SHORT REVIEWS

Satellites of the Solar System

By W. Sandner. Pp. 151. (London: Faber and Faber, Ltd., 1965.) 36*s*.

THIS is an interesting book in that it confines its attention almost entirely to the natural satellites of the planetary system; reference to the primaries is made only when necessary to clarify some point of the description. After a brief introduction to the history of observational work and the laws of Kepler and Newton, the author deals first with the satellites of the planets beyond Mars and returns to the inner worlds near the end of the book.

The work suffers little in the translation, and will appeal to the interested layman as well as to the amateur astronomer; indeed, some of the references to early observational work are rarely seen in more advanced works, yet they can, when separable from defects of optics and technique, be quite useful.

The few faults in mathematical notation will not distract the casual reader, and those who do detect them will also realize what is actually intended. This book is a useful contribution to the literature for those at the beginning of an interest in our closer neighbours in space.

L. WILSON

Elements of Geochemistry

By Prof. Yasuo Miyake. Pp. 475. (Tokyo: Maruzen Company, Ltd., 1965.) 12 dollars.

THIS text-book is said to be a modernized revision and translation of a work in Japanese first published in 1954. Although it bears a 1965 date-line, reference to investigations published later than 1958 is restricted to the mention of a few papers from Japan; and as a consequence of this lack of observations drawn from the recent vigorous growth of geochemical science elsewhere, some of the information which the book presents is obsolete. For example, a section on 'the oldest rocks' is based on a paper of 1952, giving maximum ages of no more than 2,200–2,400 m.y. instead of around 3,500 m.y. Not one of the great range of contributions published since 1956 in the Russian periodical *Geokhimiya* is referred to, although this journal is available in English translation. In his preface, the author rightly observes that he has paid more attention to the boundary problems between astronomy, geophysics and geochemistry than to a general review of geochemical science; and he claims that more space is devoted to cosmochemistry and to the geochemistry of the atmosphere and hydrosphere than in other texts of this kind. Since, however, his treatment of the chemistry of the Earth's crust compares somewhat unfavourably with that of geologically oriented works available at a lower price, it is difficult to recommend the book as a teaching text, particularly as it has received insufficient editing to ensure uniform clarity of presentation and eradication of the very many misprints.

C. F. DAVIDSON

The Collected Papers of Lord Rutherford of Nelson, O.M., F.R.S.

Vol. 3: Cambridge. Published under the scientific direction of Sir James Chadwick, F.R.S. Pp. 428+10 plates. (London: George Allen and Unwin, Ltd., 1965.) 90*s*. net.

THE third volume of *The Collected Papers of Lord Rutherford of Nelson* contains his work while Cavendish professor at Cambridge from 1919 to 1937. This was his mature period when, having laid the foundations of nuclear physics, he directed an already famous laboratory with very great distinction. Naturally the earlier papers in the volume are the most important; presumably later in the period he devoted more of his time to the general welfare of the laboratory and to advising and encouraging the many able physicists who visited the Mecca of nuclear physics.

The most important papers deal with the very occasional production of long-range protons when light nuclei are bombarded by α-particles. Rutherford correctly interpreted these observations as evidence for the absorption of the α-particle by a nucleus with the subsequent emission of the fast proton. For the first time the disintegration of light nuclei had been observed.

Rutherford's Guthrie Lecture of 1927 on "Atomic Nuclei and their Transformation" is a very clear summary of all the work of himself and his colleagues on the interactions of α-particles, including the rare disintegrations. He speculated freely about nuclear structure and nuclear forces and produced some fascinating nuclear models.

Together with some young colleagues, Rutherford performed several beautiful experiments on the very sure long-range α-particles emitted from radium *C* and correctly interpreted the complex phenomenon in terms of excited states in nuclei.

Later on we find Rutherford using both protons and deuterons to probe the structure of nuclei although he frequently reverts to the use of his beloved α-particles. At the end of his life he was searching for the mass-3 isotopes of hydrogen and helium.

Many of the papers reproduced in the volume are classic examples of scientific exposition. All students of physics would benefit greatly from reading them. It is not usually possible to find time to search out the originals so we are greatly indebted to the late Paul Rosbaud, who inspired Sir James Chadwick to collect together all of Rutherford's written work into this invaluable series of volumes, which are a truly worthy monument to his work as a physicist.

C. C. BUTLER

Weltkarten zur Klimakunde

Von H. E. Landsberg, H. Lippmann, KH. Paffen und C. Troll. Zweite auflage. Herausgegeben im Auftrage der Heidelberger Akademie der Wissenschaften von E. Rodenwaldt und H. J. Jusatz. Pp. viii+28+5 Weltkarten. (Berlin: Springer-Verlag, 1965.) 30 DM.

THE title page, contents list, foreword and text of this publication are presented in both German and English; a pocket at the back encloses five world maps (scale 1 : 45,000,000, equal area projection) of January sunshine, July sunshine, annual sunshine (hours), annual total of global (that is, direct plus diffuse solar) radiation (cal cm^{-2}) and 'seasonal climates of the earth'. There is not, therefore, a lot of new information for 30 DM, but it must be conceded that the printing and binding are of the highest quality.

The maps are intended, in conjunction with an atlas of epidemic diseases already published, as a contribution to medical meteorology, a subject which has traditionally excited more interest in German- than in English-speaking circles, both medical and meteorological. It is hard to see how such relatively small-scale maps, necessarily displaying only very generalized isolines, can advance the subject much, though it no doubt ill becomes a non-medical meteorologist to say so. The maps are, of course, authoritative. Dr. Landsberg, who is director of climatology in the United States Weather Bureau, is responsible for those of solar radiation and contributes a terse note on radiation climatology. Prof. Troll, of the University of Bonn, is meticulous, though verbose, in explaining his