

BOOK REVIEWS

Clay and Clay Minerals of Japan (Developments in Sedimentology, 26), edited by Toshio Sudo and Susumu Shimoda. Elsevier Scientific Publishing Company, Amsterdam and New York and Kodansha Ltd., Tokyo. 1978. 326 + x pp. \$60.75 (Dfl 140.00).

This well-written and nicely produced volume in excellent English is a notable addition to the literature on clays and clay minerals. The first chapter, almost one-third of the book, by Dr. Sudo provides a general description of methods of investigation and the physical, chemical, and especially the geological characteristics of Japanese clays. Throughout the volume the mineralogy and geology of clays are closely linked, and for this reason the book is very welcome. I am especially glad to find careful explanations for terms often used by Japanese workers, such as Roseki, Kuroko, Toseki, Gaerome clay, and Kibushi clay. Subsequent chapters by K. Nagasawa, S. Shimoda, H. Shirozu, H. Takeshi, and K. Wada, names familiar to all clay mineralogists, discuss in detail the various mineral groups and processes of clay mineral formation, specifically Ch. 2, Weathering of Volcanic Ash and other Pyroclastic Materials (K.N.); Ch. 3, Wall Rock Alteration of Kuroko Deposits (H.S.); Ch. 4, Allophane and Imogolite (K.W.); Ch. 5, Kaolin Minerals (K.N.); Ch. 6, Smectites (H.T.); Ch. 7, Chlorite Minerals (H.S.); Ch. 8, Interstratified Minerals (S.S.). Each chapter contains a comprehensive list of references, in several cases approaching two hundred. As would be expected from the title, the discussions are oriented towards Japanese occurrences of clays and the contributions of Japanese investigators, often treated in a historical sequence but closely integrated with work done in other countries. Many of these discussions I have found very interesting. For example, in the chapter on kaolin minerals I found that in 1934 B. Yoshiki first identified a kaolin mineral in the Shokozan area as dickite, very shortly after Ross and Kerr first used this term in 1931. Dickite has been reported from many other Roseki deposits, and now we know where to find Roseki defined (see Ch. 1 by Sudo).

The chapter by Shimoda on interstratified minerals is of very great interest, especially because of the link between the min-

eralogy and the occurrence of these materials. For many years the regularly interstratified minerals like allewardite (or rectorite) have been regarded as "odd-ball characters," but now we see them representing significant stages in alteration processes. Therefore, they have comparable significance with the final equilibrium phase assemblages. Japanese workers have played a considerable part in the discovery and elucidation of mixed-layer minerals; two of them, sudoite and tosudite, are named for Dr. Toshio Sudo.

Another notable chapter is that by K. Wada on allophane and imogolite. The discovery of the latter ultra-fine-grained mineral with its extraordinary threadlike form we owe to Japanese investigators, Aomine and Yoshinaga. The chapter on smectites by H. Takeshi gives prominence to Japanese work on so-called acid clays, and his discussion of randomly mixed montmorillonite-halloysite (or kaolinite?) formed in the process of decomposition of montmorillonite is very interesting. Shirozu's chapter on chlorites includes a useful summary of work on dioctahedral chlorites and their interstratified forms, including sudoite and tosudite, minerals frequently associated with Kuroko deposits. (Clay mineralogists must begin to learn these terms!) Equally interesting items can be picked from many other sections of this book. I hope I have said enough to justify the original statement that it is a "notable addition to the literature on clays." I must not omit to mention that on the inside front cover, a map of Japan is given showing the location of places and mines mentioned in the text, and to each name is attached the chapter number where it is described.

The price of the book, \$60.75, is considerable; nevertheless, it should be on the shelves of all libraries and individuals whose work involves research on clays and clay minerals.

G. W. BRINDLEY

Ceramic Processing Before Firing, edited by George Y. Onoda, Jr. and Larry L. Hench. John Wiley and Sons, New York, 1978. 490 + xxii pp. \$27.50.

This book represents the edited proceedings of a conference on the subject held in Gainesville, Florida, in January 1975. It is divided into five sections—Introductory, Powders, Particulate-Water Systems, Green-Body Formation and Microstructure, and Processes and Applications—with 33 chapters written by knowledgeable experts. The subject is of primary interest to the ceramic processor and concentrates on providing a scientific basis for understanding and controlling the processing of powders and ceramic bodies. Students of ceramics will find this book very useful as a reference and text. The book is dedicated to Karl Schwartzwalder and Frederick H. Norton for their outstanding pioneering contributions to the science and technology of modern ceramic processing. Of particular interest to clay mineralogists are Chapter 6—Physical

Characterization Techniques for Particles by C. Orr, Jr.; Chapter 15—Layer-Silicate Minerals by H. Heystek; Chapter 16—The Structure of Water and Its Role in Clay-Water Systems by W. G. Lawrence; and Chapter 28—Strength and Microstructure of Dried Clay Mixtures by W. O. Williamson. These four chapters are reviews but are well illustrated and contain good references. The information contained in the 33 chapters is variable. Clay mineralogists interested in clay applications should be interested in this book for their personal library. The printing quality and fidelity of the illustrations are good. An 11-page index is included.

HAYDN H. MURRAY