

other things, the salient points of the regulations which have recently come into force in the United Kingdom. The subject of shielding is well covered and, by the use of many graphs, can be applied to the reader's specific problem. The chapter on neutron flux and energy measurements is rather brief, which may be appropriate since the majority of potential users of radiation sources are unlikely to be concerned. Even so, the use of fission detectors for neutron measurements should have been mentioned.

The book can be recommended as the most detailed collection of descriptive matter pertaining to radiation sources that has been published so far, and should certainly be included in all scientific reference libraries.

S. JEFFERSON

BRITISH RESEARCH IN THE ANTARCTIC

Antarctic Research

A Review of British Scientific Achievement in Antarctica. Edited by Sir Raymond Priestley, Raymond J. Adie and Dr. G. de Q. Robin. Pp. xi + 360 + 36 plates. (London: Butterworth and Co. (Publishers), Ltd., 1964.) 210s. net.

THIS volume may be regarded as a progress report in popular form on the British contribution to research in the Antarctic regions both on land, on and beneath the sea and in the air.

This contribution began with the early voyages of British sealers, who first saw the outlying islands, and with that of the brig *Williams* under Captain Edward Bransfield, who first sighted the Antarctic continent, in the 'twenties of the last century. Since those early days it has always been the seas around Antarctica which have been of major interest to Britain as a source of wealth and commerce on account of the whales and seals which inhabit them, but it has been the great icebound land mass itself, the *Terra Australia Incognita*, which has been the challenge to our curiosity and love of adventure.

Early voyages and discoveries of British ships among the outlying islands and along the coastal fringe of the continent in the western region of the Antarctic south of South America led the British Government to lay claim, as long ago as 1843, to the islands and to a wide sector of the continent itself between longitudes 20° and 80° west. This sector became known as the Dependencies of the Falkland Islands and there was an implied primary British interest in, though naturally no actual claim to, the surrounding seas with their rich harvest of whales. Since the Second World War this claim has been disputed by both the Argentine and Chile, and several other nations have staked claims in other sectors of the Antarctic. It is with the results of research in the Falkland Islands Dependencies that this volume chiefly deals in support of the British claim, though there are references to work in other sectors, notably that of the British Trans-Antarctic Expedition, 1955-58, under the leadership of Sir Vivian Fuchs.

British research in the Falkland Sector of the Antarctic really dates from 1917 when the Colonial Office set up an Inter-Departmental Committee on Research and Development in the Falkland Islands Dependencies. This became the *Discovery* Committee under whose auspices was carried out, from the year 1925 until the outbreak of the Second World War, the most intensive and widespread oceanographic investigation ever undertaken. It was concerned mainly with whaling and, using the three famous research ships, *Discovery*, *Discovery II* and *William Scoresby*, embraced Antarctic seas around the continent. These investigations were suspended during the Second World War but, as a result of claims by the Argentine, a survey party, known as 'Operation Tabarin', was landed at Port

Lockroy in 1944. There, in nearly 65° south, a small survey base was established. In succeeding years this base grew into a kind of permanent Antarctic research service known as the Falkland Islands Dependencies Survey with its own ship and several other bases among the bays and islands of the sector. In 1962 its name was changed to British Antarctic Survey and there are now fourteen British bases scattered about on offshore and outlying islands and on the coast of the Grahamland peninsula.

The articles in this beautifully produced volume, illustrated by excellent coloured plates and many black-and-white photographs, deal in a readable manner mainly with the results of work carried out at these bases, but also on major overland expeditions, such as the British Trans-Antarctic Expedition, and on board the ships of the *Discovery* Committee. Each article has been written by a distinguished expert who has himself worked in the field on land or at sea in the Antarctic, and a wide range of subjects is covered. Not only are the fauna, flora, geological structure and climate of the Antarctic dealt with but also such diverse subjects as the technique of overland travel in polar regions, polar ships and navigation and the effect of the Antarctic environment on man himself and on the dogs he uses. There is a foreword by H.R.H. The Duke of Edinburgh, and Sir Raymond Priestley contributes a concise history of Antarctic research which forms a fitting background.

Nowadays the Antarctic may be said to be tamed. Modern science and techniques have reduced its challenge. Man's outlet for fulfilment and adventure has been transferred to outer space and soon, presumably, the Moon will occupy the position in man's regard that the Antarctic occupied fifty years ago. By the Antarctic Treaty of 1959 rival nations have agreed not to press their claims in the region for at least thirty years. So now we may hope that in an atmosphere free of scoops, stunts, journalistic stories and political alarms British scientists, such as those whose work is recorded here, will be able to continue their patient researches, in co-operation with those of many other nations.

F. D. OMMANNEY

NUCLEAR SPECTRA: A SYMPOSIUM

Alpha-, Beta- and Gamma-Ray Spectroscopy

Edited by Prof. Kai Siegbahn. Vol. 1: Pp. xxxviii + 1-862. Vol. 2: Pp. xxxix + 863-1742. (Amsterdam: North-Holland Publishing Company, 1965.) 360s. the two volumes.

THE title of this work does not truly reflect the breadth of material contained in its two volumes. All aspects of nuclear spectra are thoroughly covered with a good balance between theory and practice. *Alpha-, Beta- and Gamma-Ray Spectroscopy* is an extended and rewritten new edition of Siegbahn's *Beta and Gamma Ray Spectroscopy*, which originally appeared some ten years ago; the non-conservation of parity in weak interactions, the use of multi-channel pulse height analysers and the Mössbauer effect are among the topics now included. Some text references are as recent as late 1963 (the preface is dated March 1964) so that the new edition has been brought well up to date. Volume 1 is mainly concerned with general nuclear spectroscopy including decay schemes and also nuclear models, while Volume 2 covers such topics as transition rates, angular correlations, beta interactions, etc. There are, in all, 26 chapters and 9 appendixes; a helpful feature is that each main chapter opens with a brief summary of the material contained therein.

Volume 1 opens with a discussion of the interactions of alpha particles, electrons and gamma-rays with matter followed by a survey of the theory and practical design of alpha- and beta-spectrometers. A brief review of gamma-crystal spectrometers is followed by an exposition of the