

Unquestionably McClure's expedition was more noteworthy than that of Ross, because, by connecting Parry's discoveries of 1819–20 with known territory on the mainland coast, it revealed a potential Northwest Passage, one that McClure and his men actually traversed — partly by ship, and partly on foot after being rescued from their ice-bound ship at Banks Island. Because Cresswell preceded his shipmates to Beechey Island, he was able to reach England a year before McClure and the others, becoming 'the first man to traverse the North-West Passage' (page 7). (The first of two men, actually, for he was accompanied by Lieutenant Wynniatt.)

In *The Arctic grail* (1988) Pierre Berton pointed out that the providential rescue of the *Investigator's* men was in part attributable to Cresswell's own father, whose plea to the Admiralty to look for them at Melville Island led to Belcher sending two of his ships westward.

The book includes five rather pathetic maps showing regions in which Cresswell served. The Arctic map contains the misspellings 'Byan Martin Island,' 'Dealey Island,' 'Barrow Straight,' and 'Davis Straight.' In the text Nanking is spelled two ways (pages 13, 34), and Cresswell's name is once given as 'Creswell' (page 23n). John Barrow (page 125n) was not 'Admiralty Secretary' but Keeper of Records. 'Capt. John Rea, Arctic explorer' (page 124n) apparently refers to Dr John Rae.

The illustrations are superb. One is a painting of Cresswell making his naval debut at the age of 14, all decked out in dress uniform, his gaze resolute beyond his years, ready to unsheath the huge sword hanging from his belt and fight to the death against swarms of fierce pirates. With one exception, all the other 30 illustrations are black-and-white copies of sketches (possibly watercolours) by Cresswell himself, beginning with one done at the age of seven! Twenty represent Arctic scenes. In 1854 Cresswell personally exhibited lithographs of eight of his works to Queen Victoria.

In *Lobsticks and stone cairns* (Davis 1996), Leslie Neatby suggested that Cresswell was not an officer who stood out on HMS *Investigator*; he was scarcely mentioned in the diaries of Armstrong and Miertsching. But, he conceded, his paintings of Arctic scenes 'do more than the liveliest prose to bring home to us what was endured by the stalwarts of the British Navy in the mapping of Canada's northern archipelago with wind-jammers and man-hauled sledges.' This opinion is supported in the strongest way by Harrod's publication of many sketches that Neatby evidently did not see. One wonders which eight were made into lithographs, and whether other sketches exist. (W. Gillies Ross, Department of Geography, Bishop's University, Lennoxville, Quebec J1M 1Z7, Canada.)

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ICE SHEETS AND LATE QUATERNARY ENVIRONMENTAL CHANGE. Martin J. Siegert. 2001. John Wiley and Sons. xv + 231 p, illustrated, soft cover. ISBN 0-471-98570-8. £19.99.

Martin Siegert's aims in this book are threefold: to explain how former ice sheets can be reconstructed; to present the dimensions and dynamics of these former ice sheets; and to show how Late Quaternary ice sheets were an interactive element of the global environment. The target audience is an undergraduate one, but the author believes some researchers may find it useful for an up-to-date summary, particularly as the book is an explicit attempt to update the CLIMAP ice-sheet reconstructions presented in Denton and Hughes (1981).

The book does achieve all three aims and the first two are dealt with particularly well. In trying to cover the broad range of material necessary to explain Late Quaternary environmental change, Siegert has inevitably been forced to shorten some accounts and in places perhaps has tried to cover too wide a subject (for example, the explanations of glacial geology and geomorphology in chapter 4 sit a little uneasily with the rest of the book). Overall, the book takes an undergraduate reader quite rapidly through some of the basic principles of global environmental change. It does provide some good explanations of the latest hypotheses of the potential causes of ice ages and the mechanisms of environmental change. Several hypotheses published in late 1999 and 2000 are included, and for a textbook it is unusually up to date.

For these reasons, I believe it is an excellent undergraduate text for any course incorporating ice sheets, but as a more general reference for global environmental change it would be better placed as an addition to Lowe and Walker (1997) and would provide some of the more current and, in some cases, controversial ideas about the initiation of ice sheets and causes of glacial cycles. Similarly, I would recommend undergraduates to Benn and Evans (1998) or Bennett and Glasser (1996) for basic glacial geology/geomorphology and use Siegert as a way of introducing some of the newer ideas (for example, potential of cold-based ice to erode) and for a good explanation of ice-sheet modelling.

