HINTZE (C.). *Handbuch der Mineralogie. Erganzungsband IV*, by K. F. CHUDOBA, Lieferung 1. Berlin (de Gruyter), 1974, xii+162 pp.

This first part of a fourth appendix to 'Hintze' brings that invaluable reference book up to date as at mid-1973, so far as new minerals and new mineral names are concerned. In a further four parts it is hoped to give fuller data and generally to bring the *Handbuch* up to date in the style of the earlier appendices.

English-speaking mineralogists must, of course, expect to find names originally given in a Cyrillic alphabet in their standard German phonetic transliteration, but it is a great pity that Professor Chudoba still occasionally invents variants of Roman alphabet names in order to retain the 'proper' pronunciation or derivation (e.g. Tansanit for tanzanite); the spelling of a name originally given in the Roman alphabet should be invariant apart from its last syllable (-ite, -ita, -it, -iet, etc.) and the time-honoured prefix Klino- (= Clino-). It is also unfortunate that Professor Chudoba, while properly translating the Schaller adjectival multiplier (e.g. manganhaltiger for manganoan) then proceeds to index these minerals under their adjective, so losing one of the most valuable advantages of the Schaller adjectives.

A new feature is the inclusion of standard German transliterations of Russian versions of Roman-alphabet names (e.g. Uekfildit = уекфилдит = Wakefieldite); a list of the Russian versions printed in the Cyrillic alphabet would have been worth while, but these back-transliterations merely cumber the literature with yet more spelling variants, some almost unrecognizable.

Apart from these criticisms, this is an excellent production, and an essential for any mineralogical library. M. H. HEY

SMITH (J. V.). *Feldspar minerals Vol. 2. Chemical and textural properties.* Berlin, Heidelberg, and New York (Springer-Verlag), 1974. xiii+690 pp., 211 figs., 66 tables. Price DM 103.50 ($42.30).

The second of J. V. Smith's superb encyclopaediac volumes on feldspars is subdivided into two sections. The first (Part 3 of the whole work) deals with chemical properties and analytical techniques, the second (Part 4) with crystal growth, zoning, diffusion, defects, and intergrowths. The eight chapters provide a total of nearly 1,800 references (up to 1973, and including references to unpublished theses), most of which are briefly summarized and built into a critical synthesis of each field. While it will still be necessary to dig out original literature (since Professor Smith's assessment of what is the real meat in a paper may not correspond with yours), as a means of rapid access to the vast store of information on feldspars it has no competitors. No petrologist with interests in the crust can afford not to have it to hand, and feldspar specialists will probably obtain fresh insights into their own fields. The author has a brisk, concise style, each section contains frequent suggestions for further work, and the over-all effect is very readable and stimulating.

This is, however, much more than a specialized reference work on feldspars. Professor Smith uses the feldspars as a vehicle for outlining the whole spectrum of

techniques and basic physico-chemical principles applicable to mineralogy, and their historical development. The first chapter gives a critical outline guide to techniques of chemical analysis ('wet', XRF, probe, and others) and while this and similar sections do not give enough detail to be in any way instruction in technique, they do outline what can be done (laced with warnings on limitations), and are well referenced. This introduction is followed by 128 pages on chemical properties, chiefly those concerned with large-scale substitutions of elements other than those commonly found in feldspars, and in trace-element variations. The common major-element variations will be dealt with in the context of phase equilibria in Vol. 3, promised for 1976. Only two pages are devoted to discussion of departures from basic MT_4O_8 stoichiometry; in view of its possible importance in magmatic evolution and also in the subsolidus re-equilibration behaviour of feldspars one might have hoped for more detail on this subject.

Part 4 is essentially concerned with aspects of structure that deviate from the idealized regular structures treated in Part 1, and upon the nature of the boundaries to crystals. Diffusion comes first; like other sections of this intricate book it is strongly connected to features dealt with elsewhere, so that although the kinetics of framework ordering are treated here, the structural configurations themselves come in Vol 1. The geochronological cornerstone of argon diffusion is covered at length. Chapter 17, on growth and defects, after describing the at present minimal amount of experimental information on feldspar growth, heads off into petrography with a beautifully illustrated selection of observations on zoning and habit. As in the crystallographic sections some very basic information is given; for example, *metamorphism* is defined. Petrologists will certainly welcome the bringing together of so much material, often from papers not specifically directed towards feldspars.

All aspects of twinning, structural basis, mechanisms, frequency, recognition, and petrological interpretation are covered by Chapter 18, and the next chapter, all of 150 pages, is concerned with intimate feldspar–feldspar intergrowths. Perthites are illustrated in all their amazing diversity, and all possible mechanisms for developing such textures are explained. It is a pity that the alkali-feldspar phase diagram used in discussion of exsolution depicts binary loops for the diffusive and displacive framework transformations; this is, at best, a highly idealized picture and we will, no doubt, find a critical assessment of these relationships in Vol. 3.

The final chapter covers intergrowths of feldspars with other minerals, including some unexpected ones, and discusses the sources of clouding in the feldspars. Myrmekite is covered in detail. The author states: 'With considerable hesitation, I conclude that there is no single origin for myrmekite. . . .' This book is full of similarly stated uncertainties; despite the volume of data on feldspars numerous features commonplace to petrologists remain enigmatic and this book, better than any other, links the most sophisticated mineralogical techniques to fundamental geological observation in a thoroughly satisfactory way.

IAN PARSONS