himself famous at Cook's expense' (page 147). This totally omits that Gibbs — one of the most honoured journalists of this century, who was knighted for his outstanding correspondence from the front during World War I — was actually the first journalist to interview Cook, *before* the explorer even landed in Copenhagen. Gibbs went out to *Hans Egede*, while Cook was still aboard, interviewed the explorer, and asked to see his diaries, journal, or observations. Cook exploded at him, shouting, 'I bring the same proofs as every other explorer. I bring my story. Do you doubt that? When Shackleton and Peary came home you believed what they told you. Why, then, should you disbelieve me?' (*The Daily Chronicle* 7 September 1909). But as Gibbs commented later, 'I *had* believed him. But at that strange, excited protest and some uneasy, almost guilty look about the man, I thought, "Hullo! What's wrong? This man protests too much." From that moment I had grave doubts about him' (Gibbs 1923: 43).

Gibbs is just one piece in Abramson's indictment of the press as a tool of the Peary cabal. But his underlying assessment that the press of the United States, or even that of New York City, was 'clearly under Bridgman's influence, if not control' (page 157) is not only a naive oversimplification, it is certainly inaccurate. Herbert L. Bridgman of the *Brooklyn Standard–Union* was a minor figure with a remarkably unimportant newspaper in an era when the American press was dominated by personalities such as William Randolph Hearst, Joseph Pulitzer, and James Gordon Bennett, and by their respective newspapers. Moreover, this also overlooks that not all journalists, explorers, or scientists believed Cook, even before the pro-Peary/anti-Cook campaign got underway.

In summation, although I still would be willing to believe that Frederick A. Cook was the first man to reach the North Pole, I demand the proof to convince me that he was. It still has not been produced. (Beau Riffenburgh, Scott Polar Research Institute, University of Cambridge, Lensfield Road, Cambridge CB2 1ER.)

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ICE AGE EARTH: LATE QUATERNARY GEOLOGY & CLIMATE. Alastair G. Dawson. 1992. London and New York: Routledge. 293 p, illustrated, soft cover. ISBN 0-415-01567-7. US$25.00.

This book is designed as an undergraduate text concerning climate change during the Late Quaternary. The topic of climate change has received increasing attention during the past few years in response to fears concerning, for example, warming due to 'greenhouse' gases and the implications of this for sea-level change during the next 50–200 years. Recent evidence from both Greenland ice cores and the sedimentary record from the North Atlantic suggests that the onset of significant shifts in the climate system may also be extremely rapid. One result of the increasing number of scientific papers on aspects of global change is that, for the undergraduate, the advent of a new textbook summarizing much of this work presumably comes as something of a relief. Dawson's book is thus timely, although the publication of new papers on topics such as the massive discharge of icebergs into the North Atlantic on at least two occasions over the last 25,000 years means that certain parts of it are already superseded. This is testimony to the activity of researchers in the area of global climate change, rather than implying any criticism of the author.

The book is divided into 13 chapters, opening with three chapters that introduce Late Quaternary climate change, and emphasise the record from marine sediments and ice cores. For some time evidence from these two sources has been regarded as a benchmark against which other, often more fragmented, records are compared. The discussion of the results of global climate modelling in Chapter 3 makes up a useful introduction to the output side of computer modelling studies of climate change. The importance of specification of boundary conditions, and the basic physics that drives the models, are considered in less detail.

Chapters 2 to 5 are in many ways the core of the book. Here the isotopic records from cores in deep-ocean sediments and ice sheets are described, providing an outline of the major climate shifts since oxygen isotope stage 5e (the last interglacial). I would have welcomed a section setting the last glacial–interglacial cycle within the perspective of longer term isotopic records from the oceans, showing a series of cold–warm cycles during the last one to two million years. This would have demonstrated that the rest of the volume is dealing with evidence for only the latest of a series of oscillatory changes in the global climate system. The history of ice sheets over the last glacial cycle, and the nature of deglaciation, is discussed clearly in Chapters 4 and 5. The title of Chapter 5, 'The melting of the last great ice sheets,' is a little misleading in the sense that, particularly in the early stages of deglaciation, much mass loss from the Laurentide ice sheet in particular was probably in the form of rapid iceberg calving rather than direct melting.

A variety of Quaternary environments and processes are dealt with in Chapters 6 to 10, including permafrost conditions; the climate record in lakes, bogs, and mires; palaeohydrology; aeolian action; and volcanic activity. Late Quaternary climate change outside the areas affected directly by glacier ice, described in these chapters, is a useful treatment, but tends to concentrate on geomorphological evidence. I would have preferred to see more information from both the litho- and bio-stratigraphic records. However, the coverage of such a wide range of

evidence and topics is on the whole well-balanced. I particularly enjoyed reading about the Late Quaternary history of low latitude lakes, which was dealt with very thoroughly. A similar comment applies to the chapter on volcanic activity. The chapters on isostasy and sea-level change were also written clearly and provide a good introduction to those topics. Chapters 11 and 12 outline the effects of isostatic loading by ice and the record of both isostatic and eustatic sea-level change. The book is concluded with a discussion of the links between Late Quaternary climate change and Milankovitch variations in radiative inputs to the Earth.

