REVIEWS

THE PATH TO THE DOUBLE HELIX. Robert Olby. Macmillan. Pp. 510. £12.50.

Scientific discoveries of major importance are always interesting to discuss retrospectively. The discovery of the molecular structure of DNA must rank as one of the greatest, if not the greatest discovery in biology of all time. Dr Olby's detailed and scholarly account of the events leading to the elucidation of the structure proposed by Crick and Watson is fascinating and highly informative. It must surely stand as the authoritative account of the principal happenings and influences in the drama and is in no way merely supplementary to or detracted from by earlier accounts by Watson himself (enjoyable) and later writing by others (not so enjoyable).

Inevitably, much of the fascination derives from the glimpses of the key personalities concerned. Thus the rapidly accelerating sequence of post-war happenings such as Astbury's failure and Randall's success in attempting to convince the Medical Research Council of the wisdom, albeit courageous, of embarking on studies of complex biological substances by physical methods, and the competitive but productive interaction between Watson and Crick in Cambridge and the King's College, London, people, principally Wilkins and Franklin, are all brought to life by Dr Olby's inclusion of first-hand accounts from writing or interview of the people concerned. One great and unavoidable omission is, of course, that of Rosalind Franklin's own account, because she died prematurely while still young and immensely contributory. Wilkins' working relationship with Franklin was a source of much concern for them both. As witnessed by the present writer, they were unable to collaborate, initially due to misunderstanding and latterly due to professional incompatibility. Some absent observers have, in the writer's view, criticised Wilkins' role in this affair too harshly and it is thus highly satisfactory that Dr Olby's account is objective and analytical. One is left with the feeling that progress in the analysis of the X-ray data on DNA would have been the more rapid had this clash of professionalities not occurred. But the key question is whether Watson and Crick could have arrived at the proposed structure if the King's work had not been in progress. The various ramifications in the saga, both technical and personal, are in my view thoroughly well explored by Olby who provides the best available answer to this question.

Quite apart from its central theme, the book contains a wealth of technical information and very many absorbing accounts of current scientific and non-scientific influences at particular phases of the developing scene. Although the technical aspects are leavened with anecdotal, though always pertinent, information, this book is not to be confused with other biased and often fragmentary accounts of the last phases of the period being considered. It begins with the considerations which led to the acceptance that molecules could be large and stable, and the development of ultra-centrifugal and crystallographic methods for their analysis. It shows how conceptual progress in the understanding of macromolecules was slow until at least 1944. At this time Schrodinger's book "What is Life" was published which clashed with Delbrück's view that (the genetic substance) "pre-supposed the availability of a practically infinite number of molecules of

the same kind and infinite stability". The controversy thus highlighted continued to influence people with physicist's credentials into the late 1940's. But soon there developed an initially uneasy relationship between the physicist, physical chemists and the biologists whose problems they sought to explain in physical and chemical terms. The author deals expertly with the findings of cytochemists on chromosomes and those of biochemists and microbial geneticists on the discovery of "transforming principle" and other important events in a manner which belies his own background as a physicist. I doubt if any of the people directly involved could have written such a contributory and impressive book on such a wide-ranging field. Dr Olby has achieved stature as a scientific historian which few will equal. Sadly, also, I believe that better subjects for his expert analysis are unlikely to occur.

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THE HANDLING OF CHROMOSOMES. C. D. Darlington and L. F. La Cour. 6th Edition Allen and Unwin, London. Pp. 201+31 plate figs. £6.00.

Most books on techniques in science read like telephone directories. This one, in contrast, is eminently readable. The mass of facts on the sources of plant and animal material, on equipment, fixation, staining schedules, photography and autoradiography is expertly organised, with the aid of many very helpful tables. The plate photographs include many which are familiar from earlier editions and some which are new. They comprise some of the best examples of different techniques applied to a wide variety of chromosome complements. They are, in themselves, a pleasure to contemplate although my impression is that the reproduction does not quite match that of earlier editions.

The publishing of a sixth edition is proof enough of the high quality of this work. It embodies up to date information about new methods, including chromosome "banding" by fluorescence or by giemsa staining and the differential staining of sister chromatids. To my mind it is the best book on the subject and an indispensable item within any cytology laboratory.

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THE DEMOGRAPHIC EVOLUTION OF HUMAN POPULATIONS. Edited by R. H. Ward and K. M. Smouse. Academic Press, New York, London, San Francisco, 1976. Pp. 158 (incl. index)+xii. £4.80, \$12.25.

This volume presents a variety of recent contributions to human genetic demography. They span the history of the species, ranging from the modelling of prehistoric population structure to the genetic implications of present-day demographic change, investigations as problematical as they are fascinating.

The editors' introductory paper integrates the topics covered, starting from the inescapable premise that adequate understanding of genetic change in human populations requires knowledge of their demographic structure.