

THE AMUNDSEN PHOTOGRAPHS. Edited and introduced by ROLAND HUNTFORD. New York: Atlantic Monthly Press, 1987. 199 p., maps, illus. Hardbound. Cdn\$50.00.

In the spring of 1986 an exhibition was mounted in Vadsø, northern Norway, to commemorate the 60th anniversary of Roald Amundsen's flight in the airship *Norge* from Vadsø, via Kongsfjorden in Svalbard across the Pole to Teller, Alaska, the first flight across the Arctic Ocean. In their search for Amundsen memorabilia the organizers of the exhibition approached Mrs. Alda Amundsen, widow of Roald Amundsen's nephew Gustav. Searching the attic of her apartment in Oslo, Mrs. Amundsen produced a wooden box labelled "Horlick's Malted Milk" and assumed that it contained supplies left over from one of Amundsen's polar expeditions. But when it was opened in Vadsø it was found to contain over 200 of Amundsen's original glass-mounted lantern slides.

It was known that Amundsen had had several sets of lantern slides that he used on the lecture circuit, but when his aircraft disappeared while heading north to help in the search for Umberto Nobile and the other survivors of the crash of the airship *Italia* in 1928, his affairs and his belongings were left in a state of confusion, and the various sets of lantern slides were assumed to have somehow gone missing. The set in the box found in 1986 was thus the first more-or-less complete set ever found.

Roland Huntford, who recently published a dual biography of Scott and Amundsen (Huntford, 1979), has made a selection of over 150 of the slides discovered in Vadsø. They pertain to three of Amundsen's major expeditions: his voyage through the Northwest Passage in *Gjøa* in 1903-07; his journey to the South Pole in 1910-12; and his voyage through the Northwest Passage in *Maud* in 1918-20. Many of the slides have been hand tinted with greater or less success; in some cases the results are quite crude and garish. Not a few show signs of the wear and tear resulting from hundreds or even thousands of projections during Amundsen's lecture tours; for example, the famous view of the South Pole party saluting the Norwegian flag flying atop the tent pitched at the South Pole is badly cracked. Others appear badly faded as compared to the illustrations printed from the same photographs used in Amundsen's own accounts of his expeditions. Since the pictures taken on the South Pole trip were taken by Olav Bjaaland using a folding Kodak camera (Amundsen's own, more sophisticated camera having malfunctioned), many of them leave much to be desired in terms of exposure, focus and composition. As Huntford remarks, however, "The outcome is a poignant blend of immediacy, artlessness and authority." The best of the photos, on the other hand, are first-class.

Huntford's general introduction, which includes a condensed biography of Amundsen, placing the three major expeditions and hence the photographs into perspective, and his introduction to each of the expeditions in turn are informative and more than adequate. The same holds true for most of the extended captions to each of the photographs. One specific criticism, however, is that on three separate occasions Huntford commits a gaffe that casts serious doubt on the breadth of his scholarship, namely, his statement that *Maud* was only the second ship, after Nordenskiöld's *Vega*, to complete the Northeast Passage; in fact she was the fourth such ship. In 1914-15 the Russian Imperial Navy icebreakers *Taymyr* and *Vaygach* (Captains B.A. Vil'kitskiy and P.A. Novopashenny respectively) travelled from Pacific to Atlantic via the Northeast Passage, wintering en route off the west coast of Poluostrov Taymyr (Starokadomskiy, 1976). Such a mistake would also suggest that the text was not submitted to any rigorous review process by the publisher. While this reviewer is prepared to believe that this is an innocent mistake, in view of the fact that it is repeated three times a Russian reader could be forgiven for interpreting this as a deliberate attempt at belittling Russian arctic achievements.

The other major failing may perhaps also be the fault of the publisher rather than the author, namely, the total lack of references, a bibliography, or even an abbreviated reading list. For example, only by comparing Huntford's quotations from Amundsen's diary on the South Pole trip with the text of Amundsen's book (Amundsen, 1912) can one establish that Huntford did indeed consult the original diaries and did

not simply regurgitate sections of the book. But this reader would like to know this without going through such a complex process and would like to know where the diaries are located. Huntford had demonstrated clearly in his earlier book on Scott and Amundsen that he is a master at archival research and at handling the techniques of referencing, and this makes the omission of a bibliography all the more puzzling. Whoever is responsible for the omission has drastically reduced the value of the book to the serious reader. That having been said, we are enormously indebted to Huntford and his publisher for making available a remarkable pictorial record of three great polar journeys by arguably the greatest polar traveller of them all.

