in control of water pollution have in many cases led to marked improvements.

In the final chapter, Antti Haapanen discusses the conservation of biodiversity. According to him, fragmentation of natural habitats has at least in part been prevented by establishing national parks and nature reserves of sufficient size. He also notes that semi-natural habitats are becoming endangered due to major changes in land use.

There is a comprehensive index at the end of the book, and each chapter contains a concise list of references aiding the reader to find additional information on the subject at hand. A short description and affiliation of the contributors is also given.

The topics covered by the various chapters, their grouping, and their order of presentation could have been organised differently. It also seems that the editor had an ungrateful and difficult task of rounding up the various topics and finding suitable authors and keeping them in line. How well he succeeded is a matter of opinion, but considering the scope of the book, my view is that Seppälä did a good job. But in any good treatise there is also room for some criticism.

Due to the many authors, the quality of the language is not uniform, and, in fact, the non-English background of several of the authors is clearly detectable. This can also be seen in some of the terminology used in the text. Although geological and geographical glossaries are available both in printed form and on the Internet, a special glossary of some of the terms used in the text might have been beneficial for a person not well versed in the field.

The index in the back of the book is quite helpful, although the purpose of including a list of figures is not clear. In my view, the search for a specific figure is easier by paging through the book than by searching the list. Furthermore, it is a pity that neither the captions associated with the plates nor the list of colour plates in the beginning of the book give any hint of the page number where they are mentioned in the text itself.

Another minor complaint has to do with some of the illustrations. Although most are well chosen and informative, the print quality has not always been the best. This is especially true of many of the photographs, many of them being dull grey with low contrast and clarity. The four colour plates, placed in the middle of the book — obviously due to binding constraints — are much better thanks to the glossy paper on which they are printed. The graphics are generally good, although in some cases the reproduced figure size is not in good agreement with the portrayed information.

Despite some shortcomings, the book *The physical geography of Fennoscandia* gives a very good general view of this northernmost part of mainland Europe. It is suitable reading both for the specialist and the interested layman, and will surely find a worthy place in a private library as well as in an institutional one. (Boris Winterhalter, Geological Survey of Finland, Betonimiehenkuja 4, 02150 Espoo, Finland.)

THE S.S. *TERRA NOVA* (1884–1943): FROM THE ARCTIC TO THE ANTARCTIC, WHALER, SEALER AND POLAR EXPLORATION SHIP. Michael C. Tarver. 2006. Brixham, Devon: Pendragon Maritime Publications. 256 p, illustrated, hard cover. ISBN 0-9552208-0-7. £30.00.
doi:10.1017/S0032247406245996

At first glance, it is surprising that Ann Savours' comprehensive 'biography' of the famous polar exploration vessel *Discovery* was not followed by a multitude of similar books on polar ships, for their names are seared into the annals of polar history as clearly as the names of the explorers who sailed in them. From *Erebus* and *Terror* to *Fram, Endurance*, and *Aurora*, their timbers reverberate with the tales of the frigid human endeavours played out upon their decks. Often these endeavours are tied in the minds of polar pundits to a particular expedition or adventure, and such is the case with S.S. *Terra Nova*, the famous vessel used by Captain Scott on his final British Antarctic Expedition 1910–13. This has been particularised to the point where it is often simply called the *Terra Nova* Expedition. Yet such particularity is mistaken, for many of these vessels had long and distinguished polar careers spanning many decades and numerous expeditions. As such, their stories can be useful vehicles for the historian, much as the original vessels were useful vehicles for their captains, in penetrating the wider — and often unknown — polar landscape. Against such a canvas, one expedition becomes a passing moment, if an apex, in a ship's tale. All too often, however, the apex is brief and the deep layering of its remaining history appears to render the ship's story as inscrutable as the ice which it was built to penetrate. So perhaps we should not be surprised that polar writers have generally avoided the subject, preferring the quick returns from subjects more glibly researched and profitable. I am glad to say that this book is an exception.

The story of S.S. *Terra Nova* has taken 20 years of research to uncover, and for this meticulous work the author, Mike Tarver, is to be warmly congratulated. From the day the keel of this powerful steam-whaler was laid in Dundee, to the day the floundering ship was sunk by shell-fire from the United States' navy, the story of *Terra Nova* is a remarkable one. Whether as a Dundee whaler; as part of the fleet of 'wooden walls' sealing for Bowring Brothers from Newfoundland; or in her moments of fame in the British National Antarctic Expedition (1901–04), the United States Fiala-Ziegler Arctic Expedition (1903–05), or the British Antarctic Expedition (1910–13), her 60-year career is lovingly unveiled through a remarkable collection of sailors' anecdotes and photographs. Even the appendices are of interest, including the reproduction

