vided an efficient means of observing weather systems as they left continental North America. Barr cites Koch's excellent description of a winter depression as an example of the effectiveness of the strategy. In addition to experimenting with such things as the elasticity and plasticity of sea ice and observing the impact of German culture, transmitted through the Moravians, on the residents of the Labrador, Koch also hypothesized that the higher parts of the northern mountains of the coast had not been glaciated — anticipating graduate theses and scientific papers on this topic by a half a century.

I mention these particular, very selective, examples of one nation's contribution to the IPY in an effort to convey the value of all the expedition records over and above their meticulous and unique geophysical work, which was their primary purpose. Each expedition went to enormous lengths to set up its instruments and maintain them and keep to the pre-set schedule of observations. "Term days," on which all IPY expeditions were required to do intensive measurements of magnetism, etc., were days of frantic, often arduous activity throughout the year at all bases around the world. Yet today, the greatest value of their work may well lie in their accounts of how and how not to run polar expeditions or in their non-geophysical observations of their regions!

A good example of this is the snapshot in time they provide of the culture and conditions of high latitude native peoples. The Inuit, of both Greenland and Baffin, the Yakuts and Evenki of the Lena delta, the Nentsy of Novaya Zemlya, and the Yahgan of Tierra del Fuego all appear in expedition accounts. There are, from various corners of the earth, reports of measles, alcoholism, smallpox, relocation of native groups, etc. Native peoples from both hemispheres had been taken to the capitals of Europe and returned home with considerable loss of life. The adaptations of these diverse peoples to their inhospitable homelands varied greatly. Using means of travel as an example of this, kayaks, *kayuki*, *umiaks*, *vetki* (all boats) are mentioned, as are dogs (pack and sled), reindeer (for riding, packing, and drawing sleds), skis, and snowshoes. On one of the Russian expeditions, a man was observed riding one of three reindeer pulling his sled, to which two dogs were also hitched. On the sled was his *vetka* for water crossings. He was the Lena's equivalent of the modern-day person with a mobile home, towing a small car with a motorcycle and boat on the top.

Like the native peoples, the various nations involved in the IPY also adapted to polar life in different ways. Several used saunas as a matter of course, with reportedly beneficial results. Some used Russian-type brick stoves, some used skis routinely, one group used skates for travelling. As has been mentioned, several groups took livestock, with varying degrees of success. The clothing used varied, as did the houses and diets. Even the ships used varied, with different combinations of steam and sail and varying degrees of ice strengthening. What a remarkable wealth of information on polar technology based on trial and error by so many groups in such varied polar situations! A few decades later, it was Amundsen rather than Scott who was tuned in to this experience, which did not flow into the mainstream of the English language literature (see, for example, R. Huntford, 1983, *Scott and Amundsen, the race to the South Pole*, Pan Books, 565 p.).

The scope for meaningful comparisons among IPY groups and among their regions extends well beyond the "scientific" framework within which they worked. Barr's presentation allows the reader to pick up his own threads of interest and follow them around the globe.

Although the book is focused on a *polar* year, it provides a very interesting window onto late nineteenth-century society in general, especially in Europe. This was a time when Austro-Hungary was a major power and when Finland was a Russian Duchy (and when Finnish scientists had Swedish names and wrote their reports in French). It was a time when "German" science was booming. There is an interesting vignette of the leader of the Austro-Hungarian Expedition to Jan Mayen travelling by land from the Adriatic port, whence his expedition ship sailed, to Bergen, where it picked him up for the voyage to Jan Mayen. En route he was able to consult with German, British, Dutch, and Norwegian scientists and polar experts. He was able to meet first-hand several of those involved in other IPY expeditions. This sort of contact must have enormously strengthened the scientific programs of the IPY *and* produced a very healthy exchange of experience among polar workers.

This was also, of course, a time when what is now the northern coast of the USSR was open to all comers. Like the Canadian Arctic today, it was a magnet for "explorers" of various stripes. Indeed, Russian interest in the IPY was in part due to their desire to reinforce sovereignty over their northern region. For a while, it looked as though the expedition to Novaya Zemlya was going to be organized by Austrians rather than Russians.

