

formation became known, sealers could intercept the seals en route, lie in wait for them off the Pribilof Islands, or break United States law to raid the breeding grounds. As the value of fur seal pelts increased, the number of pelagic sealers jumped dramatically from only six vessels in 1879 to a total of 122 by 1892. During their tenure in Alaska, the Russians had confined the seal harvest to bull seals. The pelagic sealers showed no concerns for conservation. Not only did they employ firearms that increased efficiency, but they slaughtered nursing mothers that had left their pups on the Pribilofs to range far out to sea in search of food. Rejection of American claims to sovereignty in the Bering Sea and lack of knowledge about seal habits set the scene for a tragedy that almost resulted in the extinction of the fur seals. Despite the obstacles, however, Britain and the United States negotiated one of the first agreements designed to preserve a species of wildlife.

In the present essay, Williams focusses upon United States efforts to protect its seal resources and revenues from pelagic sealers dedicated totally to profits and without any concerns about preservation. When United States laws tightened, Victoria, British Columbia, became the home port for over 100 sealing schooners employing more than 2000 men. In 1886 the Revenue Marine Service, forerunner of the United States Coast Guard, began to seize sealing vessels that broke American laws. When Canadian vessels were detained, the Dominion government turned to Britain for naval and diplomatic protections. After negotiating a temporary *modus vivendi* in 1891 in which both nations agreed to patrol the North Pacific and to try their own citizens, a Tribunal of Arbitration met in 1893 at Paris to seek a more permanent agreement.

The solution adopted provided graphic illustration of the dangers of political solutions to problems where the scientific evidence was not fully available. The assignment of an American fisheries research vessel with biologists, naturalists, and hunters to study the seals came too late to influence the negotiations. As a result, the Paris tribunal overturned American claims of exclusive jurisdiction in the Bering Sea to establish a 60-mile exclusion zone about the Pribilofs that was well within the feeding range of the female seals. The sealers simply formed a cordon about the islands to decimate the herds during their most vulnerable period. With the seals already in dramatic decline, the Paris negotiators seemed to have ensured their eventual extinction. In 1894 the sealers were able to work within the law to devastate the seal herds. If the legal situation was not bad enough, Canadian "seal pirates" evaded American patrols to raid the Pribilof rookeries. Enraged at the loss of revenues, some American legislators introduced draconian bills into Congress proposing the total destruction of the remaining herds so that the United States would obtain the final profits. The arrival of Japanese sealers, who were not bound by the Paris agreement, and the continued depredations of Canadian sealers who raided the rookeries, traded liquor to the native Aleuts, and used other unsavory methods presented graphic evidence of the need for controls.

The author has adopted a popular approach to the topic, and the essay is designed to identify areas for future scholarly research. Certainly, much more can be done to examine the sealers and the Indian hunters who made the annual trip to the Pribilofs. The volume is very well illustrated, but too much text has been crammed onto each page. This could well deter some of the general readers the author wishes to attract. However, the greatest weakness in the present essay is that it requires a thorough editing to remove minor mistakes. Williams has Callao, Peru, identified as the principal seaport of Chile, and there are a number of annoying grammatical errors that detract from what otherwise is a well-researched study. Despite these relatively minor drawbacks, the monograph is a useful introduction to the Bering Sea Fur Seal Dispute.

Christon I. Archer
Department of History
The University of Calgary
Calgary, Alberta, Canada
T2N 1N4

PERMAFROST: FOURTH INTERNATIONAL CONFERENCE, FINAL PROCEEDINGS. Washington, D.C.: National Academy Press, 1984. 413 p. Hardbound. US\$32.50.

This is the second and final volume dealing with the Proceedings of the Fourth International Conference on Permafrost held at Fairbanks 17-22 July 1983. The first volume (see review in *Arctic* 37:312-313) was produced in time to be sent out to conference participants by the end of 1983 and contained the bulk of the papers in English that were presented at the meetings plus English translations of some key Soviet papers. Left unpublished were the papers from the important panel sessions, the translations of the 6 invited Soviet papers and 25 contributed Soviet papers, abstracts of additional Soviet papers published in the Soviet volume (*Problems in Geocryology*, P.I. Melnikov, Editor-in-Chief, Moscow: Nauka, 1983, 280 p.), two American papers, and some additional abstracts. This second volume entitled "Final Proceedings" include these, plus the edited verbatim text of the remarks at the opening and closing sessions, reports on the field trips, the formal program, and lists of the committees, reviewers, and participants. It finishes with an author index and a list of the publications still available from the four international permafrost conferences held to date.

The international panel sessions were chosen to stimulate discussion on key topics in current permafrost research. The topics were deep foundations and embankments, frost heave and ice segregation, sub-sea permafrost, pipelines in northern regions, environmental protection of permafrost terrain and climatic change and geothermal regimes. The idea of having these panel sessions was excellent and it helped workers in other fields to obtain an idea of the state of research in each of these areas. Unfortunately, in one or two cases the statements prepared for verbal presentation are now published in written form without much change and without the illustrations shown simultaneously on the screen at Fairbanks, so that the panel reports vary somewhat in style and value. Nonetheless, the overall result is very good and deserves its place near the beginning of the book.

The Soviet contributions include both full papers and short abstracts from a special volume of papers published in the Soviet Union. The abstracts were translated by the National Research Council of Canada, while the invited papers were translated by William Barr, University of Saskatchewan. They were then revised by English-speaking readers, but no attempt was made to standardize the transliteration, terminology and quality of the translations. The full papers add an extra dimension to the Proceedings since there was little Soviet content in the earlier Proceedings volume and, in fact, the Soviet delegation in Fairbanks was disappointingly small. On the whole, there are few problems with the translations, which are well done, and those who do not read Russian are afforded a rare glimpse of the results of some of the current permafrost research in the USSR.

The opening and closing sessions contain some interesting historical information concerning the formation of the International Permafrost Association, but it is unfortunate that the informal photographs of personalities incorporated into the beginning of the book do not include captions with their names. The map of permafrost distribution in the northern hemisphere, used as a frontispiece, is a useful addition. Although it is not completely up to date, it provides the reader with an idea of the vastness of the permafrost environment.

The nature of the book, with its lack of a single focus, means that the reader must examine it carefully to find the information that he or she may be interested in, but it is a valuable addition to the permafrost literature. It is attractively produced by the camera-ready process on good quality paper and is well worth the \$32.50 for those who are interested in permafrost science or who wish to keep up with current permafrost research.

Stuart A. Harris
Department of Geography
University of Calgary
Calgary, Alberta, Canada
T2N 1N4