
REVIEWS

The Birth and Death of the Sun. By George Gamow. (Macmillan and Co., Ltd., London), 1941. Pp. xiv + 232. Price 12sh. 6d. net.

Of the various problems of modern astronomy, the one concerning stellar structure is perhaps the most interesting from the point of view of the scientific minded layman. The subject itself is but of recent development. Although the problem has attracted the attention of philosophers from the earliest times, the prevalent ideas about the internal constitution and the evolution of stars were for a long time mostly speculative, and even in the beginning of the nineteenth century, it is said, Herschel imagined the sun to be a hot globe of vast dimensions with possibly a cool interior core that may be habitable. The fundamental researches of Lane, Kelvin, Ritter, Emden and Schwarzschild, to mention the names of only a few of the pioneers, laid the foundation for many of the subsequent investigations on the mechanism by which the sun's light and heat are maintained; and it is to be noted that the recent progress in nuclear physics has to a large extent, contributed to the important advances made during the last two decades.

In the present book with the attractive title "The Birth and Death of the Sun", Prof. Gamow has given a clear exposition of the present knowledge of the problem of 'Stars in action' in a manner suitable to the general reader who takes an intelligent interest in current scientific thought. The book is authoritative and written in a fascinating style; and the treatment is none too technical. Mathematical formulæ are avoided and all important results are explained in simple non-technical language. The illustrations are excellent and the diagrams—many of them drawn by the author in his inimitable style—clearly illustrate the argument and add much to the interest of the work.

The book opens with a chapter on the 'Sun and its Energy', in which, after some

preliminary explanation, we have a discussion of the problem of the age of the sun, and the source of the tremendously large output of energy radiating from it. Chapters II–IV deal with a variety of topics in physics, required for an understanding of the latter parts of the book, and contain an account of such subjects as the structure of the atom, the problem of the atomic nucleus, radio activity, the transmutation of elements and the liberation of sub-atomic energy. The application of the results of these discoveries to investigations of energy generation in the sun is treated in the next chapter, where we find a description of Bethe's work on the cyclic chain of nuclear reactions. Chapter VI contains a brief survey of some of the principal facts of astrophysics—the theory of giant and dwarf stars first formulated by Russell, and the Mass-Luminosity relation discovered by Eddington. The abnormal stars—the red giants and the white dwarfs—are considered in the next two chapters and an attempt has been made to deduce the life-history of the sun—its initial and final stages by considerations of analogy with these classes of objects. It will be of interest to readers in India to note the references made to the important contributions of Chandrasekhar and Kothari to the study of the collapsed state of stellar bodies. The characteristics of novæ and supernovæ are dealt with in Chapter IX and the last three chapters contain brief discussions of a number of cosmological topics—the formation of stars and planets, the galactic system, its structure and rotation, the extra galactic nebulæ and their enormous velocities of recession. The book concludes with a short resume of the current ideas of stellar evolution in the light of the facts that have become available from recent researches.

There is an atmosphere of pleasant humour throughout the exposition which makes even the difficult parts of the book delightful reading, and, here and there short anecdotes are related which add to the interest. The book will, no doubt, have a