

There are nine chapters in this book, including an introduction by the three editors. The latter are all recognized experts in polar and Antarctic science and all three have abundant Antarctic field experience. All but one chapter deal with the MDV; the last chapter by Cabrol *et al.* surveys non-Antarctic analogue environments. The introduction provides a nice historical review of some of the important work that has been done in Antarctica. Chapter 2 by Marchant & Head, the longest chapter in the book, summarizes in great detail various geologic and geomorphic features found in the MDV with extensive comparisons with actual Mars data. They also develop the concept of geomorphic features as indicators of climate conditions, both in the MDV and likely on Mars. Subsequent chapters cover in depth soil chemistry and aqueous processes in soils (Barrett *et al.*), cryptoendolithic microbial ecosystems (Sun *et al.*), fluvial environments and processes (Gooseff *et al.*), saline lakes and ponds (Mikucki *et al.*), and glaciers (including cryoconite holes and cryolakes; Tranter *et al.*). The chapter by Takacs-Vesbach *et al.* considers ecological and physicochemical factors (e.g., flow rate, wind, freeze-thaw, salt content) in controlling microbial diversity in the different environments of the MDV. The final chapter by Cabrol *et al.* provides a survey of analogue sites and recent analogue field campaign projects in places such as the Atacama Desert, high-altitude lakes in the Andes, Arctic springs, and specific localities such as Rio Tinto and the Haughton Impact Structure and surroundings on Devon Island. Each of these chapters addresses, to varying degrees, analogous features or processes on Mars and speculates on possible implications for the existence of life on Mars, either past or present.

Generally, the material is thorough, well written and well referenced. As with many books, truly up-to-date references are often lacking. For example, only a few chapters contain references to the Phoenix Mars Lander mission. This mission to the North Polar Region operated throughout the summer and fall of 2008 and certainly many of its results are relevant here. There are a few minor typographical or spelling mistakes, but generally the book and its figures are of high quality. A few minor quibbles include some authors' unconstrained speculation about life on Mars and author biases (with occasional lack of appropriate references) in reviewing some material. There is surprisingly very little on subsurface environments, including ground ice and polar permafrost. Also, the title is perhaps a little misleading. Only in the last chapter are "other cold dry environments" discussed. This chapter discusses a wide range of other analogues, many of which having very little in common with the MDV, and it feels a little out of step as there is little attempt by the authors to compare and contrast with the rest of the book and the MDV. This chapter, or the book, would have benefited perhaps from a more detailed comparison of non-Antarctic sites. Sadly, this final chapter, and hence the book, also

lacks an appropriate conclusion or summary section. My biggest criticism of the book as a whole is the unequal consideration given by the different authors of the analogue aspects and relevance of the features or processes to Mars and astrobiology. While some authors (e.g. Marchant & Head, Barrett *et al.*) provide ample comparisons with Mars and suggest practical lines of investigation on Mars, others fail to make a strong case of how the material presented is truly relevant to the search for habitable environments or traces of life on Mars, either past or present.

The expected audience for this book would be any practicing researcher working in or interested in Antarctica and the McMurdo Dry Valleys, or more generally those interested in Mars analogue environments on Earth. The book would certainly be relevant and useful in any senior undergraduate or graduate course in Antarctic science, comparative planetary science, planetary/polar geomorphology, or astrobiology.

Although this book is a timely contribution, and is a very useful reference, it may require updates in the near future as important analogue missions have recently been funded by NASA to integrate science-driven investigations with mission-relevant technologies in realistic operational scenarios in Antarctica in order to prepare for future space exploration missions. These include "IceBite", a robotic drilling and sample handling system being developed by NASA Ames, and "ENDURANCE", an under-ice robotic explorer led by the book's lead editor (PTD). As well, the continued exploration of Mars by ongoing and future missions will continue to show us the great diversity of environments, some similar to those on Earth, of our planetary neighbour.

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### **With Hillary at Scott Base: a Kiwi among the penguins**

*Vern Gerard*  
Bateson Publishing, Wellington, 2012.  
ISBN 978 1 877520 07 5. 147 pp. Obtainable outside New Zealand only from bateson.publish@xtra.co.nz at £20 post free.

