only as possible hypotheses. The initiate is, however, not seriously misled, being shown a balanced picture with a spice of the more spectacular phenomena.

A selected reading list is given of some two hundred references from a wide variety of sources largely of a popular or semi-popular nature. This list is not classified, there is no reference to it in the text, nor is there any indication of which part of each reference is thought to be apposite. To pursue every reference would take even the most assiduous reader quite some time, an unduly heavy task to develop from an easily read book which itself supplies good light relaxation. B. R. LEATON

Man's Conquest of the Stars

By Pierre Rousseau. Pp. 356. (London : Jarrolds, Publishers (London), Ltd., 1959.) 25s. net.

IN this book the author has attempted to show how the development of astronomical science has influenced, and been influenced by, human methods of thought. When primitive man first turned to agriculture he needed the stars to forecast the changes of the seasons. The sophisticated thinkers of the Greeks attempted to encase astronomy in their different philosophies—whether the perfect circles of Plato or the divine harmony of Pythagoras. When Europe was submerged by the Dark Ages, the Arabs maintained the study of astronomy, chiefly to ensure that the Moslem hours of prayer were accurately fixed. When the Renaissance dawned, the new discoveries of astronomy helped to break the chains that fettered human thought. In succeeding centuries the great explorations stimulated the study of navigation, and the industrial revolution made possible the construction of instruments of greater power and accuracy.

This history is fully developed in M. Rousseau's book ; but the most powerful part is his discussion of the contribution of the seventeenth-century scientist-philosophers Descartes, Newton, and their contemporaries. They invented methods which led directly to the 'scientific method' as we understand it to-day. The author assesses the stature of each new school of astronomy by the closeness with which it adheres to this method.

It should not be thought from the above remarks that this is a closely reasoned philosophical treatment —the style is racy and frequently enlivened by anecdotes. However, this style is virtually irreconcilable with spherical astronomy, which is made unnecessarily obscure in comparison with the rest of the book. D. H. P. JONES

Astronomy

A Textbook for University and College Students. By Dr. Robert H. Baker. Seventh edition. Pp. viii + 547. (Princeton, N.J. : D. Van Nostrand Company, Inc. ; London : D. Van Nostrand Company, Ltd., 1959.) 52s. 6d.

THIS work is an excellent descriptive handbook of modern astronomy and astrophysics. It is the seventh edition of a book originally published in 1930, but has been completely rewritten and embraces all new developments up to 1958. However, it is not encyclopædic in approach ; the author has been at pains to describe the context as well as the content of each section so that the subject appears as an organic whole. Thus radio-astronomy appears not as a self-contained unit but as the means for demonstrating the spiral nature of our galaxy, the size of which is known from optical means. The photo-electric measurement of the apparent brightnesses of stars is shown to lend a greater precision to the cosmic distance scale. Earth satellites had not made much direct contribution to astronomy at the time of publication, and they receive a correspondingly small mention.

All this information is conveyed in a lively and lucid style and there are plenty of really good photographs. Line diagrams are often used to illustrate more obscure points. In the preface the author states that no special knowledge of mathematics or physics is required ; this rather vitiates its value as a university text-book. However, it would make a good reference to the descriptive part of a general course in astronomy as well as being an intelligible introduction for the layman. D. H. P. JONES

The Sun and Its Influence

An Introduction to the Study of Solar-Terrestrial Relations. By Prof. M. A. Ellison. Second edition (revised). Pp. xiv + 237 + 9 plates. (London : Routledge and Kegan Paul, Ltd., 1959.) 25s. net.

THE second edition of Prof. Ellison's book is the same as the first except for a few corrections and an added description of the solar cosmic ray event of February 23, 1956. The book is an authoritative factual description of solar activity and its terrestrial effects. It is written for the general reader, but provides a stimulating narrative for students or workers interested in any of the phenomena operating between the Sun and the Earth. The solar problems studied are the solar atmosphere, solar radiation, radio emission and various aspects of the solar cycle. Special attention is given to solar flares. The main terrestrial effects are to be found in the ionosphere, the Earth's magnetism, and auroræ.

C. W. ALLEN

A Concrete Approach to Abstract Algebra

By Prof. W. W. Sawyer. Pp. v + 233. (San Francisco : W. H. Freeman and Co. ; London : Bailey Bros. and Swinfen, Ltd., 1959.) 1.25 dollars ; 10s. 6d. (paperbound).

IN abstract algebra, the novice is sometimes perplexed by the contrast between the almost ludicrous simplicity of the techniques and the profundity of the concepts, and may accept the logic of a modern text without acquiring any real grasp of the subject. To help him, Prof. Sawyer begins with a simple concrete model : a child with no arithmetic and no English, placed in an English schoolroom, might soon learn to associate the responses "four" and "six" with the teacher's demands, "Two and two make . . .", "Two times three is . . . ", and thus arrive at formal addition and multiplication tables without having any knowledge of the specific character of the elements to which these tables apply. By insistence on such concrete models, the author is able to emphasize the structure of an algebra, to deal with such topics as finite arithmetics, extensions of fields, and vector spaces, without inducing a feeling of unreality. A final good chapter shows how these notions can be applied to the familiar old problem of the trisection of an angle. Prof. Sawyer writes clearly and entertainingly : there are many non-mathematicians who want to know what modern mathematics is doing, and they will find this book helpful, though some references for further reading might well have been supplied.