For researchers this book does provide a useful reference work on ice-sheet dynamics and dimensions, and has a number of useful diagrams reproduced together, which show the detailed structure of glacial–interglacial (and shorter) cycles. Any researcher interested in a starting point for diving into the literature on reconstructions of any particular ice sheet would be well advised to start here. Siegert's aim to update CLIMAP is admirable and he does it well. However, the recent development of a successor to CLIMAP, namely the Environmental Processes of the Ice Age: Land, Ocean, Glaciers (EPILOG) program (Mix and others 2001), means that his attempt to provide the most comprehensive discussion of ice-sheet reconstructions may well be superseded by EPILOG publications. It is likely that EPILOG will become the new research-level

benchmark for discussion of ice-sheet volumes, but Siegert's book will undoubtedly remain the most useful undergraduate text on the subject and a useful reference for researchers.

In terms of balance, there are the usual leanings towards an author's research area: the Antarctic ice sheet is well covered and is very up to date. Similarly the book provides one of the few textbook accounts of glacial sedimentation of continental shelves and is extremely current, incorporating much recent work from the northern European and Greenland margins. The Eurasian ice sheet is also discussed in detail, and provides a helpful starting point to enter into this difficult literature. Chapter 13, which is an account of the dimensions and dynamics of the smaller ice sheets and ice caps (for example, Patagonia, New Zealand, Iceland, and Tibet), is noticeably less current than the other chapters. Although volumetrically less significant, these ice sheets and ice caps are becoming increasingly important to understanding the mechanisms of environmental change. For example, study of the behaviour of the Patagonian ice sheet provides a marvellous opportunity to investigate a long latitudinal transect through southern South America, but some of the more recent work is not referred to (such as the work of Lowell and others 1995). Iceland is covered best in this chapter, and Siegert acknowledges its key role next to the Nordic seas region of deep water formation, which means that it is increasingly important to understand its potential impacts on (and response to) changes in North Atlantic circulation. However, of the regions discussed, certainly New Zealand, mainland Europe, and Patagonia could be significantly updated. The basic principles of glacial geology and geomorphology are rather rushed in chapter 4, but are well backed up by references.

In general the production quality is high and most diagrams have been redrawn or (in the case of line diagrams) reproduced at a high resolution. However, there are a few notable exceptions where reproductions are of low quality for a modern textbook (Figs 10.6, 11.4, 11.6, and 13.3) and should be updated in any future editions. In a number of cases the figure caption does not adequately explain the full range of symbols on the diagram (for example, there is no explanation of the various ocean current acronyms in Fig. 8.4).

I recommend this book to anyone interested in Late Quaternary ice sheets, as it provides an excellent back-up to some of the basic undergraduate texts on Quaternary environmental change, with cutting-edge ideas and challenging hypotheses that could be used to stimulate students during the later years of undergraduate Quaternary courses. (Mike Bentley, Department of Geography, University of Durham, Science Laboratories, South Road, Durham DH1 3LE.)

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THE RACE TO THE WHITE CONTINENT. Alan Gurney. 2000. New York and London: W.W. Norton & Company. x + 320 p, illustrated, hard cover. ISBN 0-393-05004-1. £19.95; US\$26.95.

'To make out precisely where the different expeditions went, what they wanted, and what they effected, is no easy task' (*The Saturday Review* 1859).

The above words were written in connection with the final stages of the Franklin search, but they could equally well apply to the main subject of Alan Gurney's latest book: the three great national expeditions of the late 1830s and early 1840s. These, of course, were French under Jules Sébastien César Dumont d'Urville in 1837–40, American under Charles Wilkes in 1838–42, and British under James Clark Ross in 1839–43.

Gurney's first book, *Below the convergence: voyages toward Antarctica, 1699–1839*, was published in 1997. The present volume is the sequel foreshadowed in the final chapter of that book. *Below the convergence* was reviewed in this journal by Professor T.H. Baughman who, while having a generally favourable opinion, subjected it to fairly severe criticism on four grounds. These were that the author avoided the past tense, that he 'rarely reminded the reader of the year,' that he did not cite his sources adequately, and that the editing of the work had been poor (Baughman 1997: 251). The present reviewer's conclusion is that the author's work with regard to the first two points is definitely better, but that, concerning the other two, the situation is, if anything, even worse. This is a real pity, since Gurney has written a work of high quality and one that could so easily have been *the* book on the subject, meeting the needs of both the general reader with Antarctic interests and the more specialist historian for years to come.

Gurney certainly does not believe in pitching straight into his subject, and, indeed, the reader only arrives in the Antarctic, so to speak, after about 140 pages. But much of the preceding text is very interesting, as the author provides a series of discursive background essays on subjects such as the world as known in 1830, and the advances in exploration from the eighteenth century, with pertinent character sketches of the main participants both at home and at sea. The chapter entitled 'Blubber hunters and traders' is a very interesting account of the whaling trade, with a concentration on New England, and ends with comment on the immense efforts made in hydrography by the Royal Navy in the period following the Napoleonic