#### REFERENCES

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 HUNTFORD, R. 1979. Scott and Amundsen. London: Hodder and Stoughton.  
 STAROKADOMSKIY, L.M. 1976. Charting the Northern Sea Route. The Arctic Ocean Hydrographic Expedition 1910-1915. Montreal and London: Arctic Institute of North America and McGill-Queen's University Press.

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ANTARCTIC SCIENCE. Edited by D.W.H. WALTON, with contributions by C.S.M. DOAKE, J.R. DUDENEY, I. EVERSON, R.M. LAWS and D.W.H. WALTON, of British Antarctic Survey, Cambridge. Introduction by SIR VIVIAN FUCHS, F.R.S. Cambridge: Cambridge University Press, 1987. 280 + viii p., 43 maps, 3 tables, 303 illus., 3 appendixes, index, selected bib. Hardbound. Price not indicated.

Antarctica is probably the only region of the world for which a review of scientific progress could be so collectively integrated. The book's coverage is strongly international and interdisciplinary, making it (no doubt) the best single statement about the frozen continent and the quest to uncover its secrets. More than being a statement that traverses biological, earth and atmospheric sciences, politics, history and exploration, and current issues besides, it also captures the *esprit de corps* of the human endeavour. Nowhere else (unless in space travel) have communities of scientists been more aware of the roles of history, exploration, politics and logistical support in the conduct of their research.

The book's objectives are twofold: 1) to put Antarctic science in a general perspective; and 2) to assess scientific progress to date and to point to future research directions (being also mindful of the review of the Antarctic Treaty in 1991). Both objectives are well fulfilled.

The format is in 5 sections and 18 chapters, opening with "Geography, Politics and Science." Three chapters in this section deal mainly with history, the fourth with politics. There are many more detailed and scholarly histories of Antarctica, but this account is history from the view of the scientist, history as it influenced the development of Antarctic science. The organizing of chapters within a section to conclude with a current perspective (here political) is followed throughout the book. Thus the biological section draws the discussion of aquatic and terrestrial biogeography and of adaptations and ecological food webs into questions of managing living resources, with the emphasis on marine fisheries. In similar manner the earth sciences section traces the dynamics of Antarctic ice and rock from local scales to global and concludes by relating tectonic industry to former life and current resources. The atmospheric sciences expand the climate dimension and then extend this to geospace and the developments now arising from the research cooperation established by the International Geophysical Year. The final section poses questions of scientific direction and of the Antarctic Treaty and the future — will it be cooperation or confrontation?

As a review of Antarctic science, the book is evenly documented and compiled and is generously illustrated (but not at the expense of the text). Reproduction quality is superb (there is a good mix of colour and black-and-white figures) and the page format is attractive, with clear type. It is very readable and in the greater part should be readily understood by the general reader. It is probably most useful to scientists and students for its breadth beyond the boundaries of disciplinary interest, rather than as a specialist reference.

To a scientist with Antarctic experience (G.J.W.), it is the first easily comprehended statement I have read on what some of my colleagues have been doing. As a reviewing team, we hope also that it will be read by the administrators, politicians and support personnel of Antarctic programs. To read it is to better understand the place of sector and disciplinary interests in the context of more global issues. Thus ecological food webs are linked to the effects of Antarctic exploitation (overfishing and oil pollution are examples); the Antarctic ice sheet and its historical record are related to current world climate; physiological adaptations of species such as icefish are linked to survival at the cold extremes; the importance of temperature is traced in the tragic outcome of Scott's last journey; and seemingly esoteric topics such as CO<sub>2</sub> levels, magnetic fields and solar winds are shown to really matter if we are to look to the future well-being of our planet. Only by the uniqueness of Antarctica are some research technologies even possible.

Although the British Antarctic Survey is clearly a highest authority in Antarctic science, the book does not cite references and the text must stand on its own merits. In this it is hard to fault, and we have little criticism beyond minor points. Sadly missing, however, is a large, detailed map of Antarctica. As the one reviewer without Antarctic experience (E.G.W.), I found it difficult to cope with geography at numerous points in the text. For example, not until chapter 13 does one of the many topical maps locate the Transantarctic Mountains!

A table referred to on page 109 is missing, and the Antarctic inference does not match the sub-Antarctic photo on page 67. An incorrect photo caption (57°54'N) appears on page 254, and the diagram on page 146 could have been helpfully placed earlier in chapter 10. Some figures are only marginally related to the text but enhance the book's appearance, bulk and, no doubt, price.

