just becoming interested in the application of the physiological method to parasitological investigations is the frequent mention of unsolved problems pertinent to the various topics under discussion.

Von Brand has attained the aims that he set forth in his preface and has produced a book that will not only enhance our grasp of the facts related to parasite physiology, but one that may play a large role in interesting young biologists in this vital area of human knowledge. It is unreservedly recommended to those upon whose interests it may touch.

JACK W. DAUGHERTY

Department of Biology, The Rice Institute

Physics and Medicine of the Upper Atmosphere: A Study of the Aeropause. Proceedings of a Symposium on the Physics and Medicine of the Upper Atmosphere held at San Antonio, Texas, November 6–9, 1951. Clayton S. White and Otis O. Benson, Jr., Eds. Albuquerque: Univ. New Mexico Press, 1952. (For the Lovelace Foundation for Medical Education and Research.) 611 pp. Illus. $10.00.

This compendium of current knowledge of the upper atmosphere will prove informative and exciting to both scientific and lay readers. It will sharpen the desire of many people to test their ability to foresee the experiences of those who may someday engage in astronautical flights. The book constitutes the proceedings of a symposium on the physics and medicine of the upper atmosphere held at San Antonio, Texas, Nov. 6–9, 1951, sponsored jointly by the Air University School of Aviation Medicine, Randolph Field, Texas, and the Lovelace Foundation for Medical Education and Research, Albuquerque, N. M. The editors are both well-known authorities in the field of aviation medicine: Dr. White is director of research of the Lovelace Foundation and head of a section of aviation medicine in the Lovelace Clinic; Brigadier General Benson (USAF, MC) is commandant of the USAF School of Aviation Medicine. The foreword is by Harry G. Armstrong, USAF surgeon general, under whose guidance the Department of Space Medicine at the School of Aviation Medicine was organized some five years ago.

The volume consists of the contributions of 34 leading scientists, many of whom have devoted years to the study of problems closely related to the exploration of space by manned and by unmanned devices. Scientific foundations for today's thinking and planning in this field have taken form rapidly, and this book will occupy a position of honor—possibly that of the cornerstone of astronautics.

It was only 35 years ago that the Army adjutant general appointed a board of medical officers to study and make recommendations concerning the selection and maintenance of pilots. The board's first action was to set up a research laboratory, which today is represented by the School of Aviation Medicine at Randolph Field. Basic and applied research in aviation physiology, psychology, and medicine has progressed rapidly in the intervening years. In the fall of 1948 the school held its first symposium on space medicine. Under the guidance of John P. Marbarger, director of research in its Aero-Medical and Physical Environment Laboratory, the University of Illinois sponsored a second symposium on this subject in Chicago, March 3, 1950.[1] The four-day symposium represented by the volume under review was held a year and a half following the one in Chicago, several of the same scientists participated, and the total attendance was 400. The rapidity with which creative thinking is progressing in this field is evident from a statement by Dr. White in his introductory chapter: "Without exception, the authors who prepared the material for this volume gained much from the experience of the San Antonio symposium. Many completely rewrote their papers after the meeting, and by far the majority made major revisions in their discussions."

Defining the aeropause as "a functional border region between space and the atmosphere of the earth," the emphasis in the symposium was on working toward the optimum pilot-airplane combination for man's travel beyond the stratosphere. In Chapter 1 basic problems which must be solved to achieve this end are reviewed by a leading engineer—Alfred M. Mayo, of Douglas Aircraft Company; in Chapter 2 these problems are presented by an outstanding specialist in aviation medicine—Hubertus Strughold, now head of the Department of Space Medicine at Randolph Field. Following these two statements, there are 17 chapters, by as many authors, which are devoted to various physical aspects of the upper atmosphere, including biological effects of radiation and of meteorites.

A third section, appearing as Chapter 20, reports a panel on "Methods and Vehicles for Research in the High Atmosphere," under the chairmanship of James A. Van Allen, of the Department of Physics, State University of Iowa. Including the contribution of the chairman, there are 10 subchapters in this division. Finally, under the chairmanship of Paul A. Campbell, director of aero-medical research at Randolph Field, a panel on "Known and Predicted Problems of Human Travel in the Aeropause," comprising 13 papers by as many authors, and presented as Chapter 21, completes the contributed papers. There is an appendix which includes seven conversion tables and 46 halftone plates, many of them full-page. The 27-page index is excellent, covering not only names and subjects but also biographical references.

Children of this and earlier generations have played a game of throwing up sticks and stones and calling out, "Everything that goes up must come down." An even more exciting game is now in prospect, and this book gives the widest range of facts and suggestions on how to play it.

WALTER R. MILES

Yale University School of Medicine

[1] *Space Medicine, The Human Factor in Flights Beyond the Earth.* J. P. Marbarger, Ed. Urbana: Univ. Illinois Press (1951).