between the human  $\beta$  and  $\gamma$  chain genes. In fact the paper dealt with the problem of  $\beta$ - $\delta$  linkage. The  $\beta$ - $\gamma$  linkage was not established until Huisman's work 10 years later. These uncritical or incorrect statements tend to produce an unbalanced account of the subject and so reduce its value to the reader coming to the area for the first time. Similarly, the section on erythropoietin is rather out of date and the fascinating relation of other hormones to erythropoiesis are not discussed at all. A similar lack of balance and unevenness of approach and bibliography is found in the account of immunoglobulins.

As mentioned already it is clear that Dr Maclean has set himself a very ambitious task and it is not surprising, therefore, that he has not succeeded completely. He certainly has produced a lively and readable account of a very difficult field. His book may be a 'way in' for a newcomer to the field to a more detailed and critical evaluation of some of the areas that it covers. However, because of its errors and unevenness of emphasis, the book cannot be recommended as an alternative to the many published reviews which deal with each of its component parts in a way which is better balanced and more critical.

D. J. WEATHERALL

**Genetics and the Law.** Edited by A. Milunsky and G. J. Annas. (Pp. xii + 483; tables. \$27.00.) New York and London: Plenum Press. 1976.

If one's only contact with the law has been an occasional parking or driving offence and perhaps the tortuosities of property conveyancing, then the legal problems raised by recent developments in genetics are likely to present a demanding mental exercise. Such problems are the subject of this monograph which represents the Proceedings of a National Symposium on Genetics and the Law held in Boston in 1975. Consideration is given to the legal problems associated with antenatal diagnosis and the rights of the fetus, genetic counselling and screening, artificial insemination, paternity testing and the implications of fetal research, *in vitro* fertilization, and cloning. Some fascinating discussions centre around the XYY karyotype (which now appears not to be an acceptable criminal defence), the tort of wrongful (fetal) life (which thankfully has so far rarely been sustained), malpractice either as a result of an error or omission in genetic counselling or antenatal diagnosis, the legal status of the non-medical genetic counsellor, and the legal morass of AID. An interesting incidental point is Seymour Lederberg's suggestion that screening of the dead might help throw more light on the differential mortality of the XYY.

This is an eminently readable book with a good bibliography and index.

The emphasis throughout is on American law which probably differs in detail from British law. There are also a number of significant differences between different States. Nevertheless the problems are well discussed and certain chapters might form a useful basis for tutorials with students of medical genetics. However, because of the cost and because it is slanted so much to the American experience, apart from those with a professional interest in law, it may have a limited appeal.

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