ANTARCTIC TERRESTRIAL BIOLOGY: ANTARCTIC RESEARCH SERIES VOLUME 20. *Edited by George A. Llano. Washington, D.C.: American Geophysical Union, 1972. 8⅛ x 10¾ inches, 322 pages, illustrated. $30.00.*

The volumes of the Antarctic Research Series have provided detailed and valuable information about scientific progress in Antarctica. This new volume on terrestrial biology is no exception. The 13 original research papers cover a broad spectrum of topics, both systematic and ecological, treating fresh-water and land habitats which range from the subantarctic, to the Antarctic Peninsula, and to the continental areas of Antarctica. The three limnological and one protozoan papers present different emphases. The work of C. R. Goldman, D. T. Mason, and B. J. B. Wood is a comparative study of two coastal lakes in the continental region. One of the lakes is actively enriched by avian fertilization, the other is not. Information is given about physical and chemical conditions, biota, and productivity. The enriched lake is shown to have about ten times the overall productivity of the other lake. Experimental studies indicate that light and temperature interactions are probably more important than nutrients in productivity. While the emphasis is on a detailed comparison of two lakes, information of a more fragmentary nature is provided for a number of other lakes in the region. The paper by D. D. Koob and G. L. Leister presents detailed data about a perennially ice-covered lake, Lake Bonney, in a snow-free ("dry") valley near McMurdo Sound. It greatly contrasts with the lakes studied by Goldman *et al.* Lake Bonney has an inverse thermal stratification and no zooplankton. The few organisms are vertically stratified resulting in a stratification of carbon fixation and vertical migrations of the organisms probably because of changing light conditions. Chemical and physical data are given as well as relative carbon fixation data. The emphasis is on the uniqueness of the lake and its biota. The last limnological paper, by B. C. Parker, G. L. Samsel, and G. W. Prescott, is a survey of the fresh-water algae of the vicinity of Palmer Station on the Antarctic Peninsula, as well as information about the chemistry, physical environment, and productivity of a number of habitats in that area. The emphasis is on the algal flora with details about its abundance. The ciliated protozoa of the Antarctic Peninsula are treated by J. C. Thompson, Jr. in a systematic way. Twenty-five genera with descriptions from cultures of most of the 31 forms in them are given. Seven genera are new to the Antarctic and four species are described as new to science. In many cases the author is unable to identify species without further taxonomic generic revision, thus making this paper careful and conservative.

The five papers on antarctic land plants consider various aspects of cryptogams. The papers by O. L. Lange and L. Kappen on lichens, J. R. Rastorfer on mosses, and E. Schofield and V. Ahmadjian on lichens, mosses, and algae all take a physiological ecology approach. Lange and Kappen report on photosynthesis of lichens from coastal East Antarctica which shows that these plants can fix carbon very effectively at low temperatures, in some cases near 0° C., even at low light intensities; that they can have small amounts of fixation at temperatures as low as −18° C.; and that they can recover from cooling to temperatures of −196° C. These plants truly seem to be able to function well under their environmental conditions of little moisture and low temperatures. Schofield and Ahmadjian concern themselves with physiological and ecological aspects of lichen, moss, and algal growth in coastal East Antarctica. They find that the nitrogen compounds in bird droppings are most suitable for growth of the fungus isolated from a particular lichen and for an alga both generally associated with bird rookeries. The moss showed no particular preference for nitrogen source. Their conclusions about nitrogen sources, temperature tolerances, and light relationships indicate special adaptations to environmental conditions where these plants grow. Rastorfer, in his study of the physiology of four mosses, major components of communities in the Antarctic Peninsula, also indicates some possible adaptations to antarctic conditions, particularly photosynthetic relationships to light and temperature as well as high accumulations of lipids rather than carbohydrates. He does show a significant difference between the physiology of the two moss growth forms found. The final two land plant papers are taxonomic. H. E. Robinson considers the antarctic moss flora, concentrating on collections from the Peninsula area. Thirty genera and approximately 70 species are given and distributional patterns are discussed. His opinion is that this fllora is a recent one with very few, if any, relic forms. R. Singer's paper describes a new mushroom from the Peninsula; it is the most southern macrofungus yet described. The papers on land plants taken together indicate that these plants, though of probable recent origin in Antarctica, have evolved significant physiological adaptations to their current

environment.

