The world of instinct

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Review
Reviewed Work(s): De wereld van instinct: Niko Tinbergen en het ontstaan van de ethologie in Nederland (1920-1950) by D. R. Roell
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obvious is a contrived gender analysis of the research of the men she discusses, based on the assumption that computation is a masculine pursuit (pp. 133–135). Ketelsen's failure to describe Gödel's so-called numbering system, which produces his proof, greatly weakens her account of the theorem's connections with computability. Her comparison between the theorem and Paul Finsler's result, six years later, on undecidability rather overlooks the profound difference between Gödel's and Finsler's conceptions of provability.

Although Ketelsen covers the literature well, she omits some important historical works, for example, Martin Davis's compilation of major papers, *The Undecidable* (New York, 1965) and Judson C. Webb's refined dissection of the three title elements in *Mechanism, Mentalism, and Metamathematics* (Dordrecht, 1980). The most surprising omission is the absence of any material from the *Jahrbuch der Kurt-Gödel-Gesellschaft,* for one activity this Austrian society for logic pursues is to present interesting historical details that enrich our understanding of Austrian mathematics and philosophy in Gödel's time.

IVOR GRATTAN-GUINNESS

D. R. Röell. *De wereld van instinct: Niko Tinbergen en het ontstaan van de ethologie in Nederland (1920–1950).* (Nieuwe Nederlandse Bijdragen tot de Geschiedenis der Geneeskunde en der Natuurwetenschappen, 52.) 289 pp., illus., bibl., index. Rotterdam: Erasmus Publishing, 1996. Dfl 59.50.

The most fascinating parts of this book on the early history of ethology are those demonstrating that academic disciplines can have rather unexpected roots. Who would imagine that the origins of Dutch ethology could be traced to a chocolate company's sales promotion and the leisure activities of the well-to-do?

For Niko Tinbergen and other early Dutch ethologists—Frans Makkink, Adriaan Kortlandt, and Jan Verwey—it was the colored "nature pictures" hidden in the chocolate wrappings from the renowned Verkade factory that triggered their interest in nature. As children, these future scientists all devotedly glued the pictures, and accompanying explanatory texts, into special "Verkade albums." Moreover, these men were raised in families affluent enough to provide the cameras, binoculars, and bicycles needed for membership in such clubs as the Dutch Youth Association for the Study of Nature. In these organizations, strolling through nature was part of a culture that also encouraged discussing ideals at the campfire, dancing in the open air, and a free mingling of the sexes. Studying nature was simultaneously an exercise in accomplishing an ideal society. Observing natural animal behavior—not surprisingly, often courtship behavior—implied an acceptance of nature as it is. As D. R. Röell argues, field observation was a moral value before it became the hallmark of scientific ethology.

In his introduction Röell promises his readers a description of ethology's beginnings and an explanation of its success. Further, he emphasizes his constructivist approach. Unfortunately, these promises are not convincingly fulfilled. Although some readers may find the book interesting as it stands, those wondering about the rise and swift establishment of ethology as a scientific discipline will have to piece together the telling details from Röell's often inconsistent account.

If the constructivist turn in historiography is seen as a gestalt switch, Röell wavers between the hare's ears and the duck's beak. In order to establish when the new scientific discipline took off, he declares when the publications of each of the various early ethologists became "scientific," without explaining his grounds for granting this designation, let alone demonstrating any awareness of its variable meaning. When discussing factors that influence science, he assigns some to an "internal" and others to an "external" realm, again suggesting that the difference between science and nonscience is dictated by transcendental standards. Ethology itself is also ascribed an essence: Röell defines it as observation of natural animal behavior. He selects a 1931 article on the mating behavior of the sea swallow as Tinbergen's first ethological publication because, considered retrospectively, it already exhibited this essence; then, after reexamining the article, he concludes that it provides proof that field observation was the essence of the later, fully developed, discipline. Obviously, Röell shifts his evidence back and forth over the axis of time. Where his definition fails—after all, Tinbergen also experimentally disturbed birds' nests and cut off insects' sense organs, even expressing satisfaction with his power to exercise control over nature—Röell indulgently shuts his eyes.