of important historic documents and short biographies of *Terra Nova*'s 19 captains. Many of these were colourful characters with lives determined by the vicissitudes of the ice. By focusing on the activities of the ship, rather than on Scott, this book even manages to uncover a side to the famous British Antarctic Expedition that is rarely appreciated today. However, it is in the least famous parts of *Terra Nova*'s story that the fruits of many years labour are revealed. In particular, there are the vivid accounts, in 'Newfie' dialect, of her days on the sealing grounds, often under the command of Captain Abram Kean. Captain Kean worked the sealing grounds from 1889 to 1936, commanding a number of sealers, including, for 10 seasons, *Terra Nova*. He became known as the 'Admiral of the Fleet,' such was his success and longevity as a captain, and despite being caught up in several Arctic disasters, with large losses of life, his commercial success gained him immense respect. He was awarded an OBE in 1934 and presented with a model of *Terra Nova* in a glass case.

Tarver has also penetrated numerous rumours to provide a comprehensive account of *Terra Nova*'s dramatic sinking, whilst under charter to ship supplies for the war effort. Previously published accounts suggested that she was sunk by enemy action or caught fire. However, these rumours have always been difficult to substantiate since any papers were thought to have been lost when the offices of Bowring Brothers were bombed during the Second World War — although this action actually predates the loss of the ship. However, published accounts by the captain and the radio operator have been traced, along with still-living eye witnesses who have given accounts of the dramatic events of 13 September 1943, when the last-but-one of the 'wooden walls' went down off Greenland.

Given this rich material, it is a pity that the writing is occasionally laborious and somewhat repetitive; however, the remarkable content of the book overcomes this. Sailor's yarns intersperse with ship logs and shipwrights' lists to form a vibrant account of a long-lost polar world of sail, steam, seal blubber, and mariner-heroes. In particular, the collection of historic photographs is superb, from those of famous days with Scott by Herbert Ponting, to an equally familiar ward-room, yet photographed with an anonymous sealing captain and his mates. Many polar books have been let down in recent years by publishers printing poor quality images, an act of laziness for which there is no excuse in our digital age. This book joins those few with high quality picture reproduction. It is richly illustrated, beautifully crafted and the sort of book that is simply a pleasure to own.

It is much to be hoped that similar histories may now appear for other famous vessels of polar exploration, for despite the difficulties of the research, Tarver has shown that it can be done. Their characters and adventures are no less riveting that those of their seafaring occupants and are often more revealing of a vanished polar age. (David M. Wilson, 71 Myddelton Avenue, Enfield, Middlesex EN1 4AQ.)

REMOTE SENSING OF SNOW AND ICE. W. Gareth Rees. 2005. Boca Raton, FL: CRC Press. xx + 285 p, illustrated, hard cover. ISBN 0-415-29831-8. £56.99; US$99.50.
doi:10.1017/S0032247406255992

This book is an excellent summary of the remote sensing techniques appropriate to snow- and ice-covered regions, image-processing techniques useful for handling these data, and physical properties of snow and ice relevant to remote sensing. It is aimed at a post-graduate level, but could be used in an undergraduate course. Indeed, although the book is specifically aimed at remote sensing of the cryosphere, it provides a good summary of the basic principles that are appropriate for all remote sensing. It is a book that would be a useful addition to the bookshelf of anyone working on the cryosphere, providing as it does an introduction to most remote sensing techniques currently in use. Because it is strongly physics based, it is likely to provide at least a roadmap for understanding future methods.

The content of the book provides good coverage of techniques in use for studying snow and ice. It covers both satellite and airborne remote sensing and active and passive sensors across the electromagnetic spectrum from visible to microwave wavelengths. There are omissions: neither satellite observations of the gravitational field (for example, the Gravity Recovery and Climate Experiment (GRACE)) nor seismic sounding are covered, although the former is hinted at on page 152. Both omissions are understandable, as the former is a new technique not primarily aimed at understanding the cryosphere, and the latter is well covered by other geophysical textbooks. Seismic sounding of glaciers is not different in principle from seismic methods used in geological settings, and has several simplifying aspects — notably that glacier ice is a remarkably pure and homogenous medium, unlike the rocks usually sounded by this technique. However, the book is focussed on remote sensing using electromagnetic radiation. As noted above, in most cases, the book provides an excellent general background to the remote sensing techniques described, equipping the reader to understand new sensors as they become available.

The book is particularly strong in the area of passive sensors of electromagnetic radiation, from microwave to optical wavelengths. The author covers the physics and practical use of such sensors in considerable detail, explaining the benefits and limitations of each technique in turn. This is especially valuable where he explains the limits on spatial and spectral resolution for each broad region of the electromagnetic spectrum.

The book is subject to one main criticism, and that is that the coverage of techniques is uneven. While the