

BOOK REVIEW

The Chemistry of Weathering, edited by J. I. Drever. D. Reidel Publishing Co., Dordrecht, Holland, 1985. 324 + viii pages, hardbound, Dfl. 130.00/\$44.00; £33.25.

This book presents the proceedings of a NATO Advanced Research Workshop on the Chemistry of Weathering held in July 1984 in Rodez, France. Major fields covered are theoretical weathering models, the influence of acid rain and terrestrial environments on mineral dissolution, and weathering in specific ecosystems.

The list of contents of *The Chemistry of Weathering* demonstrates the enormous variability of possible approaches to the study of weathering processes. Subjects covered range from chemical modeling, to field and laboratory studies of specific minerals and mineral assemblages, to descriptions of bacterially induced degradation and regional weathering studies. As a result of the inherent complexity of the subject and gaps in the material covered, the contents of this book corresponds more to what one would expect to find in a journal of this title than in a textbook.

Two introductory chapters (by Sposito and Fritz) are devoted mainly to chemical models involving clay mineral formation in weathering processes. Because of the common kinetic inhibition of thermodynamically possible processes in nature—especially under surface conditions—a paper on this subject would have been a most welcome addition to the volume.

The first two chapters are followed by conceptually related studies on the weathering of mafic silicates by Schott and Berner and of oxides and aluminosilicates by Stumm, Furrer, Wieland, and Zinder and a kinetic study on albite dissolution by Wollast and Chou. Chapter 6 is a review of interstratified clay minerals and their formational environments by Wilson and Nadeau and is followed by an abstract on Fe oxides by Schwertmann (the full paper having been published elsewhere) and a study by Rodriguez-Clemente and Hidalgo-Lopez on alunite formation in the laboratory followed by the description of a natural deposit of this mineral. In a rather enigmatic chapter, Krumbain and Dyer review written rec-

ords on weathering from the Bible and Herodotus onwards, leading conceptually over to the significance of biological activity in weathering processes.

To this reviewer, as a mineralogist, the most enlightening chapter was that by Eckhardt on the significance of microorganisms in the weathering of rocks and building materials, an aspect that is too often neglected in mineralogical studies. This chapter is followed by two papers on weathering rates and budgets in acid forest soils by Cronan and by Fölster.

In concrete case studies, Ohse, Matthes, and Pekdeger describe the application of geochemical modeling using computer programs to the weathering of glacial sediments of north Germany; Velbel then relates weathering in a forested watershed in the Blue Ridge Mountains of North Carolina to parent rock type and water flushing rate; Neal and Stanger describe the weathering of ophiolites in a semi-arid environment of northern Oman; Nahon, Beauvais, and Trescases describe the formation of Mn oxides as a result of the weathering of primary Mn-rich minerals in a lateritic environment of the Ivory Coast; and Stallard relates the geochemistry of rivers in the Amazon and Orinoco basins to geology and landforms.

Direct reproduction from camera-ready manuscripts results in legibilities that range from excellent to acceptable. The listing of citations of the individual chapters varies annoyingly between alphabetical order and the order of mention, and reference to unpublished reports or papers that are “to be submitted” (when and where?) are of no use to the reader. This could have been easily avoided by more careful editing.

In spite of the mentioned shortcomings, *The Chemistry of Weathering* can be recommended not only to scientists working in the immediate field of supergene mineral alteration, but also to those concerned with such modern-day topics as the effects of acid rainfall on soils and an increasing need for the preservation of engineering materials. At \$44.00 it is a bargain.

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