physical models of the nature of climate have taken over.

William D. Sellers's admirable little book, **Physical Climatology** (University of Chicago Press, Chicago, 1965. 280 pp., $7.50), reflects this last approach. Sellers attempts to look at the manifestations of climate as energy transformations, primarily at the boundary between the atmosphere and the earth's surface. Our debt to R. Geiger and M. I. Budyko for pioneering this path is properly acknowledged.

The elements of the radiation balance and their measurement (78 pp.) and the water balance with due emphasis on evaporative phenomena (43 pp.) occupy almost half of the substantive text. That the role of microprocesses through wind, turbulence, and diffusion (30 pp.) is properly stressed is a welcome departure from the treatment accorded this topic in most English language books.

Perhaps a bit too much emphasis has been placed on zonal averages of climatic elements. They give a very fictitious picture, and lead one to underestimate the extraordinary influence of the distribution of land, water, and mountains in climatogenesis. Recent numerical simulation of climates from models of the general circulation of the atmosphere is not mentioned. Strangely, this term has been essentially banished to the last page.

A long chapter (32 pp.) on paleoclimates and theories of climatic change attempts to sift the many ideas that have been advanced in this thoroughly confused field. Here the author had to abandon the quantitative approach, which otherwise prevails in the book, but he gives a very good account of the—mostly unsolved—problems.

The book, which covers only selected areas of the field, will make a very fine text for senior and incipient graduate students for a one semester course. It will also serve as a good modern reference for workers in the various fields of ecology who have an interest in climate.

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Studies in Anthropological Method

Henry A. Murray has held that the life history is one of the building blocks of a science of man. Eleven years ago Murray made a statement that is still pertinent: "The truth is that until very recently the study of lives—the only possible way of obtaining the granite blocks of data on which to build a science of human nature—has generally been depreciated in academic circles as an undertaking to which no true scientist would commit himself." For those who share Murray's view and for those who are interested in the contributions of the life history as a method of investigation, this small book, **The Life History in Anthropological Science** (Holt, Rinehart, and Winston, New York, 1965. 94 pp., $1.50), by L. L. Langness, is a valuable contribution.

Langness defines the life history as ". . . an extensive record of a person's life as it is reported either by the person himself or by others or both, and whether it is written or in interviews or both" (pp. 4 and 5). In systematically examining this method, the author reviews the history of the use of the life history in three periods: up to 1925; from 1925 to 1944; and from 1945 to the present. The bibliography of biographical materials for these periods is most impressive and an invaluable resource.

The remainder of the book deals with the utility, acquisition, and meaning of the biographical method.

The contributions of the life history to the following important problems are systematically covered: an understanding of culture and the idiosyncratic; an individual's perspective on deviance; cultural structure as viewed by the people themselves; culture change and the role of the leader; personality studies in the culture and personality tradition; role analysis; factors of chance and accident in life experience; value studies; and the socialization process. The author also carefully examines the problems of collecting field data. The problems of rapport, language, interviewing, reliability, sampling, taking and recording notes, and interpretation are briefly but adequately discussed.

For the sake of improvements in the biographical method, Langness emphasizes the need for greater sophistication in interpretation and analysis, and the need for greater accuracy.

This is a most useful book. I want to add one thought about the life history method: when the life history is used systematically as a part of a larger set of investigative tools—for example, surveys and controlled experiments—for understanding a given problem, then the hypothesis elaborating function of the life history is vastly multiplied. In my view, it is this relative lack of making the life history an integral part of a larger set of investigative models that has seriously hindered the maximum use of this important but neglected method.

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Culicidology

On a worldwide basis, the family Culicidae (the mosquitoes) is probably the most thoroughly studied suprageneric taxon among the insects. The role of mosquitoes as pests and as vectors of diseases of man and other animals has stimulated extensive research activities not only in control techniques, but also in systematics, zoogeography, and all phases of biology. N. V. Dobrotworsky has culminated 13 years of research with a comprehensive treatment of the mosquito fauna of Victoria, a state in the southeast corner of Australia. His book, **The Mosquitoes of Victoria (Diptera, Culicidae)** [Melbourne University Press, Carlton, Australia; Cambridge University Press, New York, 1965. 243 pp., $18], is the first publication to consider all 69 mosquito species in the state. Only four species of the genus *Anopheles* are found in Victoria, and only one of these can be regarded as a potential vector of malaria. The fauna is dominated by members of the genus *Aedes*, which encompasses more than half the known species; this genus is followed in importance by the genera *Culex, Culiseta, Mansonia, Tripteroides*, and *Aedeomyia*. Seven bird-pox viruses have been recovered from mosquitoes collected in Victoria, and Murray Valley encephalitis, a disease suspected of being transmitted by mosquitoes, has been recorded on several occasions from the northwestern part of the state. Myxomatosis, a virus disease introduced to control rabbits, is mechanically transmitted by a number of mosquito species in Victoria.

