

Lines of the Chemical Elements in Astronomical Spectra

By Paul W. Merrill. (Papers of the Mount Wilson Observatory, Vol. 9.) Pp. vii+167. (Washington, D.C.: Carnegie Institution of Washington, 1956.) Cloth, 2 dollars; Paper, 1.60 dollars.

THE basic data of astronomical spectroscopy lie in the millions of objective-prism spectra and the hundreds of thousands of slit spectra that have been recorded on photographic plates in the past three-quarters of a century. Only a small part of this information has ever been extracted, let alone published; nevertheless, the amount that has appeared is so great that the task of locating a specific item is a formidable one, even for astro-physicists. For workers in related fields, unfamiliar with the literature, it may appear well-nigh impossible. Excellent summaries exist in the form of wave-length tables, photographic atlases, multiplet tables and collections of photometric tracings, but there is room for plenty more. This compilation breaks new ground by providing, element by element, summarized information about the occurrence of various atoms, ions and molecules in cosmic sources. The arrangement is in order of atomic number, and the information relates only to the occurrence and behaviour of lines and bands and to quantities derived therefrom, not to physical theories concerned in the derivation. Generous references are given under each element to an extensive bibliography. This can contain, of course, references to only the most important papers in the field; it is classified, understandably enough from the compiler's point of view, but rather oddly from the user's, according to periodical. The work concludes with a collection of partial Grotrian diagrams which exhibit, for most of the lighter elements, the lower term structure and the transitions responsible for the chief astronomical lines.

A. HUNTER

Der Vierdimensionale Raum

Von Prof. Roland W. Weitzenböck. (Sammlung "Wissenschaft und Kultur", Band 10.) Pp. 224. (Basel und Stuttgart: Birkhäuser Verlag, 1956.) 19.55 francs; 19.55 D.M.

THIS brilliant essay by a distinguished mathematician would be of much assistance to the intelligent layman wishing to understand what is meant by the 'fourth dimension'. Much of the meaning depends on the context in which the phrase is used. Thus the first eighty pages describe the development of the geometer's idea of a space; the text is lucid and devoid of undue technicalities, and the diagrams are illuminating. The next section deals with time as a fourth co-ordinate, and ranges from Dunne and Wells to the space-time universe of Minkowski and Einstein. From there, a natural transition is to the appearance of a fourth dimension in other fields of study, from physics and chemistry to mysticism and spiritualism. The last section records polydimensional notions in fiction; here, of course, pride of place goes to Abbott's classic "Flatland", while Wells is strongly represented by many of his short stories. The net is widely cast, and fine enough to have picked up Wodehouse, Ellery Queen and Van Dine. The combination of sound instruction with entertainment makes the volume admirably suited to the series of which it is a part; unlike most mathematical works, it is as good for dipping into as for continuous reading.

T. A. A. BROADBENT

Nuclear Explosions and Their Effects

Pp. x+184. (Delhi: Publications Division, Ministry of Information and Broadcasting, 1956.) Paper bound, Rs. 3.8; 7s. 6d.; 1 dollar. Cloth bound, Rs. 6; 12s. 6d.; 2 dollars.

ANY public discussion on policies concerning atomic weapons has always been hampered by the scarcity of information about their effects. Much of that information exists but is kept secret by the military authorities, and the occasional reports from official quarters have often been suspected of understating the dangers so as to allay the fears of the public. Most people thought that this state of affairs was bound to persist until the military authorities decided to release their observations of the effects of test explosions.

The book before us shows that this is not necessarily so; it contains information drawn from published sources only and yet gives a very adequate picture of the position. It puts, as it were, the cards on the table; from published accounts—the sources being quoted—it proceeds to work out the various forms of hazard (blast, heat and radiation) in front of the reader, with the help of very simple mathematics. The book reads well; physical and biological concepts—including the basic ideas of genetics—are explained in simple language as they come to be required.

This is a valuable and dispassionate account of a supremely important subject, suitable for anybody who wants to inform himself.

O. R. FRISCH

Textbook of Theoretical Botany

By Dr. R. C. McLean and Dr. W. R. Ivimey-Cook. Vol. 2. Pp. xiv+1071-2201. (London and New York: Longmans, Green and Co., Ltd., 1956.) 90s. net.

ALTHOUGH Dr. Ivimey-Cook died in 1952, he left a considerable amount of material intended for the text-book on which he was collaborating with Prof. McLean, and the senior author has, consequently, decided to retain his late colleague's name, as joint author, in all four volumes.

The second volume of the "Textbook" is concerned with floral morphology and biology, fruits and seeds, and a systematic treatment of the angiosperms. It includes a section on plant classification.

Opinions will differ as to what a book, intended to bridge the gap between the elementary text-book and the specialist treatise, should include. To me, it seems that a treatment of the topics mentioned, running into 1,100 pages, is too much for a book intended primarily for university students. It is also felt that controversial topics are sometimes discussed in too much detail, notwithstanding the authors' desire to keep discussion on such topics to a minimum. Moreover, the student may well complain at the numerous scientific terms, some of which are now so little used that they may almost be regarded as obsolete. The present volume, nevertheless, presents a clear picture of the subjects which it covers, and clarity is often enhanced by the wealth of illustrations. A number of the flower photographs are rather flat and would probably have been improved had they been taken from a somewhat different angle; but the illustrations, as a whole, are of high quality.

A book in English covering floral biology and morphology has long been wanted, and Prof. McLean is to be congratulated on filling this gap in botanical literature.

F. W. JANE