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Colin P. North and Kitty L. Milliken, Editors
A.J. (Tom) van Loon, Associate Editor for Book Reviews
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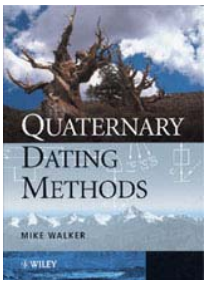
Quaternary Dating Methods, by Mike Walker, 2005. Wiley-VCH Verlag, Boschstrasse 12, 69469 Weinheim, Germany. 304 pages. Hardcover: price EUR 135.00, SFR 213.00, ISBN 978-0-470-89926-0; Softcover: price EUR 39.90, SFR 64.00, GBP 85.00, USD 59.00, ISBN 978-0-470-86927-5.



In the introduction, the author states: “This is a book written from the perspective of the user community.” Having read the book, one can also say that the book is very useful for a large community of students and researchers interested in the Quaternary. After an introductory chapter giving a historical background of the development of Quaternary dating and discussing the meaning of precision and accuracy, the next three chapters are devoted to radiometric dating methods.

Chapter two deals with radiocarbon dating. Starting from the basic principles of the method, several measurement techniques from classical decay counting to accelerator-based mass spectrometry are carefully described, and treatment and dating of different materials are discussed in detail. Calibration of the radiocarbon time-scale, and working with sets of calibrated dates are discussed. Finally, interesting examples of dating different materials and of dating materials with distinctly different ages are given.

The next chapter is concerned with dating using long-lived and short-lived radioactive isotopes. Potassium/argon, argon/argon and uranium-series dating are the methods described based on long-lived isotopes. A separate paragraph explains cosmogenic nuclide dating, a method that has come in use quite recently thanks to the accelerator technique.

The section on dating using short-lived isotopes deals with lead-210 and its support Cs-137. In addition, the thus far less known dating based on the decay of Si-32 is described.

In chapter four, the luminescence dating methods TL (thermoluminescence) and OSL (optically stimulated luminescence), electron-spin resonance dating and fission-track dating are dealt with.

Dating using annually banded records are handled in chapter five. Methods described are dendrochronology, varve chronology, lichenometry, ice-core chronologies and varves in speleothems, corals and molluscs.

From this, the author turns to relative-dating methods. Rock-surface weathering, obsidian-hydration dating, pedogenesis, relative dating of fossil bones, and amino-acid geochronology are covered in the chapter.

Techniques for establishing age equivalence form the third part of the book. Oxygen-isotope chronostratigraphy, tephrochronology, paleomagnetism and paleosols are discussed.

In the last chapter. the author looks into the future and touches upon the possibilities to be explored through the advances provided by biomolecular research.

In every chapter examples of application of each method and case studies are included. These form an essential part of the book and enlighten the various possibilities for building chronologies for different ages based on different methods and utilizing different materials.

The author describes not only how the various methods described work but also where and why errors are likely to occur. He deliberately avoids the use of the term “absolute dating

methods” because, as he says, it implies a level of accuracy and precision that can seldom, if ever, be achieved in reality.

The text is clear and easy to read. The good terminology used throughout the book needs to be mentioned. A normal lecture series on dating methods can hardly cover the whole extent of the book. In this respect, the book can well serve as a handbook for both students at pre- and postgraduate level and researchers. This is well supported by the extensive, up to date, reference list covering 33 pages.

Högne Jungner
Dating Laboratory
University of Helsinki
e-mail: hogne.jungner@helsinki.fi

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