The recent International Polar Year has stimulated historians to look back to IGY and examine more closely what was achieved and exactly how decisions taken then have structured Antarctic activities since. Amongst all the academic writing some of the still living participants found the time and energy to dust off their diaries and recount what life was like almost 60 years ago. Vern Gerard was one of those early New Zealand scientists who took part in building Scott Base as a platform for Edmund Hillary's

supporting work for the TransAntarctic Expedition and establishing the fledgling New Zealand programme.

Whilst much of what he has to say will be familiar to anyone who has worked in the Antarctic there is a subtle blend of both determination and pride in what they achieved. As a physicist his role was to establish the first Kiwi Antarctic magnetic observatory but, of course, like everyone else he had to take a full part in building the station as well. Some of the information he gives is interesting - how, for example, Hillary decided that the site at Butter Point originally selected for the station was inaccessible and Pram Point was chosen by him instead to the consternation of those who wanted to be away from the Americans and some of the scientists for whom Ross Island was not ideal. As Gerard says that “the Scott Base magnetic observatory must be easily the most poorly sited magnetic observatory in the world”, but Hillary was not concerned about the scientific requirements. Indeed, as Gerard remarks, his scientific huts were the last to be built. His account of the air hostesses that arrived on board a chartered Pan American Stratocruiser will bring wry smiles to those whose memories stretch back to an Antarctic culture completely without women. And his comments on the “race to the Pole”, although suggesting this was created by the media, recognize that Hillary had this in mind from a very early stage as he was an ambitious man and getting to the Pole first would raise his own profile as well as that of New Zealand. As it turned out the enthusiasm for things Antarctic generated by this in New Zealand was crucial in ensuring that the government continued to support scientific research after IGY.

In his final chapters he discusses tourism into the Ross Sea, the Mt Erebus air crash and the weather during Scott’s expedition. He also makes some interesting comments about the effects of free alcohol on performance after he left the station and on the lack of the organization of New Zealand activities in those days!

The publishers say this seems to be the only first-hand account by a scientist of the building and establishment of Scott Base and as such provides a much needed personal view to read alongside the official narrative in Helm and Miller (1964) and the brief account in Fuchs and Hillary (1958). These days scientists do not need to build their own stations and, despite all the efforts and experience, planning still sometimes goes awry. However, it would appear that the experience of overwintering has not changed much and is still something that can be a truly formative experience.

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## Antarctic security in the twenty first century

*Edited by* Alan D. Hemmings, Donald R. Rothwell & Karen N. Scott  
Routledge, 2012.

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ISBN 978-0-203-121000-9 (e-book)

The concept of security seems an odd one to apply to a continent dedicated to peace and science but the editors make the case that the Antarctic Treaty itself actually provided the first security construct for the continent. Their approach has been to propose that security in the 21<sup>st</sup> century context is multidimensional and needs to be considered from a variety of view points, which will often seem somewhat tenuous in an essentially uninhabited area. Much of the book is based on “what ifs” and concerned with legal approaches which may seem of little interest to scientists but there are important elements in many chapters for those interested in the way in which the continent is managed. Indeed this is an important volume attempting to ensure Antarctica is adequately connected with developments elsewhere in the world. There are 17 chapters, the first and last by the editors, and of the 14 authors all except three come from Australasia.

The three editors set the scene in Chapter 1, arguing that it is appropriate and necessary to consider security as a series of regimes covering state security, Antarctic Treaty regime security, maritime security, environmental security, resources security and finally human security. Whilst it is clearly true that Antarctic security has evolved from the international tensions of the 1950s to what is now the largest demilitarized zone on Earth I remain unconvinced that their expansion of the application of security terminology to all these other fields is really justified.

In Chapter 2 Nasu provides an analytical framework for law and policy on Antarctic security, a chapter very much devoted to his general contention that almost anything can be justifiably considered in a security context. Much of this chapter is not about Antarctica but a much more general discourse on the way security issues have been developed through the United Nations or with respect to international health issues like AIDS, concluding that international law for Antarctica needs to more clearly recognize and address the extra-territorial issues.

Donald Rothwell provides an interesting analysis of the security aspects of the Treaty in Chapter 3 beginning with a brief history of its origins but without mentioning the secret preparatory meetings in Washington. Here the reader will feel on more familiar ground as he discusses the limitations on military use in Articles I and V, the territorial provisions of Article IV and the inspection regime to underpin trust between states. He concludes that the ATS has dealt effectively with various challenges but that the Japanese whaling programme is a security stumbling block, an