

explore large parts of the north coast of the North American mainland, its members also made detailed scientific observations and recordings and compiled extensive collections of botanical, zoological, and geological interest. The expedition also launched the career of three of the most famous and influential polar explorers of the first half of the century: Franklin, John Richardson, and George Back. And, perhaps most importantly, the extreme hardships of the journey led to tragedy and the deaths of 11 of its 20 members. These calamities were, in turn, so well-publicised that they became major factors in developing the popular images of the Arctic that flourished throughout the western world for much of the rest of the century. This despite the fact that the only first-hand published account of the expedition for a century and a half was Franklin's long and tedious *Narrative of a journey to the shores of the Polar Sea* (Franklin 1823).

Several years ago, Stuart Houston of the University of Saskatchewan completed a remarkable academic labour that had taken him more than two decades: editing, annotating, and introducing the journals and other expedition materials of the three naval officers serving under Franklin. As opposed to Franklin's book, which had been designed for reading by the British lay public, each of these journals was an official document, written without the concern of what the public might think. Thus, each of the three volumes that Houston edited opened up new vistas in understanding the expedition, not only because the use of the journals allowed differing, more personal perspectives on previously recorded events, as well as insights into the specific individuals recording those events, but because the men were at times separated and therefore were writing about different occurrences in different times. This trilogy was further increased in significance with the recent publication of Franklin's own official journals and correspondence (Davis 1995), an effort that expanded and deepened the understanding of both the expedition and its leader's perceptions.

These two volumes are the initial paperback editions of the first two volumes of Houston's masterly trio, both of which have long been out of print and have become hard-to-find and very expensive commodities. Released following the publication of Houston's volume on the expedition materials of George Back (Houston 1994), and almost in sync with Davis' Franklin opus, these two books allow polar scholars who were not on the scene a decade or two ago to complete the cycle of primary publications about the Arctic Land Expedition.

*To the Arctic by canoe* records the journal entries of Midshipman Robert Hood, an astute observer of both nature and mankind, and a very talented artist as well. Unfortunately, Hood's writings — which showed an impressive understanding not only of his naval colleagues but of North American native peoples and their relationships to both their environment and the steadily encroaching onslaught of men of European descent — ended prematurely, because he was killed by a voyageur on the return south from the Arctic coast. Houston has combined

Hood's journals with extensive background information, annotation, and commentary on Hood's paintings, a number of which are reproduced in the book.

*Arctic ordeal* — presenting the journal of Richardson, the expedition naturalist — is a more involved work, as it required not only a detailed introduction and careful commentary on the journal, but extensive annotation about Richardson's many and varied scientific observations, including those on geology, botany, birds, and land and water wildlife. However, by carefully editing together Richardson's journals and his official report, Houston has managed, despite his attention to historical accuracy and the presentation of a mass of scientific detail, to make the book flow with the excitement usually reserved for a less scholarly publication.

These two books legitimately received extensive praise when they were first published. Now that the final of the three works has also made a positive impact on polar community, those who value polar scholarship should be grateful to McGill–Queen's for making the first two accessible again. (Beau Riffenburgh, Scott Polar Research Institute, University of Cambridge, Lensfield Road, Cambridge CB2 1ER.)

#### References

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- Houston, C.S. (editor). 1994. *Arctic artist: the journal and paintings of George Back, midshipman with Franklin*. Montreal and Kingston: McGill-Queen's University Press.

**PAST GLACIAL ENVIRONMENTS: SEDIMENTS, FORMS AND TECHNIQUES.** John Menzies (Editor). 1996. Oxford: Butterworth Heinemann. xxiv + 598 p, illustrated, soft cover. ISBN 0-7506-2352-7. £40.00.

*Past glacial environments* represents an attempt to summarise what is currently understood about the various aspects of glacial geology with respect to the Pleistocene and pre-Pleistocene glaciations. The book consists of 17 chapters that have been written (and co-written) by 18 contributors. Subject matter varies widely, from sedimentary analysis of glacial geology, to descriptions of laboratory techniques used to make such analysis possible. The volume is edited by John Menzies and is intended for use as an undergraduate-level text book. It is therefore assumed that the reader possesses some previous knowledge about glaciology and glacial-geology.

This text book claims to offer a great deal. There is certainly a place in the market for an all-encompassing undergraduate text relating to the glacial-geology of ice-age activity. However, after initial examination of the book, one becomes quickly disappointed with it. The main reason for this is that it has no obvious structure. Certainly the book has an 'aims and objectives' section at the start,

but one can see no reason for the order in which the volume is formulated. The chapters do not appear to be comparable in terms of their remit or length. For instance, a very interesting chapter on sub-glacial environments is more than 100 pages long, yet two chapters later is one of 18 pages, devoted solely to ice scouring for the specific purpose of determining palaeo-lake environments. The result of having several chapters that appear unrelated to each other, within a book with little in the way of scientifically related structure, is very unfortunate.

