

on all aspects of Antarctic ecology, descriptive, quantitative, behavioural, functional, grouped into fourteen themes, each with a short introduction and a useful edited discussion at the end. The papers are illustrated with photographs, figures and maps, and there are good subject and author indexes at the end of volume two. Volume one deals essentially with marine ecology, volume two with terrestrial and freshwater ecology.

Several of the topics lead into discussions of cropping and conservation of Antarctic ecosystems. Are the krill, supposedly under-exploited by the present decimated whale populations, a potential world food resource, or are they basic to so many Antarctic food chains that it would be hazardous to crop them at all? Cropping at the zooplankton level has always seemed ecologically attractive but mechanically impracticable, but krill are large enough, abundant enough and occur in dense enough shoals to overcome these difficulties. Moiseev suggests that successful exploitation of krill would "probably allow us to double the present catch of aquatic organisms from the world ocean". Other members of the symposium were less sanguine.

What are the hopes for successful conservation of the Antarctic continent, an international resource hitherto almost totally unexploited, with its simplified and presumably vulnerable ecosystems? The Antarctic Treaty, negotiated in 1960, is steadily being endorsed by all the relevant nations and is sometimes hailed as an example of effective international conservation, a model for the internationally agreed world conservation measures essential for man's survival. It is too early to say whether Antarctic conservation is successful and, if so, whether this is because governments have at last seen the light about conservation, or because the economic and/or military advantages of flouting the treaty are negligible. If resources of world fossil fuels become critical and nuclear energy is not an acceptable substitute, will the great Antarctic coalfield be scheduled for exploitation? If so, will the Antarctic Treaty cut much ice?

I would have liked all the maps the same way up. I am surprised the symposium contained only a bare mention of the oft quoted occurrence of organochlorine pesticides in Antarctic animals. A critical discussion of the ecological implications of these results would have been valuable. Few individual scientists will be able to afford *Antarctic Ecology*, though by present standards £11 for one thousand pages is not expensive. All in all, the contributors, publishers and especially the editor are to be warmly congratulated on this *magnum opus* and librarians at least should be encouraged to buy it. It will stand as a major source of reference for many years.

P. J. NEWBOULD

Controlling Parasitism

Recent Advances in Researches on Filariasis and Schistosomiasis in Japan. Edited by Manabu Sasa. Pp. 402. (Tokyo University: Tokyo; University Park: Baltimore, Maryland and Manchester, July 1970.) \$21.

THIS is an account of the work stimulated by the Japan US Cooperative Medical Science Programme which set up a Japanese Panel on Parasitic Diseases in 1965 to study filariasis and schistosomiasis. Medical parasitology as a scientific discipline began with filariasis in 1877, when Patrick Manson discovered that the filarial parasite causing elephantiasis was transmitted by mosquitoes. Filariasis is still a major problem in Asia with more than 200 million people infected. At the time when Manson was working on filariasis in China, Japanese physicians were studying a disease of the liver and bowel that was spreading throughout the Hiroshima prefecture and other parts of southern Japan. The blood fluke causing this disease was eventually discovered by Katsurada in 1904, and he was able to show that it was closely related to the parasite causing bilharziasis in Egypt. Western scientists were completely baffled by this disease and were unable to determine the mode of transmission. The clue came from Japan where Fujinami and others had shown that infection was contracted by bathing in water—Miyairi and Suzuki in 1913 demonstrated that transmission was through a snail host. Professor Yokogawa gives an account of these far reaching discoveries in the section of the book devoted to "Schistosomiasis in Japan"; this is a success story. Japan is one of the few areas of the world where control is effective. In spite of the problem of a large reservoir of infection in animals (which makes control by treatment ineffective), the parasite has been practically eliminated chiefly by killing the snails with molluscicides, and by lining the irrigation canals with concrete to prevent the snails from breeding. In one area the parasite was eliminated when an infected swamp was converted into a golf course.

Elsewhere in the world schistosomiasis is of increasing importance; in Africa and South America practically all new irrigation schemes have been invaded by the snail hosts and control measures are having little effect on the prevalence of the disease. There is no doubt that western scientists and public health workers have still a great deal to learn from their Japanese colleagues when it comes to the control of parasitic diseases. Control is not the only aspect of schistosomiasis dealt with in this book; there are other chapters dealing with the ultra-structure of the parasites, their isoenzymes, the clinical aspects and treat-

ment of the disease and the development of immunological tests.

In the section on filariasis, Professor Sasa and his colleagues show that although this disease has been less effectively controlled than schistosomiasis, there has been a steady decline in the infection rate chiefly as a result of systematic surveys and treatment. As with the work on schistosomiasis there have been numerous supporting studies including observations on spermatogenesis and oogenesis of adult worms using the electron microscope; studies on the dynamics of transmission with a detailed mathematical analysis of epidemiological data; immunological studies with a view to developing better diagnostic techniques; and studies on the periodicity of microfilariae. This latter study takes research on filariasis full circle back to the observations by Manson, who first noted that although the microfilariae are present in the blood in large numbers at night they disappear from the blood during the day. A variety of controlling mechanisms is known but this circadian rhythm is still something of a mystery. Professor Katamine is studying this problem in experimental animals and man in Japan. Of particular interest is the account of the change in rhythm of microfilariae in Japanese emigrants on a two month journey westwards from Japan to Bolivia. This study confirmed that the innate rhythm of the parasites is determined by the sleep rhythm of the host and that there was a gradual shift of peak microfilarial activity in spite of the 13 hour time difference between Japan and Bolivia.

G. S. NELSON

Insect Physiology

An Introduction to Insect Physiology. By E. Bursell. Pp. xiv + 276. (Academic: London and New York, November 1970.) 70s; \$10.

AIMED at the undergraduate and intended as an introduction to physiology, Professor Bursell's book fulfils perhaps the primary requisite of an introductory work in that it can be read easily and completely. As such it contrasts with larger and more comprehensive works such as Chapman's *The Insects, Structure and Function*, and Wigglesworth's *The Principles of Insect Physiology*, which, though excellent works of reference, are at first difficult to grasp as a whole.

Divided into four chief sections, *An Introduction to Insect Physiology* begins with the largest, that concerned with somatic physiology. Here the reader finds the classical subdivisions of physiology, metabolism, digestion, circulation, osmoregulation, excretion and respiration as applied to insects. The second section deals with neuromuscular and