

stethoscope.' One might think, as this reviewer did on first looking into the book, that such an approach tends to trivialise the subject. This is, of course, no less than one supremely dedicated individual's attempts to better the medical care afforded to peoples living in one of the toughest environments on Earth. But this would be to misinterpret the task that the author and publisher have set themselves. It is obvious that this was not to produce a full 'chapter and verse' type biography, which clearly must wait for some years, but to seek to set out for the non-medical reader some of the challenges faced by Schaefer during his work in the north, to outline the evolution of his thoughts about the problems facing him, and to view the overall success he achieved during his career. And all this in a format that would appeal to popular interest and to increase general knowledge relating to a remarkable Canadian.

In this they have been successful, and, while the book is very interesting, it is also easy reading and none the worse for that. It is highly recommended for those who are interested in the development of health care in the north during the second half of the twentieth century and those who have heard of Schaefer and wish to know more about him. (Ian R. Stone, Laggan Juys, Larivane Close, Andreas, Isle of Man IM7 4HD.)

THE NATURAL AND SOCIETAL CHALLENGES OF THE NORTHERN SEA ROUTE: A REFERENCE WORK. Willy Østreng (Editor). 1999. Dordrecht, Boston, and London: Kluwer Academic Publishers. xlii + 466 p, illustrated, hard cover. ISBN 0-7923-6112-1. £132.00; US\$212.00; NLG400.

This volume represents what must have seemed an overwhelming task at the outset, the condensation of six years of output from the International Northern Sea Route Program (known as INSROP). The numbers speak for themselves: 167 working papers, and 318 researchers from 69 institutions on three continents producing some 14,500 pages of scientific text. The three principal cooperative partners of INSROP were the Central Marine Research and Design Institute (CNIIMF) in Russia, the Fridtjof Nansen Institute (FNI) in Norway, and the Ship and Ocean Foundation (SOF) in Japan. Contributors' notes reveal the depth of outstanding talent represented by the editor and 12 authors of the different chapters in this book. Willy Østreng is magnanimous in acknowledging the efforts of hundreds of contributors to INSROP. At the same time he openly discusses a number of important disagreements on the content and organization of the final text for this volume. While this might appear as a somewhat unusual airing of internal affairs, it serves to illustrate the intense difficulties that had to be overcome to produce this work. With the vast number of parties, cultures, and disciplines involved, the lack of unanimity in the final editorial process should come as no surprise. The effort was certainly worthwhile. This book stands as a unique reference work on all aspects of the Northern Sea Route (NSR): natural and societal. Rather than focusing strictly

on Russian internal affairs and history (although there is a good deal of this), the book contains extensive discussions of the linkages between the NSR and both political interests and economies in adjacent seas and countries: world trading patterns, international geopolitics, military spheres of influence and so on.

Several items stand out from Østreng's introduction: the initial concept for INSROP growing out of Gorbachev's initiatives in 1987; the use of geographic information systems as a means of bridging the many disciplines and languages; and the different functional definitions of the Northern Sea Route depending on the geographical and political context.

The first chapter provides a fascinating overview of the historical and geopolitical context of the Northern Sea Route. Here, the western NSR, where year-round shipping is already a reality, is contrasted with the much more difficult eastern NSR, where the shipping season is limited to less than six months by severe ice conditions. The early history covers the initial opening of the NSR by a combination of Dutch, English, and Russian sailors in the sixteenth and seventeenth centuries as well as the overland exploration driven by the fur trade. Military history begins with the original Russian desire to use the NSR as a means of exchanging naval vessels between the northern and Pacific fleets, and proceeds to discuss the utilization of the route by convoys during World War II and by military vessels and submarines during the Cold War, when the NSR was out of bounds for any foreign commercial use. The role of prison labor in post-war Siberian development serves as a grim reminder of the dramatic shift in political regimes during the past decade. Østreng introduces the western view of the NSR as a misbegotten product of the Soviet command economy rather than any legitimate offspring of market economics. He makes the point early on that at present the NSR is not perceived as a viable year-round alternative to the Suez or the Panama routes. Perhaps most disturbing are the data revealing how dramatically the impressive infrastructure of the NSR, developed during the old Soviet regime, is now disintegrating in the new Russia. Cargo volumes that peaked in 1987 have since dropped threefold. Prospects for economic relief and renewal of fleets and ports appear dim to non-existent. Set against this overall sense of gloom and chaos is the historical record of Russian achievements against tremendous odds, and the creation of a unique and unmatched icebreaker fleet.

Chapter 2 characterizes the natural conditions in the key straits and seas within the NSR in terms of ice severity, water depths, currents, and other factors impeding or aiding navigation. Draft stands out as the most important natural factor (apart from the ice itself) in dictating the largest size of vessel that can navigate along the entire route or access any of the ports along the way. The authors do a good job describing the geographic choke points and the variability in ice thickness and concentration in time and space, including polynya and fast-ice boundaries.