One aspect, recurrent through the book, that is a little disappointing is the lack of critical discussion of the chronology of past environmental change. Dating control, combined with stratigraphic considerations, is vital to correlations between sites and to our understanding of the timing and rates at which environmental changes take place. Dawson recognises the importance of geochronology in his introduction, but then states that he has attempted to use the dates that 'are considered the most reliable.' The implication is that debates over timing are not dealt with in detail, a stand that is largely confirmed throughout the book. The stated notion that the conventional radiocarbon timescale does not vary markedly from sidereal years is also an oversimplification, which can lead to significant misinterpretation at times where divergence between the two scales does occur.

The book is well-illustrated with line drawings. These are a strength of the volume, and many have been redrawn from the originals to emphasise key points. There are also 16 black-and-white plates that have been reproduced with variable quality.

In summary, Dawson has produced a useful and very readable undergraduate textbook on Late Quaternary environmental change. The caviat is that the undergraduate reader should be aware that a more critical appraisal of the evidence, and particularly the geochronological data, will require a careful reading of the primary scientific papers on which all textbooks are based. The book certainly provides a good starting point for those interested in the shifting nature of Earth's environment during the last 130,000 or so years. (Julian A. Dowdeswell, Scott Polar Research Institute, University of Cambridge, Lensfield Road, Cambridge CB2 1ER.)

A HISTORY OF ANTARCTIC SCIENCE. G.E. Fogg. 1992. Cambridge: Cambridge University Press. xxi + 483 p, illustrated, hard cover. ISBN 0-521-36113-3. £55.00.

This is an excellent historical account very much parallel with the author's previous work, *The explorations of Antarctica: the last unspoilt continent* (1990; London: Cassell; reviewed in *Polar Record* 26 (159): 338). The essential difference is that the new work emphasises the development of scientific knowledge of Antarctica, whereas the former was essentially a geographical history. A quotation from George Sarton at the beginning aptly summarises the author's perception of the significance of the history of science:

> Science must be tempered with humanity, and the best way of doing this is to explain its organic development, and also to show all that was really great, beautiful and noble in these civilizations of old, all that our conceited scientists and inventors have too often forgotten and disdained. We must teach reverence for the past, – not simply for its own sake or because it is still full of treasures, – but for the sake of the present which it will aid us to appreciate, and for the sake of the future in which it will help us to walk with dignity.

After an introductory chapter, the author discusses the southern voyage of Sir Edmond Halley in 1700, which is regarded as the beginning of geophysics. The chapter continues with a description of the scientific aspects of the two early Antarctic navigators, James Cook and Thadeus Bellingshausen. The early sealing industry is mentioned only briefly, which is appropriate, for, although their contributions to geographical exploration were large, not much was contributed to scientific knowledge by sealers. More familiar scientific investigations are described in the following chapter, with the contemporaneous British, French, and American expeditions. The competition and cooperation associated with this period is discussed from the aspects of national interests — a theme that pervades the book, as indeed it pervades science in Antarctica.

The period from the *Challenger* expeditions until about 1925 is covered quite rapidly. Undoubtedly this is a very well-known period, but the scope of its contributions to science may have justified somewhat more detail. Sufficient information is given to allow the reader to follow the development of techniques. This theme is followed in the next chapter with descriptions of improvements in ships, electrical communications, motor vehicles for travel over snow, aircraft, aerial survey, construction techniques, and several other items. The expeditions of Richard E. Byrd are used to provide examples of much of this, but indications of the many contributions of other expeditions are given by the photographs.

The modern period of Antarctic science is regarded as beginning at about the time of the Second World War, and the author again emphasises the influence of politics. The economic (and scientific) importance of the whaling industry is again indicated, but it is unfortunate that the German raiders that destroyed most of the fleet are incorrectly described as submarines. Although overlapping territorial claims to the Antarctic were made during this period, some were of considerably longer standing. Methods to resolve some of these difficulties and the drafting of the Antarctic Treaty are examined. These led to the concept of Antarctica as a 'continent for science.' National Antarctic programmes and the role of the Scientific Committee on Antarctic Research (SCAR) in coordinating their scientific programmes after the International Geophysical Year (1957–1958) are treated with comments on the essential distinction between SCAR and the Treaty. The chapter concludes with pertinent observations about private expeditions of adventurers or those expressing political aspirations; examples are given of some