

Book review

Geology for Ground Engineering Projects. C. J. N. Fletcher. CRC Press, Taylor & Francis Group, Boca Raton, FL, 2016, £49.99, paperback, 293 pp., ISBN: 978-1-4665-8549-2

This is an extremely well-written book and is beautifully illustrated in colour throughout. The book has chapters on: geological fundamentals; geological maps; sedimentary rocks; intrusive igneous rocks; extrusive igneous rocks; metamorphic and hydrothermal rocks; faults; discontinuities; folds; weathered rocks; karst; superficial deposits. At the end of each chapter project case studies are presented that highlight the key engineering significance of the geological phenomena encountered. The details in the chapters on rocks and rock structures show that this book is written by a geologist who fully understands the fundamentals, the subtleties and the recent developments in the science of geology. The information on rocks and rock structures is presented in a lucid and effective way with some of the more abstruse geological vocabulary explained well. The chapter on weathered rocks, drawn mainly from Hong Kong, is also a very good introduction to this complex subject. However, the chapter on karst seems out of place and I wonder why this topic was highlighted when there are quite a few other 'geohazards' that could have been included, such as landsliding or ground subsidence. Also, the final chapter on superficial deposits does not really do justice to this vast subject.

My main reservations with the book do not lie in its content but in whether or not it meets its primary objective stated on page 2 as 'to explain the geology that is relevant to many engineering projects in such a way that it is readily comprehensible to the practicing [sic] or aspiring geotechnical engineers'. To meet this requirement I asked the question used in the book *Geology for Civil Engineers* (Matthews *et al.* 2008): 'How does this information help the civil engineer?' Although at the start of each chapter there is a useful section on 'engineering considerations', the subsequent geological

detail often goes beyond that needed by the practising geotechnical engineer; it falls into that trap of 'too much information'. Conversely, information that could be of use to the engineer is often missing. This is best illustrated in the chapter on folds, which are described extremely well, but one of the most important elements in the case study at the end of the chapter is a kinematic analysis of potential failures in a quarry face using a stereonet. However, nowhere in the book is the method shown for how the data may be collected, plotted or analysed using such an approach.

This is a good introductory book on geology and of interest to engineering geologists who might be a bit rusty on the fundamentals of their core discipline. However, to meet the requirements of the engineer it needs the following: a chapter on hydrogeology; expansion of the chapters on rocks to include items such as the importance of lithostratigraphy, data on rock strength and compressibility, and how to use standard techniques for compiling relevant geological data (e.g. Norwegian Q; RMR; discontinuity surveys); a much expanded and more up-to-date section on superficial deposits; expansion of the karst chapter to include other geohazards; a stronger emphasis on the importance of the Quaternary Period in shaping the landscape of the present day. For me this book is not as useful to engineers as that of Matthews *et al.* (2008), but is a very stimulating book to read.

Reference

Matthew, M., Simons, N. & Menzies, B. 2008. *Geology for Civil Engineers*. Thomas Telford, London.

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