There is no mention of specific ice parameters of interest to ship designers in conducting voyage simulations: ridge frequency and keel depths, ice pressure, and rubble-field morphology. The generalized Russian characterization of severe ice 'massifs' is carried through the book with few details on the composition of these areas of 'compact ice.' The use of satellite remote sensing to guide ice operations is discussed with several examples of RADARSAT imagery. The coverage of navigation aids is clearly presented in a series of maps. Thirty-six comprehensive pages are devoted to the subject of ship technology, leading the reader in a clear and organized manner through subsections on icebreakers and convoy methods, ship damage in ice, ship speeds, design constraints for future NSR cargo ships, today's ship technology focusing on experiences with the icebreaking SA-15 type, and examples of a series of future designs developed by the Ship and Ocean Foundation. It would have been interesting to see a contrast of the Russian convoy methods of tandem towing and short towing with Canadian practices of icebreaker escort and independent operation of highly capable commercial vessels. The chapter ends with an excellent conclusion and summary section, which captures all the key information.

Chapter 3 deals with the issue of environmental assessment. At 100 pages, the length of this chapter reflects the high level of importance assigned to this topic. The development of the Environmental Atlas is clearly one of the outstanding achievements of the program. Unfortunately many of the illustrations drawn from this Atlas suffer greatly from being reproduced in black and white. This problem occurs throughout the book, but is particularly acute in the environmental area, where much of the information needs to be presented graphically. The authors do an admirable job of trying to condense an impossibly complex suite of principles and data into what amounts to a mini-textbook on the basic principles of environmental assessment, oil-spill risk analysis, projected disturbances on valued ecosystem components, regulatory frameworks, and recommendations for mitigation. Unfortunately, the result often appears disjointed, with considerable repetition and inclusion of peripheral material at the expense of the key points. Notably, the chapter concludes with the remarks: 'there is no scientific evidence that civilian navigation has resulted in significant stress to the NSR environment.'

Chapter 4 deals with the economics and commercial viability of the NSR in a comprehensive and clear presentation. There are no 'rose-coloured glasses' here. The authors speak honestly about the critical economic problems facing the new Russia in trying to maintain and replace a decaying infrastructure of vessels and ports. Tables clearly show the dramatic rise and fall of shipments along the NSR between 1945 and 1995. Future utilization of the route as a transit alternative to the Suez Canal is assessed in realistic terms. While much has been made of the potential distance and sailing time advantages of the NSR, the authors point out that in choosing a route,

reliability and punctuality of service rate ahead of absolute shipping cost as the deciding factors for many shippers worldwide. In this regard, the NSR with its severe draft restrictions and limited season appears at a serious disadvantage. In spite of these drawbacks, the discussion establishes the NSR as a viable alternative for certain cargoes where cost is more important than a fixed delivery schedule. The Russian internal and export/import trade is discussed in detail for specific ports and commodities. Important information is provided on the age-distribution and capabilities of the current Russian fleet of cargo ships and icebreakers. The lack of capital for fleet replacement is raised as a critical issue, which will become even more severe in the next five to 10 years. Dramatic evidence is presented showing the impact of the overall Russian economic collapse on the NSR region. On the other hand, the huge prospects for oil and gas development provide a bright note for the future, at least in the western NSR. The discussion of marine insurance reveals the need for hard data on which to judge the new risk regime posed by the NSR. The authors point out that ship owners are not ready to risk high-value vessels on this route without better information. Key issues for the future are presented effectively as a series of questions and answers. The chapter ends with a detailed discussion of the economies of each region along the route. Investment by private interests is seen as the key to near-term development, but only in the presence of a stable and reliable political and legislative framework.

Chapter 5 spans the full gamut from the cloak-and-dagger of submarine operations to political management and native subsistence harvesting. The military use of the NSR and perceptions of that use, which still persist, are effectively exploded and exposed in a fascinating discussion of the cat-and-mouse games played by both sides during the Cold War. The political management structure appears to be in a high state of flux with great uncertainty as to the future independent role of northern regions within the federal sphere. The authors delve into the intricacies of political power sharing and possible political scenarios affecting the NSR. Politics is followed by complex discussion of legal issues, including Russian and international laws of the sea governing sovereignty claims and right of passage along the NSR as viewed in the eyes of different world bodies in general and the USA in particular. The chapter ends with a comprehensive look at social impacts, including a detailed description of indigenous peoples and their lifestyles in relation to land and sea. This human-affairs discussion appears to relate more logically to the environmental assessment (Chapter 3) and seems out of place here.