The Russian expedition to the Lena delta makes particularly interesting reading for this and other reasons. The group took more than eight months to travel to the delta by land. In doing this they travelled by train, by post sled, on horseback, by stage coach, by barge, by steamer and by other vessels. On arriving in their expedition area, they were met by two U.S. naval officers searching for further evidence of the crew of the *Jeanette*, which had been lost a year or so earlier! They also met a group of Cossacks chasing escaped political prisoners who were hoping to make contact with U.S. whalers in the delta. In addition to the usual IPY geophysical program (for which they had to haul stone bases into the delta for instrument pillars), this expedition's reports are notable for their observations of life in this huge delta, of the delta itself (notes on pingos and other ground ice, etc.) and on mammoths. While trade in mammoth ivory was apparently brisk and skeletal remains quite common, hide and flesh of mammoths were rare. Barr includes an extensive description of a mammoth dig.

Although there have been great advances in the synchronous collection of global knowledge, although the idea of scientific "years" has been reasonably well exploited since the First IPY, and although the Antarctic Treaty has stimulated a remarkable amount of polar research activity, it is a sad reflection on polar politics and polar science that the First IPY is still, more than a century later, something of a model for us all. The circumpolar approach to polar problems is still an ideal toward which we strive. At the moment some of the greatest efforts to move toward this approach are being made by the circumpolar native peoples themselves. Even within Canada, northern work is plagued by compartmentalization among disciplines and among groups, which has resulted in a social and physical science landscape cluttered with reinvented wheels and oft-visited dead ends. There is little sense of a long-term polar focus within disciplines, let alone among them. Lt. Weyprecht, of the Austro-Hungarian Navy, who conceived of the IPY but who died of tuberculosis contracted on a previous expedition before participating in it, would weep if he were alive today.

William Barr, a physical geographer with a great facility for language, an intimate knowledge of the polar exploration literature, and an international network of friends and acquaintances with complementary interests, has performed a great service by bringing this overview of the First IPY to our attention.

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ARCTIC ORDEAL: THE JOURNAL OF JOHN RICHARDSON, SURGEON-NATURALIST WITH FRANKLIN, 1820–1822. Edited by C. STUART HOUSTON. Kingston and Montreal: McGill-Queen's University Press, 1984. xxxiii + 349 p., illus., maps. Hardbound. Cdn$29.95.

In 1974, C. Stuart Houston published *To the Arctic by Canoe 1819–*

1821, his edition of the private journal of Robert Hood, midshipman to John Franklin on the first Arctic Land Expedition. Ten years later, Houston has come out with the journal of John Richardson, Franklin's surgeon-naturalist on that same expedition. Thanks to Houston's considerable efforts, readers now have access to three firsthand accounts of that ill-fated geographical undertaking, for Franklin's own narrative version was published in 1823 and has been recently reprinted. Reading all three accounts would not be redundant, for Hood, Franklin, and Richardson were not always together, and one account often fills in where another leaves off. More importantly, though, even a single experience achieves numerous facets as it is refracted through the media of multiple consciousnesses. One can, as W. Gillies Ross suggests in the Foreword, use the three perspectives to "assess the effectiveness of the operation," or if one is less inclined to judgement, simply to become more familiar with the personalities of the men engaged in this exploratory journey that ultimately led to the death of over half the party.

Arctic Ordeal, unlike the journey it documents, is rich and luxurious. Several features of the book demonstrate that it has been designed with the reader's pleasure in mind, features that distinguish it from many scholarly editions of exploration records. The most obvious distinguishing characteristic is the strong visual component. Profusely and finely illustrated with drawings by H. Albert Hochbaum, *Arctic Ordeal* is an attractive book, regardless of the tale it tells. Another feature that distinguishes Houston's book is the use of modern topographical maps upon which Franklin's daily progress is charted. The editor has gone to great lengths to mark every compass bearing and measurement that Richardson's journal records. It is most unfortunate, however, that the maps themselves are barely legible, appearing more like grey rectangles across which heavy black lines and numerals are traced. Even on close examination, when the grey "blanks" reveal themselves as maps, the topographical markings are too vague to be of use. Not only does this production error interfere with the attractive visual format intended, but it also confounds Houston's desire to impress upon the reader the great accuracy of the expedition's bearings in comparison to modern geographical survey work.

