Brower's *Fifty Years Below Zero*) are still of local interest but lack the scholarly perspective of an historian's years of research. Bockstoce's book gives us the historical perspective that the commercial bowhead fishery richly deserves. He also explores the flavor of personalities and life before the mast. Would this heroic bit of history be more widely celebrated if it had not been eclipsed by the simultaneous settling of the American West?

The book is generously illustrated with photographs, drawings, and advertisements of the time, as well as with eight maps charting particular events. Editing and printing are virtually flawless. It seems a handsome volume for the price. As a landlubber, I found the profuse nautical vocabulary occasionally difficult but apparently precise. The glossary, and four other appendixes, are useful and relevant.

Though Sylvester Stallone may not purchase the movie rights to this book, *Whales, Ice, and Men* is no dry chronology. Fortunes were won and lost, 150 ships were lost; there are true tales of scandal, murder, incompetence, and heroism. There is also scholarship and objectivity. Bockstoce has crafted a superb book.

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PIPELINES AND PERMAFROST: SCIENCE IN A COLD CLIMATE. By PETER J. WILLIAMS. Ottawa: Carleton University Press, 1986. viii + 129 p., index, bib. Softbound. Cdn $9.95.

At the end of World War II, it was obvious that Canada must start to use its polar lands or lose sovereignty over them. Although mineral deposits were known to be present in the Shield, they were too far from markets to be economically worth exploiting except in a few special cases. On the other hand, Alexander Mackenzie had reported oil seepages near Norman Wells in 1789, and the first oil well had been drilled there in 1924. Subsequently, the oil produced was sent to Whitehorse along the ill-fated Canol pipeline for a brief period in 1943, but a burst in that pipeline showed the risks involved in such ventures.

Exploration in various parts of the northern sedimentary basins around the margin of the Canadian Shield soon established the presence of substantial oil and gas reserves, and even larger reserves were found in the Soviet Union and Alaska. This raised the problem of how to get the products to market, spawning a considerable number of proposals for pipelines in arctic North America, especially in the boom period before the collapse of world oil prices in 1981-82. The Canadian Government had learned from experience that development could be difficult unless carried out properly, and it was coming under more and more pressure from environmentalists and the native peoples to ensure that the proposals were geotechnically sound and would minimize the risk to the environment.

Pipelines and Permafrost describes the resultant hearings and discusses the successes and failures of the few developments that have been allowed to proceed from the viewpoint of one of the environmental consultants. It is an updated edition of the book first published in 1979 by the Longman Group of London. Like its predecessor, it is a readable account of the debates over the pipelines, including a relatively simple description of some of the technical problems that have to be overcome. The two major recent pipeline projects that have gone ahead in North America (the Norman Wells Pipeline and the Trans-Alaska Pipeline) are discussed, together with the debate over the Alaska Highway Gas Pipeline that ended when falling energy prices and escalating construction costs made the project uneconomic. However, if energy prices rise significantly, the debate may be renewed, so it is extremely important to have on record a concise, readable account of the limitations to our knowledge concerning the construction of pipelines in permafrost areas.

Chapter 7 is new and describes the recent work on the problems that limit construction, lamenting the lack of information being gleaned from the rather considerable pipeline experience obtained in Russia. It also points out that if research is left to industry, the research may be abruptly terminated and the results never written up if they are not of immediate use to the company supplying the necessary funds. This emphasizes the importance of continued funding of government and university research on these problems, so that when the inevitable rise in energy prices once again raises questions of pipeline construction, we shall be better prepared to deal with them.

The selected references and comments at the back of each chapter have been updated and improved, so it will be easier for the interested reader to find additional material. The additional chapters successfully update the book so that it continues to fulfill its original purpose.

Geographers, political scientists and others interested in the technical problems of pipeline construction over permafrost soils will find this book fascinating. Those who are more concerned about the effects of pipelines on the biota will continue to find that this book largely ignores that area. It is a well-illustrated and provocative book, and this paperback edition is good value for the price. The revised edition differs sufficiently from the original that many owners of the first edition will want to buy the new one.

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THE NORDIC SEAS. Edited by BURTON G. HURDLE. New York: Springer-Verlag, 1986. 777 p., 26 maps, 262 illus., 19 colour plates, index and bib. with each chapter. Hardbound. US$69.50.

This handsomely produced volume aims to be "a reasonably comprehensive multidisciplinary scientific description of the Nordic Seas." This volume coins the name Nordic Seas as a collective name for the Norwegian, Greenland, Iceland and western Barents seas; I hope this comes into common usage. With chapters covering all aspects of the physical environment of the Nordic Seas from the atmosphere above them, the ice and water within them and the rocks and sediments below them, it truly is multidisciplinary. The foreword and the afterword also emphasize the importance of the Nordic Seas both as the birthplace of modern physical oceanography and as an ocean basin in early adolescence.

The initial chapter, "Climatology," by S.G. Gathman, is disappointing in that it states that the marine climate database is insufficient to provide a quantitative description of the climatology of the Nordic Seas. What climatology appears is based almost entirely on data collected in and near the Norwegian Sea. The chapter concludes with a discussion of the meteorological data collected during two month-long summer cruises in the region during the early 1970s, whose principal point seems to be that the strong sea surface temperature gradients found in the region are responsible for a high incidence of marine fog.

Happily, much more information is available from the rest of the book. P.D. Wadhams's chapter, "The Ice Cover," is a wealth of information on sea ice and icebergs in the Nordic Seas covering the full range of data sources from the historical descriptions given by early navigators and whalers to modern aircraft and satellite observing systems. The following chapter by W.F. Weeks, "The Physical Properties of the Sea Ice Cover," discusses the smaller scale physical properties of sea ice in general and points out that only a few such detailed studies have been carried out on sea ice in the Nordic Seas. An addendum by O.M. Johannessen and co-authors, "Preliminary Results of the Marginal Ice Zone Experiment (MIZEX) Summer Operations," previews the scientific results of this major multi-institutional investigation of the physical processes operating at the boundaries between ice pack and open ocean.

Physical oceanography is covered in five chapters. A "Brief Overview of the Physical Oceanography," by O.M. Johannessen, briefly reviews the current systems and oceanic frontal zones of this complex