

infuriating style in which the book is written. Presumably in an attempt to demonstrate that the work has some literary merit, or to heighten the sense of drama, the text is strewn with redundant, often senseless verbiage. For example, at one point the reader is told that the sunken ships were 'locked for centuries in their frigid stupor,' while elsewhere a reference (presumably to the Knight expedition) to the 'brazen sails of chance' appears simply grotesque in the context of this book.

Presumably also in an attempt to heighten the sense of drama, in the opening sentences Geiger and Beattie state that in 1767, 'The northwest coast of Hudson Bay was utterly unfamiliar, and thus wholly malignant.' As their own text in due course reveals, this statement is totally false. This coast had been visited by a whole series of expeditions, including those of Button, Foxe, Middleton, and Moor, and had been competently mapped by Middleton in 1742, quite apart from trading voyages made by Company sloops from Churchill, which landed on Marble Island at least four times, and possibly even six times, prior to 1767. Such a patently erroneous statement in the opening sentences scarcely enhances one's confidence in what the authors have to say in the remainder of the book.

The authors must also be taken to task for what can only be described as a breach of academic courtesy. At no point in their text do Geiger and Beattie mention the names of Ralph Smith and Walter Zacharchuk, who located both the ruins of Knight's house and the sunken wreck of *Albany* in 1970 and 1971 and published fairly precise maps and directions as to their locations; their publications are listed in the end-notes, however. Since Smith and Zacharchuk provided the foundation on which Beattie's research was able to build, good manners demanded that they be named and the debt to them properly acknowledged. (William Barr, Department of Geography, University of Saskatchewan, Saskatoon, Saskatchewan S7N 0W0, Canada.)

THE INTERNATIONAL LAW OF ANTARCTICA. Emilio J. Sahurie. 1992. New Haven: New Haven Press; Dordrecht, Boston, and London: Martinus Nijhoff Publishers. xxviii + 612 p, hard cover. ISBN 0-7923-1037-3. £128.00; US\$ 199.00; Dfl 380.00.

This sixth volume of the New Haven Studies in International Law and Order Series is a revised version of a doctoral thesis for the Yale Law School in the mid-1980s. It follows the 'policy-oriented' approach traditionally associated with what has become known as the New Haven School. Therefore, the author does not focus on Antarctica as such, but, as Professor Reisman points out in his foreword, on 'the social, political, and legal processes that deal with the continent and thus make it pertinent to human beings' (page vi).

The book is divided into three parts. Part one describes Antarctica in a global context. In a long first chapter, the author depicts the participants in Antarctic processes, reviews their respective power, and shows the strategies they use to fulfil their expectations. This description ends with some considerations on the factors that influence

Antarctic processes. In chapter 2, the author, in language typical of the New Haven School, identifies the basic community policies that should guide any decisions relating to Antarctica. In this respect, the key issues are: the removal of the threat and use of force; the participation in the decision-making process; the protection of the environment; and a global resources policy.

Part two deals exclusively with the question of territorial acquisition. It is well known that seven states have claimed areas covering some 85% of the Antarctic territory, and that three of these claims (Argentinian, British, and Chilean) partially or entirely overlap. Chapter 4 examines in detail the modes of territorial acquisition on which all the claims are based. With regard to the competing claims, the author believes that the notion of historical rights, discovery, and effective occupation have no decisive value. In the absence of undisturbed occupation, he asserts that 'only geographical proximity may provide what is a residual and yet more objective criterion' (page 342). However, well aware that this dispute will very unlikely be submitted to adjudication, he rightly concludes that: 'Absolute state control, once a basic foundation of the legal order, has now become largely outmoded and has failed to provide a satisfactory solution for Antarctica' (pages 343–344).

Part three examines the specific claims to Antarctic resources. After describing the resources that can or could be found in this part of the world, the author studies the regimes established for the high seas, the deep seabed, outer space, and the Arctic, cases that have often been compared to Antarctica. He rejects these analogies and maintains that only the Spitsbergen case constitutes an experience that is relevant to Antarctica (chapter 5). Chapter 6 concentrates on claims to mineral resources. It starts with a note mentioning that, while this book was in production, the 1988 Convention on the Regulation of Antarctic Mineral Resource Activities, which is discussed in this chapter, was eventually rejected and replaced by the Protocol to the Antarctic Treaty on Environmental Protection. This latter bans all mineral activities other than scientific research in the area for at least 50 years. However, some of the issues presented in this chapter (like the question of responsibility for environmental harm) continue to be relevant. Chapter 7 looks closely at problems relating to offshore areas of Antarctica. The author first discusses the existence and the extent of a continental shelf; he then tries to determine, in the light of the 1982 Convention on the Law of the Sea, what regime should regulate the Antarctic deep seabed. Claims to marine living resources are considered in chapter 8. Conservation policies are described in the light of the different treaties adopted to regulate overexploitation of whales, seals, krill, and other components of the marine ecosystem of the Southern Ocean. Chapters 9 and 10 focus on the regimes that govern the use of maritime and aerial spaces in Antarctica and show in what they differ from the regimes traditionally applicable to such areas.

