

parapatric or contiguous population of different species. Given the notoriously potent sting of several common species, one wonders whether this "character convergence" is not just localized mimicry.

The book is handsomely produced by the University of Tennessee Press, and by present standards is reasonably priced. It will be a necessary reference item for all ant specialists, desert ecologists, range managers, and western entomologists and naturalists in general. —William L. Brown, Jr., *Entomology*, N.Y. State College of Agriculture, Ithaca

*Geochemistry & Mineralogy of Rare Elements & Genetic Types of their Deposits*, Vol. 3: *Genetic Types of Rare Element Deposits*, edited by K. A. VLASOV; 916 pages; 165 figs.; \$30; Daniel Davy and Co., Conn. Translation of the 1966 Russian edition, Israel Program for Scientific Translations, Jerusalem, 1968.

This volume and the two earlier volumes (AMER. SCI., 3, 333A, 1968) comprise a definitive account of the geochemistry, mineralogy and types of occurrence in nature of Li, Rb, Cs, Be, Sr, Sc, Zr, Hf, Nb, Ta, Cd, Ga, In, Tl, Ge, Se, Te, Re, Y, and the lanthanides. Many of these elements have become of increasing importance in recent decades in a variety of technological applications, providing impetus for the study of their geochemistry to aid in creating an adequate raw material base. The book was prepared by 53 research workers associated with the Institute of Mineralogy, Geochemistry, and Crystal Chemistry of the Rare Elements, one of several institutes in the area of the geological sciences operated by the Academy of Sciences of the USSR. The systematic manner of treatment and the numerous extensive tabulations of analytical and other data, together with adequate indices, make this and the earlier volumes easy and convenient to use. Text references in Vol. 3 include 875 Russian and 520 non-Russian titles, making a total, with some duplication, of about 4500 titles for the 3-volume set. The translation is good, and errors are few.

Deposits of the rare elements are extremely diverse genetic types and complex mineralogical expression. Search for an exploitation of these posits involves many problems encountered with the more common accessible elements such as iron, aluminum, or lead. The book does not attempt a full-scale catalog of the known posits, but is more concerned with characterization of the geochemical processes and geological environments that lead to local concentrations of rare elements from an initial dispersed state in the lithosphere. The treatment follows the distinction between endogenic and exogenic processes. Under the former are included concentrations in magmatic segregations, pegmatites, greisens, hydrothermal deposits deriving from the main igneous rock types. Exogenic concentrations include residual deposits and placers, evaporites, phosphorite, subsurface waters, oil, and coal. Metamorphic concentrations, often prominent in origin, are treated only briefly. The three volumes are an invaluable reference work for geochemists, mineralogists, and economic geologists. It should be added that they are a monument to Russian leadership in the general field over many decades. —Clifford Frondel, *Geological Sciences*, Harvard University

*A Comparative Quantitative Phonology of Russian, Czech, & German* by KUČERA & G. K. MONROE; 196 pages; \$12; American Elsevier Publishing Co., Inc., 1968.

This study applies quantitative methods and procedures to the comparative phonological analysis of two closely related languages and a more distantly related one. A brief survey of the phonological phenomena of the three languages (distinctive feature matrices are included) elicits little that has not already been stated; for Czech, for example, Kučera himself in *The Phonology of Czech* (The Hague, 1961). But the section is followed by an extremely enlightening discussion of the phonological syllable which deals with both makeup and with the exploitation of various structures in speech. The po-