Two papers in this volume give detailed information about antarctic soils. One, by F. C. Ugolini, is about soils formed in an Adélie penguin rookery. Where fresh guano and regurgitated materials are present, both high nitrogen and salts are common. By use of differential thermal analyses it is possible to identify guano, algal, and moss materials in the soil. The author believes it is possible to identify buried ornithogenic soils because the layers seem to be little disturbed in this McMurdo Sound region. R. E. Cameron's paper emphasizes the microbial and ecological aspects of Victoria Valley (a dry valley) in East Antarctica. Not only is detailed information provided about microbes, but also about the soil and other materials they are in, the physical and chemical setting and other pertinent facts. Some soils were too dry or saline and did not have any microorganisms in them. In others, various types were found, some requiring special techniques for their culture. All organisms grew at 2° C. as well as at 20° C. The soils are fully characterized and described.

Some antarctic mites at Hallett Station are considered in a paper by E. E. Gless. In spite of difficulties of laboratory cultivation, these organisms are characterized as to their life histories and a new species is described. The subantarctic rain forests of Magellanic Chile, the southernmost forests in the world, are reported on by S. B. Young. The evergreen trees grow at very slow rates despite the high moisture. The composition of the forests is described as are some of the significant environmental factors influencing past and present growth. Some trees are estimated to be about 1000 years old, although the oldest one with tree ring count is about 300 years old, even though they are stunted in their growth. This is a different "rain forest".

This volume is truly a remarkable record of research that provides much data and many ideas about the various terrestrial organisms of Antarctica, and their environments. I found the editing and production of the book to be very salutary. One misidentification, of a figure number in the text on page 229, was the only typographical error that I noticed. George Llano in his preface says that, "much of biological research involves graduate research assistants, and seven of these papers represent, in part or in whole, their contributions presented in partial fulfillments of requirements for higher degrees." We can all be grateful to the National Science Foundation and its Office of Polar Programs for supporting the valuable research of these senior scientists and their students that has given so much striking information about this distant and unknown land.

Emanuel D. Rudolph

SCULPTURE OF THE ESKIMO. By GEORGE SWINTON. *Toronto: McClelland and Stewart Limited, 1972. 10 x 12¾ inches, 255 pp. 37 colour plates, 770 black and white photographs. $18.50.*

In this lavishly-produced book, George Swinton presents the most comprehensive statement on Canadian Eskimo sculpture and the best representative collection of photographs of the sculptures themselves. Like the only comparable set of published photos in the catalogue for the exhibition *Sculpture/ Inuit,* these richly document the variety, vigour and merit of modern Eskimo sculpture. This new book is no rehash of Swinton's 1965 *Eskimo Sculpture* but a new presentation and one with a different viewpoint resulting from the continuing developments in Inuit art and Swinton's deeper study. For example, he no longer forecasts, as did many others, the demise of Eskimo art but, comprehending acculturation, he anticipates changes in it. Although now more aware of ethnological and archaeological concepts and data, he never writes like an anthropologist. Swinton's text is personal, committed, vigorous and wide-ranging even when he reviews the art and events of the prehistoric and historic periods in arctic Canada. At that I'd have welcomed a more detailed history of the 1948-58 period and surely many readers will wish Swinton to write in detail on his ideas of mythological or religious content in current Eskimo art.

Perhaps the most pertinent chapter is that on Eskimo aesthetics. There, by inference and implication, Swinton rejects many common stereotypes of Eskimo art — and there are many indeed to be rejected. What is "Eskimo art"? Who decides? Swinton provides the reasonable, but not so simple, answer that Eskimo art is that produced by Eskimos. The discussion of such questions follows from a candid and careful attempt to explain why Eskimos "do" art although, in that passage, the reviewer is not so convinced that the Canadian Eskimo find in art "a means of cultural and ethnic self-affirmation". I accept that some Eskimos do but perhaps also many whites find that art, for themselves, a means of Eskimo affirmation.

Inuit art of the past 25 years will probably be recognized as the most significant development in Canadian art since the Group of