Restrictive use and clear definition of technical terms is commended but a little jargon escapes definition here and there — e.g., firm (p. 42), euphotic zone (p. 78), gyre (p. 148), to mention a few. Some acquaintance with technical language renders easier reading of the core science chapters, but should one chapter appear more difficult than another, this is likely to reflect the reader's background more than a difference in presentation standards. There are a mere handful of typographic errors, but "Antarctica" (p. 161) and "Antarctic Plate" (map, p. 176) are the most arresting. On page 174, "southern Africa" might be intended rather than "South Africa"?

It is most helpful that Appendix 3 lists the names and addresses of 19 national bodies to contact for information on Antarctic activities. Appendix 1 presents the full text of the Antarctic Treaty.

Fairer mention might have been made of the negative environmental impacts of some good science when less systematic science was addressed (e.g., p. 64), and greater coverage might have been expected of the BIOMASS program (Biological Investigations of Marine Antarctic Systems and Stocks) — there is only passing reference in chapters 9 and 18. However, there are many different programs cited, and given the book's compact coverage within its 280 pages, their treatments appear consistent. Any overemphasis of British achievements is slight, and for such an international overview the editor prefaced the following caveat:

The authors have considered the breadth of studies in their respective subjects and chosen from amongst them those that appear to have been the most important scientific developments. The choice is necessarily subjective.

Not until the final chapter, "Science, the Treaty and the Future," is there a hint of deviation from the scientific rigour of earlier sections. In the light of chapter 12, it here seems hard to reconcile the preciseness of a 60 m rise in sea level if the Antarctic ice sheets completely melted (p. 253). This author is also relatively brief in countering the concepts of

Antarctica as a "common heritage" and as a "world park." The one concept is freely aligned with exploitation and the other is dismissed as politically unacceptable.

Today, the direction of scientific research in Antarctica is clearly in flux. With the likely advent of a "minerals regime" and exploitation of Antarctic resources for commercial gain, there is a fear that collection of information on resources will proceed at a rate faster than information on the environment. Politicians argue in urgency that the risk of an unregulated scramble for such resources is too great and that a minerals regime should therefore be concluded.

The authors of this text do not emphasize this urgency. They do, however, emphasize the lack of political power scientists have (second-class status at Treaty meetings) in formulating conventions. Scientists fear that a minerals regime would be to the detriment of scientific research, particularly if the pristine Antarctic laboratory is perturbed by industrial activity.

A quotation from page 137 leaves a fitting (and hopefully lasting) impression of this fragile continent:

The slow growth of Antarctic mosses means that the mark of a footprint remains in a moss bank for some considerable time. The break in the surface at the edge of the footprint allows the wind to grip the surface and tear the moss bank apart, causing erosion far faster than the rate at which the moss can grow.

We highly recommend *Antarctic Science* as the title because its reading dimension is Antarctic science *in process*.

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THE GREENLAND CARIBOU — ZOOGEOGRAPHY, TAXONOMY AND POPULATION DYNAMICS. By MORTEN MELDGAARD. Kommissionen for Videnskabelige Undersøgelser i Grønland (The Commission for Scientific Research in Greenland). Meddelelser om Grønland, Bioscience 20, 1986. 88 p., tables, figs., appendixes. Softbound. Dkr158.60.

This monograph is for the most part a greatly needed comprehensive review of the voluminous zoogeographical information, much of which is scattered in various reports. Eighty-four years have passed since the zoogeography of the caribou in Greenland was last monographed in any detail. Everybody can recognize a caribou or even a caribou antler, and the animal is the one with the most extensive literature record in Greenland. The historical record from this part of the Arctic can be traced back to the old Norse document *Kongespejlet* (*The King's Mirror*), written about 1260. The modern record begins c. 1720 with the new colonization of West Greenland.

The caribou has been — and still is, at least periodically — a major prey for the Greenlanders, and its bones have been recovered from many archaeological sites. This aspect is extensively dealt with. The archaeological record goes back to c. 2500 B.C., when the first hunting cultures arrived in Greenland. At this time most, if not all, of the present-day mammals had immigrated to Greenland. The knowledge of the mammalian fauna prior to this event is very sparse. And knowledge of the caribou of that period is virtually restricted to a few radiocarbon dated remains found in geological contexts.

Today natural populations of caribou are only present in southwest Greenland and in Inglefield Land in northernmost West Greenland. However, shed antlers and bones, which testify to its previous presence, can be found virtually everywhere in Greenland. In central East Greenland historical sources show that the caribou became extinct sometime between 1890 and 1920, probably close to 1900.

Domestic animals are present in southwest Greenland, but animals from this herd have been introduced to a number of places. The modern