

Roots of Ecology: Antiquity to Haeckel

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The tables and illustrations are of reasonable quality, and several of these chapters include useful species lists as appendices.

This excellent volume should therefore generate wide interest as an example of how to integrate science research across disciplines ranging from molecular genetics to paleontology as a means of exploring the dynamic history of a region. As both a synthesis of our current understanding and a user-friendly reference work (both taxonomic and subject indices are included), *Bones, Clones, and Biomes* will find broad use.

A common theme throughout much of the book is that limited sampling remains a key impediment to both paleontological and neontological studies in the Neotropics. Much of what we know is still based on relatively few localities and taxa. If the detailed fossil record available from Patagonia is as distinct from that of the remainder of the Neotropics in the past as their faunas are today, the southern fossil sites used by earlier paleontologists may continue to offer limited insight into paleomammalogy throughout this immense biogeographic realm. Toward that end, *Bones, Clones, and Biomes* summarizes a series of newer discoveries in Chile, Bolivia, and Colombia, among other places.

The urgency of additional fieldwork in the Neotropics cannot be overstated, particularly given the rapid loss of habitat in several of these regional biomes. Primary forest destruction in the Amazon Basin continues in a futile effort to slake our thirst for biofuels, and biomes such as the Atlantic Forest have effectively vanished. One wonders what a synthesis on Neotropical mammalian biogeography will entail in 30 years.

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THE MULTIPLE ORIGINS OF ECOLOGY

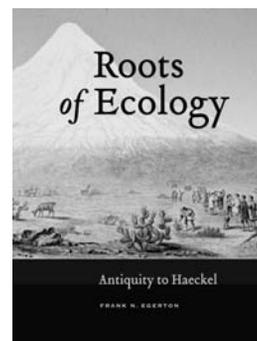
Roots of Ecology: Antiquity to Haeckel.

Frank N. Egerton. University of California Press, 2012. 288 pp., illus. \$75.00 (ISBN 9780520271746 cloth).

Ernst Haeckel coined the term *ecology* in 1866, and the historical development of ecology as a recognizable discipline did not begin in earnest until the very end of the nineteenth century. Despite these relatively recent occurrences, the roots of ecology extend much further into the past, as Frank Egerton's survey ably demonstrates. *Roots of Ecology: Antiquity to Haeckel* is based on extensive scholarship that is carefully documented in hundreds of endnotes. Egerton has amassed a tremendous amount of useful historical information about how older specialties of botany, zoology, natural history, and physiology contributed to what we now recognize as ecology. His encyclopedic treatment of the ecological ideas of Aristotle and other ancient Greek and Roman naturalists to those of nineteenth-century protoecologists fills an important need in historical scholarship. Although much of this information is not new to professional historians of science, compiling it in an attractively illustrated volume serves a useful purpose for other scholars. Biologists interested in ecology's deep history will consider *Roots of Ecology* a helpful reference for tracing the precursors of present-day ecological questions and ideas.

Egerton, who is professor emeritus of history at the University of Wisconsin–Parkside, is considered the

dean of historians of ecology. Beginning in the early 1960s, long before other historians had taken notice of ecology, Egerton explored the origins of population studies and important ecological ideas, such as the balance of nature. Those of us who began writing detailed histories of modern ecology in the late 1970s owe a debt of gratitude to Egerton's pioneering efforts. In addition to his contributions to the professional history of science, Egerton has become the unofficial historian for the Ecological Society of America. Over the years, he has contributed numerous historical articles to the society's journals—most notably, a series of more than 40 historical essays that have appeared in recent volumes of the *Bulletin of the Ecological Society of America*. These short articles provided the raw material for *Roots of Ecology*, although the book is more than a collection of papers.



I admire Egerton's ambitious attempt to write a synthetic historical account of ecological ideas covering more than two millennia. Modern ecology is quite a diverse collection of specialties and its development from earlier natural history traditions was not a simple linear process. Furthermore, Egerton includes important contributions from physiology, medicine, and other fields that also affected this historical development. Unifying this mass of information is a daunting challenge, because no single, central theme is likely to encompass every facet of the history of ecology.

