

HAMBREY, M. and J. ALEAN, 2004. *Glaciers. Second edition*. Cambridge, etc., Cambridge University Press., 394 pp., ISBN-10 0521828082, ISBN-13: 9780521828086, hardback, £35.

Hambrey and Alean's *Glaciers* is a well-illustrated and non-technical book mainly aimed at the layman. It treats the subject in a very broad sense. The greatest appeal of the book is how well all concepts are illustrated with photographs. The wide geographical coverage sets it apart from otherwise similar books.

The book begins with an overview of the ice cover on Earth. The authors then discuss the many different forms and shapes in which glacier ice occurs and how they can be classified in terms of ice temperatures. Chapter 3 explains in simple terms how a glacier is the result of mass gain through accumulation minus mass loss through ablation or calving. The effects of changes in mass balance are explained, and a short section describes techniques for measuring mass balance. A photo showing four people watch one person drill a hole might not inspire the reader's confidence in the claim that mass-balance measurements are 'labour-intensive'.

In Chapter 4 the current worldwide trend of receding glaciers is discussed. The authors acknowledge the scarcity and importance of long-term monitoring programs. They draw attention to the almost complete ice loss in tropical regions. A section on tidewater glaciers in Alaska points out the complexities of having advancing and retreating glaciers in the same area, but, unfortunately, the tidewater glacier cycle is not explained well. 'Ice on the move' is the longest chapter. Here the authors draw on their knowledge of structural geology. They also include a section on surging glaciers, which is perhaps one of the most intriguing glaciological phenomena. Next comes a discussion of debris transport by glaciers, followed by the fascinating, and often disastrous, interaction between water and ice. The biggest ice sheet on the planet, Antarctica, is given its own chapter, but unfortunately its northern counterpart in Greenland does not get the attention it deserves. Nonetheless, it is made clear that the fate of the big ice sheets is something of concern to all of us.

Fire and ice is bound to fascinate any reader and the authors give an excellent account of the unlikely alliance between volcanoes and glaciers and the potentially catastrophic results of it. Chapter 10 shows how glaciers shape landscapes. It gives the reader many examples, mostly with

pictures, of how signs of former glaciations can be found, even in places far from present-day ice. This is followed by a chapter on the flora and fauna around glacier ice, including a nice sequence of pictures demonstrating the recolonization process of plants in a recently deglaciated area. A chapter on benefits of glaciers to society is followed by a longer one on glacier hazards. The glacier hazards are mostly illustrated by accounts of several of the more tragic events. 'Living and travelling on glaciers' gives a good account on how life is for a field glaciologist. It also includes some accounts of the early exploratory phase of polar travel. Chapter 15 contains a discussion of the Earth's glacial record that goes back to the Pre-Cambrian. This is a very well laid out and informative chapter on the entire history of ice on Earth and also gives some glimpses into how this information is obtained. The book concludes with a look into the future of glaciers. An extensive glossary should help the reader who might have trouble remembering some specialized terms from earlier chapters.

The book is the second edition of one published more than 10 years ago. Owners of the first edition might find it necessary to purchase the second one as well. The new edition contains more information, including the new chapter on Antarctica. Many of the excellent photos from the first edition will be missed, but they are adequately replaced by new ones. The authors are correct in assuming that pictures speak better than words, and the many excellent illustrations from all over the planet are undoubtedly the main asset of this work. The inclusion of some images derived from satellites illustrates the importance of remote sensing in modern glaciology.

I would recommend the book for anybody with a naturalist's interest, particularly people spending time in areas that are or were covered by glaciers. It will open their eyes to the power and fascination of glaciers. A German and/or French translation might sell well in the European Alps.

The book also contains good material for an introductory Earth science class. I enjoyed reading it and admired the many pictures. It would make a great present for those of our friends who sometimes wonder what glaciologists actually do.

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