

ecological background for the understanding of the different antifreeze strategies. Also, he shows the use of antifreeze in the clarification of the evolution of the notothenioids. Briefly mentioned and hypothetically explained is the surprising similarity of antifreeze in taxonomically unrelated species such as Antarctic notothenioids and Arctic gadoids.

Swimming performance, cardiovascular and respiratory systems, and the nervous system are analyzed and interpreted in the light of systematic origin and environmental determination. Notothenioids are at the low end of the range of activity and swimming speeds of fishes, and, therefore, it is hard to obtain comparable species from temperate regions for comparison. 'Antarctic sea water, its thermal constancy, increased oxygen solubility, and high kinematic viscosity set the Southern Ocean and its fauna apart from all other marine habitats' (page 220).

Eastman's concluding remarks, that Antarctic fishes, notably notothenioids, on the first glance do not show the striking morphological difference that one would expect compared to other teleosts, may surprise in the light of the above statement. What makes Antarctic fishes special, however, are the many adaptational details that only appear on closer investigation. Some of the adaptations may be related to the phyletic position of the suborder rather than to the Antarctic environment. This differentiated approach may be disappointing for those who look for the 'extreme' in Antarctic fish, but it may help better to understand biology of extreme environments in general.

Eastman's book is the most exciting Antarctic fish book on the market. Over most parts it is well-written and didactically excellent. The book is enriched by impressive original photos of preparations and live specimens and by well-prepared tables and figures. Unpublished personal field observations at McMurdo Station, where Eastman had the chance to study live fishes in aquaria, add to the originality of the presented information. By its evolutionary and ecological approach, *Antarctic fish biology* is of interest not only to Antarctic fish workers, but to biologists and interested laymen in general. The book will facilitate teaching and learning in polar courses, and it gives a sound basis for future work on the fascinating details of fish life in a unique environment. (Gerd Hubold, Institut für Seefischerei, Bundesforschungsanstalt für Fischerei, Palmaille 9, D-22767 Hamburg, Germany.)

CHANGING TRENDS IN ANTARCTIC RESEARCH. Aant Elzinga (Editor). 1993. Dordrecht, Boston, and London: Kluwer Academic Publishers. xi + 161 p, maps, hard cover. ISBN 0-7923-2267-3.

Only a few of the diplomats and politicians involved in Antarctic policy have any scientific understanding, and only a few of the Antarctic scientists have any political ability or interest. Mutual misunderstanding should be the order of the day, and the Treaty should be a disaster. It isn't — so the logic must be wrong. This conundrum clearly fascinates lawyers and political scientists, perhaps partly because the scientific community has played such a sig-

nificant and unusual role in the development of this international forum. The meeting on which this book is based attempted to unravel the historical complexities and provide a forum in which a range of protagonists could discuss what the future might hold.

The meeting was a brave attempt to bring scientists, political scientists, managers, and NGOs together for constructive discussion. For a book on such a topic, the balance of both speakers and participants was unusual. Half of the eight invited speakers were Scandinavian and there were only 19 participants in all. The views expressed cannot therefore be considered as representative of the Antarctic community as a whole. What was obviously missing was a strong diplomatic/political input.

The text shows that there was interesting discussion, but the format adopted by Elzinga for publication is strange. The book comprises 15 chapters: an introduction, eight narrative accounts of presentations and the ensuing discussions, one report of a panel discussion, four written versions of papers presented as narrative in earlier chapters, and a summary of a recent International Council of Scientific Unions (ICSU) examination of the role of the Scientific Committee on Antarctic Research (SCAR). In addition there are three appendices giving a list of participants, the programme of the meeting, and a list of Antarctic research stations. Throughout the book there are little vignettes taken from the illustrations used in Nordenskjöld's original account of the Swedish South Polar expedition.

For those interested in management systems, the chapters by Barry Heywood on the British Antarctic Survey (BAS) programme and by Bruce Davis on the Australian programme will make an interesting comparison. The BAS centralised system, overseen by a variety of outside committees, apparently provided the most acceptable general model to the participants. Davis, on the other hand, provided a very critical assessment of the Antarctic Division, noting the difficulties an outside researcher faced in gathering facts and the high level of political interference in Antarctic affairs. Nigel Bonner provided a robust defence of the need for SCAR advice on environmental protection, whilst Jim Barnes, presumably representing the 'vociferous populist groups whose experience is mainly in the field of manipulating media,' argued that the concerns of NGOs are very similar to those of the science community.

Monitoring and its role was an important theme addressed by several participants — is it a dirty word? Others raised questions on applied versus strategic research, ethical acceptability, and the impact of advanced technology on field activities.