As is frequent in edited volumes, the writing styles differ dramatically between chapters. Consequently, not only is the subject matter difficult to follow, so is the style of the book itself. In the references, I discovered very few articles dated after 1991. This suggests that the book does not account for recent research activities and may be around five years behind current 'state of the art' knowledge. Many of the figures used are of poor quality, and the photographs are often very grey in appearance. Some diagrams represent simple photocopies of existing figures within scientific articles. For example, the legend in Figure 2.30 (representing a theoretical cross section through a drumlin) is very difficult to read, which leaves the figure uninterpretable. I can only conclude that the publisher was unwilling to provide resources for diagrams, or that the inclusion of a series of compatibly designed graphics was not anticipated. This is unfortunate, since the lack of continuity between figure style gives the book a rather untidy appearance. With the availability of modern desktop publishing and computer graphics tools, this aspect of the book is both irritating and unnecessary.

Of particular disappointment is that, in a text book more than 500 pages in length, which claims to represent a review of current knowledge about past glacial environments, there is no explicit account of what the ancient ice sheets looked like. Surely a chapter devoted to the reconstruction of ice masses should be a prerequisite for a text such as this. How can an undergraduate expect to relate to chapters that provide information about past sub-glacial environments without being informed about where large ice masses may have existed in time and space? Moreover, a chapter devoted to the relative sea-level change that is caused by glacial isostasy becomes meaningless without information about the volumes of ice that existed globally at the last glacial maximum. Neither is there much discussion concerning climate change and the processes by which ice ages are forced, subjects that surely require definition.

There are, however, useful contributions that stand out in the book. For example, there is an excellent chapter devoted to sub-glacial environments, by Menzies and Shilts. Also a fine review of glacial marine environments is provided by Elverhøi and Henrich. In fact, most of the chapters are scientifically valid, with extensive examples and supportive diagrams. Moreover, the contributors are amongst the world's most renowned within the areas covered in their respective chapters. However, this is

perhaps more indicative of the book being an 'opportunity missed' as much as it is to the book's credit.

I expected a lot from this book, and *Past glacial environments* had the potential to be the excellent summary of glacial geology that it claims to be. However, it is not; it is too long, too confused, and too expensive (at £40) to be used as an undergraduate text. Perhaps the problems evident within *Past glacial environments* lie with the scope being too wide.

This has, sadly, been a largely negative review. However, the book does contain a great deal of interesting information concerning past glacial environments. Unfortunately, in my opinion, the problems far outweigh the successes of this book. I therefore would be reluctant to recommend it as a course text for undergraduate use. Although the book will sit well amongst contemporary publications within university library shelves, I cannot envisage it lying on many students' desks. (Martin J. Siegert, Centre for Glaciology, Institute of Earth Studies, University of Wales, Aberystwyth, SY23 3DB.)

**ALEUTIAN ECHOES.** Charles C. Bradley. 1994. Fairbanks: University of Alaska Press. xxviii + 286 p, illustrated, soft cover. ISBN 0-912006-75-7. \$US25.00.

Charles Bradley is a geologist who has worked in several posts in the universities of Montana and Wisconsin. This book is not simply a tale of his 'war exploits,' but also reveals, among other things, the story of how he became a geologist in the post-war years.

After the inconclusive battle of the Coral Sea, the Japanese high command came up with an elaborate plan to capture Midway Island in June 1942. This plan involved an attack on the Aleutian Islands to draw the US naval forces northwards. The Japanese plan failed badly and the tide of the Pacific war started to turn. One result, however, was that the Japanese had bombed Dutch Harbour in Unalaska and invaded the two Aleutian islands of Attu and Kiska. The Japanese retreated from Kiska, but the battle for Attu in May 1943 was long and bloody. It was a major amphibious operation with many thousands of troops equipped with clothing designed for use in temperate zones. The polar maritime climate they encountered was so unexpected that there were huge casualties from the weather alone. It therefore became important for the armed forces to develop clothing and tactics to reduce the level of non-combat deaths and injuries. It is in some ways surprising that there existed such a lack of understanding of the conditions, but it was an extremely remote region, and the reader can put the situation into context when he remembers that, only 20 years previously, a certain Captain Eisenhower had taken more than two months to cross the United States by motor convoy because of poor knowledge of the conditions and the roads.

Bradley, a graduate geologist, was a professional photographer and keen outdoor man at the start of the war. After a brief sojourn in the Medical Service, Bradley joined the newly formed Ski Troops, a unit in the 87th