

## DEVELOPMENTS IN ASTRONOMY

## A Concise History of Astronomy

By Peter Doig. Pp. xi+320. (London: Chapman and Hall, Ltd., 1950.) 21s. net.

THE writer of a concise history of astronomy is often confronted by the difficulty of deciding on the amount of space that should be devoted to various developments in the subject. Maintaining a true sense of proportions is not always easy, and an author is often open to the accusation that he has bestowed too much attention to some minor developments while other branches have been dismissed with scant consideration. Very few readers can make this charge against Mr. Peter Doig's book—the first of its kind which has appeared in Great Britain for forty years, though, by a remarkable coincidence, Abetti's "Storia dell'Astronomia", recently published in Italy, runs on parallel lines to the work under consideration.

The first four chapters are devoted to the astronomy of the Chinese, Egyptians, Babylonians, Indians, Greeks, Mohammedans and Tartars; and, as these chapters cover less than one-sixth of the whole book, sufficient space is left to deal with modern developments which, to most readers, are the matters of primary importance. The volume is much more than a history of the lives of those who have made outstanding contributions to astronomy, though this part has not been neglected; it provides also a history of the development of ideas, theories and instrumental equipment, and it is certain that the author's hope, expressed in the preface, that it will be "a handy reference book useful to students as a record of the main events and of the chief work of individual astronomers", will be fulfilled. A bibliography of useful books and various astronomical periodicals, at the end of the chapters and on pp. 310–11, and also an index, enhance the value of the work. In connexion with the index, one wonders whether it would not have been better to have divided it into names and subjects; the former occupy by far the greater portion of the index and are very comprehensive (but why has Lyttleton's name been overlooked, though mentioned on p. 254?), but in some cases references to certain subjects have been omitted. As an example, although "Stellar Populations" and "Distribution of Galaxies in Space" appear as headings on p. 306, there is no reference to them in the index.

It is practically certain that a second edition will appear, and if so the following suggestions might be worth noticing. Readers might be led to believe from reading p. 134 that the sole responsibility for Leverrier's credit to priority in predicting the place of Neptune devolved on Airy; but, as the Astronomer Royal pointed out a few years ago<sup>1</sup>, the fault was largely due to Adams, who failed to reply to a letter from Airy, an omission for which he apologized in later years. On p. 246 the diameter of Pluto is given as about the same as that of the earth, but Kuiper's measurement a year ago showed that it is less than half that of the earth. The announcement was, however, probably too late to be included in the book. On p. 251 no reference is made to the work of Lovell and his colleagues on meteor velocities. Lovell has stated that "at present the radio measurements strengthen the case of those who believe that all meteors—sporadic or in showers—are members of the solar system".

This supports the view of Porter on the elliptical motion of meteors.

All these, however, are very trivial matters and do not detract from the value of the book, which has obviously been compiled with considerable care.

M. DAVIDSON

<sup>1</sup> "John Couch Adams and the Discovery of Neptune" (Cambridge University Press, 1947).

## DESIGN OF ELECTRICAL INDUCTORS

## The Theory and Design of Inductance Coils

By Dr. V. G. Welsby. Pp. 180. (London: Macdonald and Co. (Publishers), Ltd., 1950.) 18s. net.

DR. V. G. WELSBY'S book presents features of the subject which although well represented in scientific papers have, so far, found little place in British text-books. His aim is to develop the basic design principles of inductors, with and without ferromagnetic cores, and to cover the whole frequency range from power to radio frequencies. There are, therefore, three main divisions of the subject, namely, air-cored coils, coils with laminated iron cores and coils with dust cores. Two chapters deal with the basic theoretical considerations—the equivalent circuits of inductance coils, the effects of self-capacitance, and skin and proximity effects. Ferromagnetic phenomena, magnetic circuit concepts and their limitations, and mathematical analysis applied to hysteresis and eddy-current effects constitute the contents of another chapter, and a further chapter is devoted to harmonic distortion in iron-cored coils.

The telecommunications engineer expresses the 'goodness' of a coil in terms of its 'Q factor', that is, the ratio of its reactance to its resistance, and it is on this basis that the analysis of coil performance and the theory of coil design are developed. A method of graphical analysis devised by Dr. Welsby for use in coil design is the subject of one chapter.

It might be thought that a book of less than two hundred pages attempting to deal with a subject of such wide scope must necessarily be superficial, and to a certain extent this criticism could be sustained; but the author has achieved a remarkably successful compromise by restricting his attention to the ranges of parameters which are of practical importance and by specifying the ranges within which formulæ and approximations are valid. He has collected and presented in a systematic fashion the essential basic matter of a very large part of the available information on inductor design. In my opinion one chapter of the book, that on impedance measurement, might preferably have been omitted and the space utilized to accommodate material more directly related to the design problem. For example, the important topic of spiral cores and the characteristics of joints in laminated cores might have received attention. Again, in a book of this type in which it is possible to deal only with salient features and in which simplifying assumptions and approximations abound, a much more extensive bibliography would have been appropriate.

This book is a useful work of reference for the designer of inductors whether he be concerned with telecommunications or with the 'lighter' branches of power engineering.

J. GREIG