The arrangement of Richardson's journal also sets *Arctic Ordeal* apart. Tedious botanical and zoological descriptions have been excised from the journal itself, an editorial deletion that enhances the narrative vigour of Richardson's account, although Houston is regrettably vague about whether deleted passages can always be found in the appendices or if they have been discarded. In a similar move calculated to maintain the energy and flow of Richardson's account, Houston has interspersed — within the texture of the daily journal entries — a report Richardson prepared for officials in Great Britain. No journal entries appear for the period October 8–29, 1821, in Richardson's manuscript, and as the events of that same period are dealt with in Richardson's official report, Houston has dovetailed the report into the journal. The alteration of (and addition to) the journal makes it more accessible and appealing as a self-contained tale.

An editor of historical documents must decide the extent to which he wishes to manipulate his material and the extent to which he wishes to transcribe it faithfully. Houston has chosen wisely, I think, as *Arctic Ordeal* maintains the excitement and tension that were essential characteristics of the experience Richardson documents. No doubt, some will disagree with Houston's decision and will object to such manipulations of what they claim is an autonomous and inviolable text. But Houston willingly risks such charges so that he may re-create Richardson's experiences for the lay reader. *Arctic Ordeal* is not merely a scholarly edition of an historical document, but as was Franklin's *Narrative of a Journey to the Shores of the Polar Sea*, it is a book designed to satisfy the curiosity of an intelligent and educated audience that wishes to know what brought about the dramatic events that took place on the first Arctic Land Expedition and how they affected the men involved.

I should like to clarify one issue. On page 216 of *Arctic Ordeal*, Houston refers to "the recent reprint of Franklin's journal." In fact, Franklin's journal remains in manuscript form in the Scott Polar Research Institute; it has never been published, much less reprinted. Houston means, of course, Franklin's "narrative." Although nothing more than a slip of the pen in this particular instance, the failure to distinguish between Franklin's "journal" and his "narrative" has, at other times, led to unfortunate circumstances. Franklin kept a daily journal of events as they transpired, as did the officers under his command. But upon returning to England, only Franklin prepared a shorter narrative version tailored for public consumption. Upon numerous occasions, Houston remarks that Franklin is more timid in his description of events that might offend his audience than is Richardson, as when the practice of eating warble fly larvae is mentioned or when the abdominal or scrotal incisions to relieve Adam's oedematous swelling are reported. But had Richardson been writing for a general audience, he too might have been less frank in his descriptions. To compare Franklin's published narrative to Richardson's official journal and then to draw conclusions about the authors on this basis is treading on ice thinner than Franklin would have cared to cross.

The more serious consequence of not distinguishing between journal and narrative, however, is that the public easily forgets that the journal of the commanding officer remains in manuscript, while the journals of two of the three officers under him have been published and the journal of the third officer — George Back — has, according to the Preface of *Arctic Ordeal*, been recently transcribed. This irony arises, no doubt, because of the availability of Franklin's *Narrative of a Journey to the Shores of the Polar Sea*. But that account is no substitute for his official journal; it is less than half the length of the unpublished daily record and is directed at a totally different audience.

I should not wish to close this review of *Arctic Ordeal* on anything but an affirmative note. After all, Houston is now single-handedly responsible for publishing two of the four daily logs kept by officers of the 1819–1822 Franklin expedition. And Houston's book will undoubtedly gain the wide readership for which it is designed and that it deserves.

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THE ALASKAN BEAUFORT SEA: ECOSYSTEMS AND ENVIRONMENTS. Edited by PETER W. BARNES, DONALD M. SCHELL, and ERK REIMNITZ. Orlando, FL: Academic Press, 1984. 466 p. US$39.

"The period of most direct contact between scientists and public policy makers in the Beaufort Sea, 1977–1981, was also marked by pioneering approaches to arctic field studies and to analyses of the resulting information. Some of these innovative approaches (and results) are documented in the present volume" (p. 16). This quote from the Introduction conveys the essence of the book. Most of the information was collected to assess the consequences of offshore oil exploration along the Alaskan Beaufort Sea coastline. The usefulness of the information for these purposes is clearly demonstrated by its inclusion in the special conditions for arctic leases, as mentioned in the Introduction on research history by Weller and Norton.

The information collected for assessment is valuable for inherent scientific reasons; thus, publication of the book is scientifically significant. Most of the information has appeared previously in government reports, but publication of the book makes significant research results much more available. The following paragraphs describe some of the results.

The general westward drift of the Beaufort Sea gyre's southern edge is well known. A subsurface easterly counter-current, the Beaufort