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Egerton organizes *Roots of Ecology* chronologically, although some later chapters also have thematic overlays. Chronology may seem logical, given the broad historical sweep of the book, but I found this organizational plan to be problematic. The lack of interpretive themes makes the chapters overly episodic and the narrative somewhat disjointed. Inevitably, related topics in important fields, such as botany and zoology, appear in several different chapters. Egerton frequently reminds the reader of this fact—a tactic that I sometimes found annoying. I was often tempted to use the index to skip from chapter to chapter, finding information on topics of interest, rather than reading chapters from start to finish.

Even within a single chapter, the overall treatment is, at times, confusing. For example, in the important chapter on nineteenth-century precursors to ecology, Egerton sandwiches an admirably detailed discussion of the rise of microbiology between sections on entomology and Ernst Haeckel's concept of ecology. Surely, the germ theory of disease has some ecological relevance, but the chapter provides no suggestion of how Koch, Pasteur, and other bacteriologists influenced either Haeckel or the later development of ecology. The abrupt transition between these topics is jarring. Intrepid readers may wade through *Roots of Ecology* from cover to cover, but others may find that the parts of the book are more satisfying than the whole.

The task that Egerton set for himself in writing this book was gargantuan, and writing a tightly organized, compelling account within such a short space may have been impossible. Nonetheless, despite its literary defects, *Roots of Ecology* is an extremely useful source of information about the many scientific contributions that make up the prehistory of ecology.

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COLD DEDICATION

Secrets of the Ice: Antarctica's Clues to Climate, the Universe, and the Limits of Life. Veronika Meduna. Yale University Press, 2012. 232 pp., illus. \$40.00 (ISBN 9780300187007 cloth).

For most people, the Antarctic is and will always remain the impenetrable continent. Locked in the grip of massive ice sheets and surrounded much of the year by pack ice, this land is the only continent that lacks permanent human habitation. In the last 60 years, increasing numbers of scientists from many nations have been probing the secrets of this “last place on Earth.” As a New Zealand science journalist writing for a popular audience, Veronika Meduna has attempted to bridge the gap between those Antarctic scientists and the rest of the world with her book *Secrets of the Ice: Antarctica's Clues to Climate, the Universe, and the Limits of Life*. In it, she admits to writing “from a New Zealand perspective,” focusing mainly on the New Zealand sector of the continent: a piece of the Antarctic pie that encompasses much of the Ross Sea region and a wedge of land that comes to a point at the South Pole. Nevertheless, she succeeds with real talent in making Antarctic science accessible to the general public.

Meduna does not allow her text to get bogged down in technical detail or jargon, avoiding the trap to which many scientists fall prey, but still manages to include informational chapters that introduce the continent; reconstruct its ancient environments through bedrock geology and ice-core drilling; feature the biology of penguins and near-shore marine life; and focus on the very limited terrestrial life of bacteria, invertebrates, mosses, and lichens that can survive extremely cold and arid conditions. There is also a chapter on the remote Antarctic Dry Valley, as well as lake and river environments, and a brief concluding

section on the study of atmospheric phenomena.

Meduna makes Antarctic science personal by showing it to the reader through the eyes of the scientists on site. This approach humanizes certain topics that are difficult for non-scientists to grasp and shows the motivation behind the scientific work, answering the obvious question of why anyone would want to go to the coldest, most inhospitable place on Earth to do research. From geophysicists and ice-core geochemists to penguin experts and marine biologists, *Secrets of the Ice* introduces the reader to a broad spectrum of scientists and their work. Through their eyes, we see the extreme conditions, the isolation, and the lack of creature comforts, but we also sense their enthusiasm and dedication and their shared fascination with Antarctic science. They cannot wait to return each year to carry on with their research projects; below are two examples.



Meduna visited fellow New Zealander Nancy Bertler's glaciology field camp near a location called Dome C, one of the highest ice domes on the continent and one of the coldest places on Earth, with winter temperatures recorded as low as -80 degrees Celsius, not unlike the average surface temperature on Mars. Bertler's international ice-coring team is in charge of digging a massive trench in the snow to store the cores of ice extracted from a drill rig. This is backbreaking work, as is the drilling, but the team perseveres because they know the true value of these ice samples. The bubbles of air trapped

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