In his conclusion, the author rejects the claims of the

less-developed countries for a new legal order in Antarctica. Radical changes would, according to him, endanger the remarkable achievements of the existing order. He proposes, however, to broaden the basis for participation in the Antarctic Treaty System. This would reflect the interests of states that lack the economic means to be actively involved in this region.

This book is undoubtedly an important contribution to the legal literature on Antarctica. It provides the reader with a detailed analysis of the social and political context in which a unique legal framework has developed. It is therefore much more than a mere description of the legal texts adopted to regulate the status and the uses of Antarctica. Despite some incongruities (all related to an updating problem) and the use of sometimes obscure language, this work will be welcomed by those having a special interest in the public order of the frozen continent. (Serge Pannatier, Faculté de Droit et des Sciences Economiques, Université de Neuchâtel, Avenue du 1er – Mars 26, CH-2000 Neuchâtel, Switzerland.)

ANTARCTIC FISH BIOLOGY: EVOLUTION IN A UNIQUE ENVIRONMENT. Joseph T. Eastman. 1993. San Diego: Academic Press. xiii + 322 p, illustrated, hard cover. ISBN 0-12-228140-3. US\$74.95.

Until recently, information on Antarctic fish was scattered in original publications or briefly summarized, for example, in chapters of the SCAR biology symposia. Only as late as 1990, the first comprehensive book on Antarctic fish taxonomy and systematics, *Fishes of the Southern Ocean*, was published by Gon and Heemstra. In 1991 DiPrisco's *Biology of Antarctic fish* appeared, followed in 1992 by Kock's *Antarctic fish and fisheries*. Number four in this short list is the new book by Joseph T. Eastman, *Antarctic fish biology: evolution in a unique environment*.

The subtitle characterizes Eastman's approach to Antarctic fish biology: evolution and environment. The environmental factors of the Antarctic habitat both in the geological past and today set the stage for the evolution of a widely endemic Antarctic fish fauna and its adaptations over geological time from life in a warm paleo-ocean to the present Antarctic sub-zero environment.

In three parts — 'Environment – present and past,' 'The modern fauna,' and 'Adaptations' — a wealth of information is presented based on the author's own profound scientific work in the field and derived from more than 600 references to Antarctic fishes and their habitat. The coverage of scientific literature on the subject is excellent and truly world-wide.

The first part of the book contains a stringent presentation of relevant physical factors and processes characterizing Antarctica today. A detailed geological history of the habitat then shows the possible influences of temperature development and geomorphological changes on the fish fauna. This section is especially well written and is didactically excellent, and even a less-dedicated reader will pass through it without difficulty. Tables of time

scales and informative diagrams add to the chapter's content.

Antarctica's fossil fish fauna are only known from sparse fossil records. Eastman presents the state of the art of our knowledge on the origin of Antarctic fish. This chapter is based partly on the author's original work and contains information one could not find elsewhere in the literature in a comparably digestible form.

Zoogeography and taxonomic composition of the modern Antarctic fish fauna are given as a short and handy summary. A useful presentation of habitats and their fish assemblages provides ecological background to the otherwise often tiring lists of species and their occurrence. The main emphasis is on the species of the suborder Nototheniidae and its general biology. Most aspects are covered, although a notable gap is evident in the species' life histories. The absence of data on growth, feeding, reproduction, and population dynamics is a shortcoming of the book as a whole, but it was the author's declared intention not to duplicate information that is available in other existing compilations, such as Kock's book.

A rather lengthy chapter on systematic relationships among the notothenioids dives deep into the methodology of cladistic analysis, which is interesting mainly to the dedicated reader. Here the author obviously writes very close to one of his own areas of expertise and does not find the same distance to subject as shown in other sections of the book.

The origin and evolution of the modern fish fauna then are presented as an excellent overview on possible pathways of Antarctic fish evolution. The author discusses the role of seasonality vs temperature in evolution, which is of importance to understand adaptational biology of Antarctic fishes today. The chapter is very detailed, but nevertheless shows how little we know about evolution in Antarctica. Much remains speculative, such as the questions about why there are no sharks and so few rajids in the Antarctic seas.

Another very useful part of the book is the chapter on biochemistry and metabolism. In this area, published knowledge is especially scattered over the scientific literature, and controversy — for example on metabolic cold adaptation — often makes an understanding of the subject difficult for the non-specialized reader. Eastman explains the current concepts in an understandable and convincing way.

In my opinion, the section on buoyancy is too detailed. As a special subject of many years of his own work, the author presents the morphological adaptations for flotation in the water column in the fashion of a piece of original literature, which makes it hard to read in the context of a book. On the other hand, buoyancy of the swimbladderless notothenioids is, of course, a key for the understanding of evolutionary radiation and pelagization, so this should be forgiven.

Summaries on antifreeze glycoproteins are to a certain extent available in the literature. Eastman's chapter on that subject goes beyond existing compilations, as it gives an