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BOOK REVIEW

Clay in Engineering Geology, by J. E. Gillott. 2nd edition. Elsevier, Amsterdam/New York, 1987. 74 + x pages, hardbound, DFl.145.00/US$64.50 (ISBN 0-444-42758-9).

The author's stated purpose in this volume published as part of Elsevier's Developments in Geotechnical Engineering series is to discuss clay in engineering geology, with the interdisciplinary objective to introduce geologists and mineralogists to geotechnical engineering, as well as geotechnical engineers to geology and mineralogy. The chapter titles indicate the broad scope of the text:

1. Nature and classification of clays and soils
2. Physical geology
3. Origin and evaluation of clay minerals and clays
4. Composition and fabric of clays
5. Physical chemistry of clays
6. Moisture interaction with clays and clay minerals
7. Strength and rheology of clays
8. Soil stabilization
9. Clays as materials
10. Mineralogical aspects of clays
11. Physical analysis of clays
12. Engineering analysis of soils

The references included at the end of each chapter provide a good representation of subjects discussed; however, in several instances, the reference cited is an obscure publication, when the same information has been published in a more readily available journal.

Although this volume is advertised as a second, completely revised edition, several unfortunate problems still remain. For example, in Chapter 4, Figure 4.1 conveys the thought that silicates, while inorganic, are neither crystalline nor noncrystalline. Leaves one to wonder what are silicates! The phrase 'base-exchange capacity,' used here and there in the text, for cation-exchange capacity is a poor word choice. Cation-exchange capacity has been the commonly preferred term for 45 years. In Chapter 5, the author cites Schofield and Samson's work, but neglects to mention their major conclusions, that kaolin has cationic substitution and that its charge density is about twice that on smectite.

In his discussion of clay swelling, the author uses the term montmorillonite when he should have used smectite. All Na-smectites swell, not only montmorillonite, as shown by many authors, including Ravina and Low cited by the author. The author also states on page 261 that soil cement "has been employed for well over a quarter of a century." I should think so—the Romans used soil cement a few years before that.

This reviewer was particularly disappointed by the author's treatment of two important subjects: (1) Effective stress. Effective stress, $\bar{\sigma}$, equals total stress, σ, minus pore water pressure, u. Hence, $\bar{\sigma} = \sigma - u$. This vital first principle of effective stress is understood by very few geologists and mineralogists. In many parts of the text, the author discusses some aspect of effective stress, but never explicitly attempts to relate these aspects to the basic principle, $\bar{\sigma} = \sigma - u$. (2) Pedological soil classification. Pedological soil maps provide a great deal of valuable information that is rarely used by geotechnical engineers, largely because of ignorance. It is therefore unfortunate that the author did not discuss pedological soil classification. On both of these counts, it is this reviewer's opinion that the author missed golden opportunities to advance interdisciplinary understanding.

R. TORRENCE MARTIN

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