A recurrent theme, addressed in different ways by several speakers was that the implementation of the Protocol on Environmental Protection to the Antarctic Treaty would inevitably reduce the importance and influence of SCAR on the Treaty Parties. Indeed, in the final chapter by Rita Colwell, it is suggested that 'SCAR's mission and goals might be sharpened so that science co-ordination, stimulation and quality enhancing functions are clearly

defined and greater attention is placed on science, either down-playing or eliminating science advisory functions.' However meritorious this might appear from the purely scientific viewpoint of ICSU, this is not the real world. Scientists need to ensure that the Treaty has the best possible impartial scientific advice at all times to limit potential damage to science by nationalism, politics, and sheer ignorance of Antarctic affairs. Colwell's chapter should be read by all Antarctic scientists — it is disturbing in its approach and its conclusions. The idea that Antarctic scientific literature is not well represented in mainstream disciplinary journals is completely false, as any perusal of the COLD database will show. The suggestion that the creation of an 'Antarctic Foundation' will somehow solve SCAR's problems is illusory. Another strange proposal is that SCAR should 'consider incorporating Arctic science' — this is especially worrisome as it indicates a lack of understanding of the different political and organisational imperatives that limit scientific opportunities in the two polar areas.

The volume contains quite a few references to SCAR failing to assume leadership, failing to raise extra funds, failing to concentrate on basic research, etc. Stromberg points out that this is a difficult role for an ICSU body to assume since it must work through national committees. Whilst all acknowledge the importance of SCAR in giving impartial advice, advice that has provided the basis for most of the scientific decisions taken by the Treaty, no one has yet presented SCAR with extra funds. Does being impartial have to equate with being impoverished?

The book will provide both scientists and non-scientists with a useful insight into the way politics and science interact in an international forum. It also makes clear that it is the scientists who provide the drive for international co-operation and that, despite fine words by diplomats, there is no evidence that anyone will put a fraction of the money from the political area of the Treaty into the science arena of SCAR. Antarctica may be 'a continent for peace and science,' but it is still clearly the continent for lawyers and diplomats. Scientists will neglect this at their peril. (D.W.H. Walton, British Antarctic Survey, High Cross, Madingley Road, Cambridge CB3 0ET.)

ACROSS THE KEEWATIN ICEFIELDS: THREE YEARS AMONG THE CANADIAN ESKIMOS, 1913–1916. Christian Leden. Shirlee Anne Smith (Editor). Leslie Neatby (Translator). 1991. Winnipeg: Watson and Dwyer Publishing. 298 p, illustrated, hardback. ISBN 0-920486-19-3. \$Can29.95.

Previously released in German, Dutch, and Hungarian, this book is the first English translation of what is a remarkable account of adventure, exploration, and human perseverance. It is the tale of the three-year expedition by Norwegian musicologist Christian Leden, who set out to travel through the western Hudson Bay region of the Canadian Arctic, living with the Keewatin Inuit. The book is a rich account of Leden's extraordinary undertaking, and a document of his search for anthropological data,

ethnographic photographs and motion pictures, song recordings, and Inuit artefacts. It is replete with lucid descriptions of the natural history of the region, details of Inuit camp life and social structure, and stimulating tales of travelling and living on the tundra with native companions. It is liberally punctuated with numerous esoteric discussions of Inuit dental habits, clothing taboos, and the often harmonious relations between co-wives. Yet with equal aplomb, the author recounts the prolonged darkness of winter, the extreme cold and isolation of the Keewatin, and even describes the persistence of summertime mosquitoes.

However, for all of its anthropological focus, the book remains foremost an account of a polar interloper the likes of whom has long since vanished. It is an electric tale of adventure in which the author endures shipwrecks, starvation, and lengthy (and often unproductive) hunting trips on the ice at frighteningly low temperatures — all in a land that at the time was largely unknown or understood by most of his audience.

Leden's own life story was certainly compelling. A native of Trondheim, he studied music and anthropology in Oslo, continued his formal education in Berlin, where he studied composition, and returned to his native Norway as organist of Tromsø Cathedral. In 1909, at the age of 27, Leden visited Greenland, studying the native language, recording Inuit music, collecting artefacts, and taking photographs and motion picture film. This first visitation to the native peoples of the north seemingly had a dramatic effect upon the young Leden; from that point forward, he set a course of research that absorbed him throughout his life. Following a brief southern sojourn in Alberta to record the music of the Blackfoot, he returned to the Arctic and continued his research in the region of Hudson Bay. After three years in the Keewatin region — the period covered in this volume, during which he routinely made recordings of Inuit songs with crude sound equipment, developed photographic and motion picture film in his specially built tent, and for the most part offered not a whisper of complaint regarding the difficulties he faced in adjusting to native life — Leden returned to Greenland, in 1923, to continue his ethnomusicological research. For a number of years, he gave a series of popular lectures throughout Europe and the United States, illustrated with lantern slides, film, and wax recordings of Inuit songs. Near the end of his life, Leden continued his study of indigenous music, travelling extensively in South America to collect data.

The reader quickly discovers a significant aspect of Leden's personality. From the beginning of the book, when he arrives in Churchill alone in August 1913 with the monumental task of organising his expedition by himself, there is a sense of his narrow and self-important determination with reference to the expedition, combined with his condescension and contempt for any and all detractors. Leden's eagerness for his research and his firmness with his Inuit companions and guides often prevailed over his common sense, very nearly costing him his life on more