HOOKE, Roger LeB. 2005. *Principles of glacier mechanics. Second edition.* Cambridge, etc., Cambridge University Press, 429 pp. ISBN 0-521-83609-3, hardback, £75/US$120; ISBN 0-521-54416-5, paperback, £35/US$65.

Roger Hooke's updated book on glacier mechanics represents the best introductory glaciology textbook available in English. I have used the first edition to teach the subject to senior undergraduate and junior graduate students and found it to be an excellent textbook. The second edition retains all the same superior qualities of a text, but updates its chapters to include scientific developments through the early 2000s. Thereby, it provides a sweeping overview of progress in glacier mechanics from the 1950s models of sliding and ice deformation to very recent treatments of ice motion over unlithified sediments and ice streaming.

What makes Hooke's book so successful as a text for teaching glaciology? It clearly came out of the workshop of a practicing professor. He understands that introducing mathematics into a glaciology course represents one of the biggest challenges, but also joys, in our quantitative field. As the preface states, the book is an outgrowth of a course taught to students who may not have had a strong background in continuum mechanics. It does not shy away from equations, which are needed to truly convey the essence of many glaciological advances. However, Hooke is very particular about the way he introduces mathematics into the subject. Many key equations are derived from first physical principles. Words are used to explain the meaning of individual terms in equations. Finally, unit analyses are deployed to teach the habit of checking each derivation through this simple but powerful approach. When combined with Hooke's lucid writing, these techniques make his book one of the best examples of a readable introduction of quantitative concepts into any field of geosciences. Previously, I have encountered only one geoscience book with comparable quantitative elegance, Ken Hsu's *Physical principles of sedimentology* (1989).

Principles of glacier mechanics is also an excellent reference book. The introductory table listing key physical properties of ice gives, by itself, good enough reason to buy the book. In addition, Roger Hooke provides a chapter detailing why it is important to study glaciers and ice sheets. However, the bulk of the book's content revolves around the application of continuum mechanics to understanding ice motion due to internal deformation and enhanced basal motion, including sliding and deformation of subglacial sediments. As intended by the author, this is not an all-inclusive book on glaciology, but it is hard to think of a more comprehensive and understandable treatise on topics related to the mechanics of glacier motion. Anybody with college-level calculus and physics will be able to use *Principles of glacier mechanics* to start learning about many key glaciological topics, such as mass balance, ice rheology, control of bed roughness and water pressure on ice sliding, temperature distribution in ice masses, and motion of meltwater through glaciers. Furthermore, Roger Hooke includes a significant connection to glacial geology by emphasizing the links between the physics of ice motion and the formation of glacial landforms and sediments.

Overall, *Principles of glacier mechanics* is a must-have book for a broad audience. It provides an excellent gateway into quantitative glaciology for undergraduate and graduate students, as well as a great reference book for seasoned practitioners. However, the appeal of Hooke's book is much broader, since its readability makes it suitable for other Earth and planetary scientists who want to understand the physics of ice masses.

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