Chapter 6 is a valiant effort to pull together all diverse topics and discussions into a cohesive framework within which to view the NSR. Information about the route is linked through the concept of geographic hot and cool spots. These spots include natural and societal factors that either impede or promote increasing utilization of the

route. Appealing in its initial simplicity, the hot/cool approach is complicated by a further breakdown into issue-specific hot spots and aggregated hot spots, each of which is judged either accessible or inaccessible. Once the reader has overcome the hurdle of terminology, this chapter can be appreciated as a valuable overview of the key pieces of information scattered throughout the book. In the process of extracting material from the other chapters, certain statements appear unsupported or confusing. One example relates to the contention that new icebreaking ship designs will achieve speeds approaching those required to make the NSR a worthy competitor to the Suez Canal. Yet this statement follows a discussion that claims that future icebreaking commercial ships on the NSR will only achieve 4–7 knots in winter, versus the 11–13 knots required to be competitive with traditional open-water routes. Several interesting new topics are introduced here and touched on briefly: the potential effect of global warming on the Arctic shipping season, and the philosophy of ‘multi-value’ navigation that takes into account both economics and environmental sustainability. The book ends on an upbeat note, with reference to Vilhjalmur Stefansson’s optimistic predictions in the 1920s of northern development to come. Østreng makes the important point that conclusions tied to a time horizon of less than 10 years may have little relevance to the level of development, which could occur along the NSR later in the twenty-first century. The bibliography includes an impressive listing of all the INSROP reports as well as a selected listing of other references. The index tends to be overly specific such that individual ship types and names are listed (for example, *Noril’sk*), while topics and subjects are not (such as icebreakers, marine mammals, ice thickness).

It is difficult to sum up such a vast undertaking. This book represents a lasting legacy of essential baseline and historical information, and forms an essential and unique reference work for anybody with an interest in the past or future development of this region. On another level, it provides a wonderful insight into Russian Arctic history and the mindset of the Soviet system. As the editor points out, no other form of government could have achieved the level of development reflected in the NSR during the 1980s. In Østreng’s own words: ‘The challenge of today is whether this system, left to the new Russian regime, can be utilized by market forces to enable profits to be made in the future.’ (David Dickins, DF Dickins Associates Ltd, 1660 Cloverdale Road, Escondido, CA 92027-6717, USA.)

FIRE INTO ICE: CHARLES FIPKE & THE GREAT DIAMOND HUNT. Vernon Frolick. 1999. Vancouver: Raincoast Books. 354 p, illustrated, hard cover. ISBN 1-55192-232-0. \$US21.95.

Assessing Vernon Frolick’s book is rather like assaying one of the complex minerals analysed by the volume’s protagonist, Charles Fipke, and then having to say what it is exactly. The front cover promises ‘the true-life story of the man behind the great Canadian diamond discovery,’

while the back cover describes it rather blandly as ‘business’ and ‘biography.’ Even combined these categorisations hardly do the work justice, nor do they make it stand out sufficiently from the crowd.

This is a pity, because in many respects Frolick’s achievement is as multi-faceted as one of Fipke’s cut diamonds. It is an amalgam of biography, travel writing, anthropology, ethnology, geography, and at least half a dozen different types of history (cultural, imperial, family, ethnic, tribal, and secret, to name but a few). It is also a travel book — the story of a lifetime of journeys worthy of *The odyssey* that takes its reader to New Guinea, Australia, South Africa, and Canada. At times it even reads like a rites-of-passage narrative, not only of Fipke but also his family, past and present. In weaving together so many different strands, and fictionalising the verbal exchanges between his characters, it would do no disservice to Frolick to say that at times he conjures the magic of a Bruce Chatwin.

The axis of the text is the geologist Charles (Chuck) Fipke, an enormously complex, contradictory, and difficult character. He appears as the quintessential male, plunging fearlessly into swamps, and trading clothes with potentially hostile cannibals to avoid being killed for the protein that his body will provide. He is a ‘man’s man’ who never misses taking a geological sample, whatever the odds, who continually tests restrictive boundaries and rises to any challenge. He seems naturally tough, almost invincible, but just when the reader thinks that he is dealing with a character from a Hemingway story, Frolick reveals a human being who has overcome a ‘stutter’ (page 122) and has failings like the rest of us.

Frolick creates a character who at times seems badly equipped for fitting into civilised society (pages 14–15) and yet is immediately able to cope with the uncivilised work and environments in which he has to live. In this respect he is the antithesis of his wife, Marlene, who has a more conventional understanding of the wisdom of limits than her husband and who acts as his counterpoint in the text. The juxtaposition of the two characters is a clever device that undercuts a simple hero-worshipping of Fipke. At crucial moments in the text — such as when Fipke deliberately startles a herd of rhinos simply to obtain ‘worthwhile close-ups’ (page 162) — the reader oscillates between an identification with Fipke’s desire for a perfect photograph and Marlene’s fear/anger as the stampede narrowly misses killing them. Indeed, a recurrent suspicion of Fipke’s unsettling propensity towards self-destructiveness haunts the text.

In essence Frolick is telling a success story, but with dynamics that are far from simple. The tension between the conventional, represented by Marlene, and the uncompromisingly individualistic, like Fipke, lends the text a bittersweet flavour. Superficially the book charts Fipke’s life from its early privations to a flourishing career as a geologist who is made immeasurably wealthy by his discovery of diamonds in the Canadian Arctic. On the one