

BOOK REVIEWS

HEROIC ANTARCTIC EXPLORATION

South to the Pole

The Early History of the Ross Sea Sector, Antarctica. By L. B. Quartermain. Pp. xx+481+26 plates. (London: Oxford University Press, 1967.) 75s. net.

MR LESLIE QUARTERMAIN is a scholar and Antarctic enthusiast who has delved deeply into published and unpublished records of the heroic era of Antarctic exploration. He is also a practical historian who, in his capacity as information officer with the Antarctic Division of New Zealand's DSIR, has restored huts used by Scott and Shackleton so that all who visit McMurdo Sound can see how these expeditions lived.

South to the Pole tells a story which runs from the time of the early Polynesians to the 1920s but has the unusual geographical limitations of 160° E. to 150° W. and south of 60° S. Within this area, the lands and islands form the Ross Dependency which is administered by New Zealand. Especially in these days of the Antarctic Treaty, one could criticize the division of Antarctic history into sectors, but the later history of the sector does in fact have a unity of its own. The earlier history consists of relevant sections of the voyages of Cook, Bellingshausen, Wilkes, Balleny and one or two others, plus the first major exploration of the Ross Sea under Sir James Clarke Ross in 1840-42.

After Ross, little exploration of the sector took place until the turn of the century, although many scientists pressed for action, as we see from articles in *Nature* by the German hydrographer in 1872, by H. R. Mill in 1896, and by resolutions of the International Geographical Congress in 1895. This pressure culminated in a series of national expeditions starting in 1901, Scott's British Antarctic Expedition of 1901-04 being the first major one to explore to the south of New Zealand. Before this took place, however, a Norwegian schoolteacher from Australia, Borchgrevink, secured the backing of the press baron Sir George Newnes and organized the Southern Cross expedition of 1898-1900. The party had its shortcomings, but nevertheless was the first to overwinter on the Antarctic continent and it seems to have received less than due recognition from the President of the Royal Geographical Society, Sir Clements Markham, and from Scott.

While this expedition was in the field, the Royal Geographical Society in co-operation with the Royal Society succeeded in raising funds from private and government sources to send out the British Antarctic Expedition of 1901-04. Relations between the two societies did not stay happy, because of differences over finance and the leadership of the land parties. These disputes seem to have had some lasting effect, for although the two societies have co-operated in many ways since, no further expeditions have taken the field with the two societies accepting joint responsibility for their organization until the Royal Society/Royal Geographical Society Brazil Expedition of 1967.

The stories of the period 1901-14 are well known, but they are retold in an interesting way with ample references to original source material. The assessment of the person-

alities and respective merits of the leaders of this period seems very fair and free of the more usual emotional assessment. Due prominence is given to the little known but heroic story of the Ross Sea section of Shackleton's Imperial Trans-Antarctic Expedition of 1914-17. Their shore party was equivalent to Hillary's section of Fuchs' subsequent Trans-Antarctic Expedition. Radio communications were too primitive to establish communication with the outside world. The ship which was intended to stay with the wintering party in McMurdo Sound was driven to sea in a storm in early autumn, leaving those on shore with inadequate stores and clothing. These men, not knowing that Shackleton had failed to land from the Endurance in the Weddell Sea, succeeded against gross odds in laying the depots expected by the trans-Antarctic group. One of the shore party died during the return journey, and two more lost their lives by attempting the last stage between huts in McMurdo Sound before the sea ice was firm enough. Finally, Captain J. K. Davis on the *Aurora*, with Shackleton on board, rescued the survivors in January 1917.

The history is taken into the 1920s with an account of the development of early whaling operations in the Ross Sea. It stops before the opening of the mechanical era which began with Byrd's first expedition.

The book does not attempt to provide a history of early scientific research in Antarctica in relation to the present day efforts. Quartermain provides instead an interesting, accurate and balanced assessment of the various expeditions and their leaders in the light of present day information on Antarctica. As a volume it will clearly join the classics of the history of general Antarctic exploration.

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HIGH ENERGY PHYSICS

High Energy Physics

Vol. 1. Edited by E. H. S. Burhop. (Pure and Applied Physics; a Series of Monographs and Textbooks. Vol. 25.) Pp. xi+499. (New York: Academic Press, Inc.; London: Academic Press, Inc. (London), Ltd., 1967.) 176s.

HIGH energy physics is the title which, for want of a more appropriate description, is nowadays assigned to that branch of physics which formerly went under the name of elementary particle physics. It is the frontier of physics, concerned with the most basic laws, and it is not surprising that it has attracted and continues to attract the most talented and ambitious among physicists. Although high energy physics is still far from answering the questions which it poses for itself, it has made great progress in the thirty or forty years of its existence and continues to do so. It is now a vast subject embracing a wide class of phenomena ranging from very low energies of the order familiar to low-temperature physicists to the very great energies obtainable only from cosmic rays and from the giant accelerators. It has an army of practitioners and its demands on the exchequer are now the subject for national and international debate. I am therefore inclined to agree with Professor Burhop that "it is now extremely difficult to envisage a work both comprehensive and up to date, written by a single author" on this subject.

Professor Burhop has sought to cover the main branches of high energy physics by collecting seventeen chapters on various subjects contributed by experts in their respective fields. The choice of subjects and the manner in which they are treated necessarily reflect the preferences of the editor and of the various authors.

Of the five chapters in the present volume, the introductory chapter by V. F. Weisskopf is a popular account, reprinted from *Science*, of the present status of elementary