statements that are *not* correct. Thus, on p. xvii it is stated that 'sizeable deposits of tin and tungsten were discovered in England during the last fifteen years, by geochemical surveys, in Cornwall, Devonshire, and Wales . . .'. Apart from the obvious geographical error, neither the Swedish Company nor others who have employed geochemical prospecting in these areas have found a mineral deposit of economic importance. On p. 8 Ginzburg remarks that chemical methods of analysis for small quantities of arsenic and antimony that would be suitable for applied geochemical investigations 'are either inadequate or entirely undeveloped'. In point of fact perfectly adequate methods have been known in Britain for several years. It is, however, clear that the Russians have generally employed spectrographic methods of analysis rather than colorimetric ones. Ginzburg advocates the greater use of the latter and he includes details of a few of these methods in an appendix.

The 72 diagrams considerably enhance the value of the work and they have gained much by being redrawn from the original, but the fundamental construction of some is such that they cannot be readily understood, and, unfortunately, many of the maps lack scales and cardinal points.

Despite the above criticisms the monograph is a major contribution to applied geochemical literature and the extent to which the subject is covered may be judged by the following chapter, &c., headings: Introduction (essentially a historical survey). Methods of analytical investigations. Geochemical tracers (indicators). Accumulation of metals in igneous and metamorphic rocks. Accumulation of metals in sedimentary rock. Prospecting in bedrocks. Prospecting for deposits without surface outcrops. Accumulation of metals in unconsolidated overburden (dispersion halos). Prospecting at the surface of the overlying mantle. Migration of metals in waters. Hydro-geochemical prospecting for metals and characteristics of different water types associated with ore deposits. The bio-geochemical method of prospecting. General conclusions in reference to geochemical survey. Appendix. Rapid methods of determining Pb, Cu, W, Mo, and Ag in the field. Glossary. Translator's notes on soil terms used in this book.

K. F. G. HOSKING

KASPER (J. S.) & LONSDALE (K.), Editors. *International Tables for X-ray Crystallography, Vol. 2: Mathematical Tables.* Birmingham, England (Kynoch Press for the International Union of Crystallography), 1959, xviii+444 pp., 39 figs. Price 115*s.*; there is a conditional reduced price for individuals on application to the Printers.

The first volume of this new series was published in 1952. This second volume covers a larger and more varied field and is the work of a number of authors. The main sections are: Introduction, Fundamental Mathematics, Crystal Geometry, Diffraction Geometry, Physics of Diffraction Methods, Fourier Synthesis and Structure Factors, Special Topics, Miscellaneous Exponential and Trigonometrical Tables. The work is completed by a Dictionary of Crystallographic Terms in English, French, German, Russian, and Spanish. Items of special interest to the mineralogist are the sections on twinning and on the interpretation of single-crystal and powder photographs, but the volume contains much that is of use to all those engaged in different branches of crystallographic studies. The Editors have done a splendid job, and the whole production is of the high standard that would be expected from the Printers and from the International Union of Crystallography.

C. H. KELSEY

WILLIAMS (Howel). *Volcanic History of the Guatemalan Highlands.* University of California Publications in Geological Sciences, vol. 38, No. 1, pp. 1–86, pls. 1–13, 8 figs. (including 2 folding maps).

This account is based on field reconnaissances totalling four months under a Guggenheim fellowship. Apart from a succinct preliminary sketch of the basement geology, it is entirely devoted to detailed descriptions of the outcrops of the volcanic rocks, the physiography, and the history as deduced from these. As the only up-to-date general account of this area it is most valuable, but it contains no detailed petrographic descriptions and the author's use of rock names is vague; one suspects from his descriptions that most of the rocks called 'andesite' and 'dacite' would have been named 'rhyodacite' had analyses been available. The author throughout commendably uses the term 'glowing-avalanche' instead of 'nuée ardente'. A feature of his observations is the extent to which he has recognized the prevalence of this type of deposit especially in the first, Tertiary, 'fissure-eruption' phase of vulcanicity. He recognizes, however, that most of the vast pumice deposits of the second, Quaternary phase are of secondary, penecontemporaneous, torrential (laharic) origin. Much attention is devoted to the geomorphological history of the area, especially the origin of its three main lakes: Atitlan (as a cauldron subsidence), Ayarza (as paired calderas), and Amatitlan (as a volcanotectonic basin).

S. E. ELLIS