

Aubert (H.) and Pinta (M.). *Trace Elements in Soils* (Developments in Soil Science, 7). Amsterdam and New York (Elsevier Scientific Publishing Co.), 1977. x + 395 pp. Price Dfl. 145.00 (\$49.50).

This translation clearly fulfils the authors' aim of providing researchers in English-speaking countries with rapid and convenient access to extensive information on total and extractable trace elements in soils, compiled from world-wide sources by l'Office de la Recherche Scientifique et Technique Outre-Mer, and mainly for the thirteen elements—boron, chromium, cobalt, copper, iodine, lead, manganese, molybdenum, nickel, selenium, titanium, vanadium, and zinc. It differs from the original 1971 French edition by the inclusion of over 300 bibliographic references for the period 1968–75 and by the introduction of the 7th Approximation (U.S.D.A.) Soil Classification System into the Synoptic Tables as an additional means of identifying the types of soil studied. The newer references, however, have only been listed without critical comment in the general text, forming the first section of the book, and have not been summarized in the very useful Synoptic Tables that occupy the remaining two-thirds. The book is intended for pedologists and agronomists, but the price may well deter many of them from placing it on their shelves.

J. C. BURRIDGE

Hurlbut (C. S., Jr.) and Klein (C.). *Manual of Mineralogy (after James D. Dana)*, 19th edn. New York and London (John Wiley & Sons), 1977. xii + 532 pp., 506 figs. Price £14.00.

This new edition is an excellently produced volume, the clarity of typography and illustrations producing an immediately favourable impression.

The chapter on crystallography is amplified by an account of point group symmetry, fifty-seven pages are devoted to crystal chemistry and crystal structure, and a short paragraph on crystal structure and chemistry is added to each of the 200 descriptions of minerals. This last feature is supported by many new, and mostly very good, diagrams of structures. All these additions give a welcome aspect of modernity. The new chapter (33 pp.) on phase equilibria and petrography is too brief to be of much use.

The treatment of optics remains traditional. Reflected light is neglected. The descriptions of minerals provide few graphs of variation in optical properties of rock-forming minerals: the feldspar group rates one determinative graph—r.i. and S.G. of plagioclase. The determinative tables suffer from the same defect, all species being grouped by gross

physical properties only. This limits the usefulness of the book to students and for them it is not today's best buy.

M. H. BATTEY

Fleischer (R. L.), Price (P. B.), and Walker (R. M.). *Nuclear Tracks in Solids: Principles and Applications*. Berkeley and London (Univ. California Press), 1975. xxii + 605 pp., 205 figs., 1 pl. Price £22.00.

It is not yet twenty years since E. C. H. Silk and R. S. Barnes first reported on the occurrence in mica of fission fragment tracks, but in that period there has been a remarkable growth in the number of studies and published papers on the formation and analysis of particle tracks in solids—over 1300 papers had been published by mid 1973. Many of these relate to the Earth sciences where applications of the technique include geochronology; determination of cosmic ray nuclei; identification of extinct radio-isotopes in meteorites; mapping of fissionable nuclide distributions, as well as lithium and boron, on a microscopic scale; and in uranium exploration.

One of the strengths of the particle-track method is its relative cheapness—for many applications little more is needed than a good microscope and a painstaking research worker. The state of development and the scope of particle-track studies is such that it is a very appropriate time for the publication of this book, especially when the authors are probably the most authoritative in the field.

The first part (Chapters 1 to 3) deals with the formation and etching of tracks and the methods of nuclear particle identification. The experimental techniques are given in some detail so that a beginner will be able to use the book as his laboratory manual. For example, a relatively complete list of optimum etching conditions for different minerals, glasses, and plastics is given, together with much previously unpublished information. This detail ensures that the experienced researcher also will find it a useful manual: a recent visit to a research institute in Paris, where particle tracks have been a subject of study for many years, showed a well-thumbed copy on the laboratory bench.

The second part (Chapters 4 to 6) covers the applications in the Earth and Space sciences and starts with a fairly detailed exposition of fission-track dating. The method can cover a wide time range and is particularly useful in the span from about 10^4 to 10^6 years where carbon-14 or K-Ar dating methods are awkward to apply. The section on procedures deals with sample selection and preparation and with track counting, but some geochronologists would wish to have seen more