
The purpose of this book is "to consider and to try to explain some of the major features of the evolution of life": an exposition of "four-dimensional biology". A partial list of chapter titles indicates the "major features" considered: Rates of Evolution; Variation; Mutation; Population and Selection; Adaptation; Trends and Orientation; Extinction, Relicts, and Irreversibility; Higher Categories; and Patterns or Modes of Evolution. The book is the offspring of and successor to TEMPO AND MODE IN EVOLUTION, and contains much reworked material from that book. As the list of subjects shows, this work is much broader in scope, and is able to take advantage of much that has been learned since the earlier work. As a writer of science Simpson has few peers, and the purpose of this book is accomplished with his customary clarity and brilliance. He is particularly effective in the defense of the development of characters and groups through gradual accumulation and the refutation of the notion of their catastrophic appearance more or less de novo. Equally effective are his thrusts at vitalist and finalist theories of orientation of evolution. The book is an indispensable reference work for the practicing biologist or paleontologist who is concerned with anything more than pigeon-hole taxonomy. It should be assigned for reference, if not as a text, to students in courses on evolution and majors in biology or paleontology.

Malcolm P. Weiss.