The book is divided into two sections. The first deals with general considerations of mosquito anatomy, biology, zoogeography, and disease relationships. The second and most extensive section consists of a taxonomic treatment of genera and species within the area. Subfamilies and genera are characterized, and diagnostic keys to the adult females and fourth stage larvae are provided for most groups. An illustrated résumé of the salient anatomical features of the adult and larva of each species is presented, along with a concise summary of biology and distribution.

Considering the general editorial excellence of the work, it is unfortunate that the format adopted for synonymy is not consistent with standard usage and is therefore frequently misleading. The description of one new species assures for this book a permanent place in the taxonomic literature. Students of the mosquito fauna of the Australian region will find this work a valuable reference, but, owing to the restricted area considered, the book will be of limited value to culicidologists interested in other geographical regions.

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Space Science: A Curious Conglomeration

Over the past few years we have witnessed the emergence of a new subject area called "space science," a curious conglomeration of topics having one thing in common: the utilization of data obtained in space. Yet this common element exerts an exceedingly strong coalescing influence on the subjects involved—partly because of the enormity of the costs, which overshadow other factors, and partly because of the novel technology, which bears importantly on all disciplines alike. This somewhat artificial merging of disciplines is reflected in the establishment of institutes or even departments of space science at universities and the appearance of books, such as this one, **Introduction to Space Science** (Gordon and Breach, New York, 1965. 934 pp.), edited by Wilmot N. Hess, intended to survey topics that might depend heavily on space measurements.

Books of this kind undoubtedly fill a need, as there are many people who will want to study a large part of space science—for example, students who know they want to enter the field of space science but are not quite sure about the particular subdivision. And many research workers will find it convenient to have timely reviews of these interrelated subjects in a single volume.

The 23 separate chapters were written by scientific staff members of the Goddard Space Flight Center of NASA. The book is divided into three parts, covering, respectively, the earth and its environment; space (for example, the interplanetary medium, cosmic rays, orbital mechanics, and man in space); and astronomy of the solar system and beyond. Space observations have had little influence on most of the field covered by the last part, and, with the notable exceptions of two articles "The sun" and "Space astronomy," these nine chapters emphasize theory and classical observations.

The background physics required is mostly at the intermediate college level, but some chapters are significantly more advanced. A few authors have carefully derived the fundamental concepts in the subject being discussed. But too often the fundamentals are "pulled out of the hat" and merely quoted, while recent observations are discussed at length. Reference lists have been intentionally limited, with the idea that readers may go to other review articles for more background; however, in a few chapters, the authors list no other general reviews and concentrate mainly on the most recent references to space observations. The historical introductions promised by the editor are not given in several chapters. Although excellent author and subject indices have been provided, cross referencing between chapters is virtually nonexistent. Such are the problems in uniformity when an editor tries to get 30 busy scientists to conform.

In view of the size of the book, not even the reference edition ($29.75 for institutions) is exorbitantly priced, and the professional edition ($10, available only to individuals) is an excellent bargain. (The copyright page of the professional edition contains a boldface, ominous warning of the rights and remedies "the publisher shall exercise" if individuals are caught buying professional editions for institutions.) Moreover, the inexpensive edition is nicely printed and bound with a brilliant purple hard cover, which should make it easy for habitual borrowers to find the volume on the owner's shelf.

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Soil Analysis

The two volumes of this treatise, **Methods of Soil Analysis**, parts 1 and 2 (American Society of Agronomy, Madison, Wis., 1965. $17.50 each; $30 set), edited by C. A. Black, D. D. Evans, L. E. Ensminger, J. L. White, and F. E. Clark, were jointly sponsored by the American Society of Agronomy and the American Society for Testing and Materials. The volumes contain 133 chapters written by 96 authors. The first volume, *Physical and Mineralogical Properties, Including Statistics of Measurement and Sampling* (894 pp.), contains 6 chapters on the statistics of sampling and measurement, 14 chapters on measuring physical aspects of soil water, 5 chapters on thermal properties, 14 chapters on determining mechanical characteristics of interest to agriculture and soils engineering, 8 chapters on different techniques of mineralogical analysis, and 2 chapters each on textural properties and gas in soils. The second volume, *Chemical and Microbiological Properties* (926 pp.), contains 6 chapters on different methods of elemental analysis, 28 chapters on the determination of 22 elements (nitrogen and carbon rate several chapters each), 3 chapters on exchange capacity and exchangeable ions, 3 chapters on acidity and soluble salts, 7 chapters on organic compounds, and 15 chapters on isolating and counting populations of microscopic soil organisms. As a convenience, each volume contains the same preface plus the table of contents and index to both volumes.

Despite the diversity of authors and subjects, all chapters follow the same general format. An average chapter is about 20 pages long and consists of a brief introduction, a discussion of the principles on which the method is based, a step-by-step description of the method (including descriptions and plans of apparatus, where appropriate), a discussion of the pitfalls and limitations of