In the last chapters, Röell explains the triumph of ethology over animal psychology and ethology's rapid growth. He attributes the decline of animal psychology to its teleologism and vitalism without, however, considering why such characteristics became unacceptable at a partic-

ular point in time. The ascendance of scientific ethology Röell attributes mainly to its incorporation of the experimental method and, by implication, its ability to adapt to other disciplines' standards of science. He thus not only contradicts his definition of ethology once again; he also largely begs the issue of the discipline's success.

This book's undeniable merits are the exciting questions it poses and the interesting information it provides. But Röell has not adequately thought out the presentation of his material.

TRUDY DEHUE

Julio C. Figueroa Colon (Editor). *The Scientific Survey of Puerto Rico and the Virgin Islands: An Eighty-Year Reassessment of the Islands' Natural History.* (Annals of the New York Academy of Sciences, 776.) illus., figs., tables, bibls., index. New York: New York Academy of Sciences, 1996. $80 (paper).

Not often are we treated to a scholarly, comprehensive, and extensive work on the development of natural history studies in areas so territorially limited as Puerto Rico. This publication provides a much-needed reassessment of all the work done in natural history on the island, placing in proper perspective both accomplishments and lacunae.

The volume has many strengths. As a long-overdue attempt to evaluate just how much is known about Puerto Rico's natural history, it documents studies in geology, botany, mycology, ecology, invertebrate zoology, ornithology, mammalogy, and archaeology—a fairly wide range of disciplines—from 1913, when the New York Academy of Sciences initiated its scientific survey of Puerto Rico and the Virgin Islands, to the present.

Wisely, almost all the contributors try to summarize the current status of the data for each discipline represented in the book. Some authors also indicate which fields require further evaluation or which aspects of those fields deserve reevaluation. It is especially helpful that the authors have included events and data that predate 1913, particularly as such information is scarce and difficult to obtain. The authors emphasize major contributions in each field and in some instances demonstrate how new concepts created possibilities for further research, which then reshaped the final work.

The sequence of chapters is very logical, considering the scope of the collection. The first chapter describes the gestation of Nathaniel Britton's idea for the original survey and its magnificently successful realization: the cataloguing and description of animal and plant groups throughout Puerto Rico and the Virgin Islands. At the end of the book, the chapters by S. J. Ramos and Sonia Borges exemplify current research on groups that have already been studied; moreover, Borges's contribution on terrestrial oligochaetes fills in one of the remaining gaps in the original survey. In the final chapter Ricardo Alegría both integrates and summarizes work accomplished separately by local researchers, outsiders, and survey participants. Although all the chapters are well done, those by Thomas Donnelly (geology), James Ackerman (flora), and Ariel Lugo (ecology) are particularly comprehensive and epitomize the intentions of this publication.

It is unfortunate, although perfectly understandable, that some orders of insects, such as the Coleoptera, Diptera, and Hymenoptera, could not have been examined in greater depth. But omissions should simply provide a stimulus for further work. The status of natural history studies on the region's sponges, echinoderms, cnidarians, and fish, for example, also remains to be determined.

This book should appeal to botanists, geologists, zoologists, biologists, and archaeologists. But nonspecialists—teachers and general historians interested in the Caribbean region—will also find it useful and informative.

ANGEL BERRÍOS-ORTIZ

David Edgerton. *Science, Technology, and the British Industrial "Decline," 1870–1970.* (New Studies in Economic and Social History.) viii + 88 pp., tables, bibl., index. Cambridge/New York: Cambridge University Press, 1996. $29.95 (cloth); $9.95 (paper).

Prepared as a guide or handbook for students and teachers, this book tackles a subject of persistent controversy: Did the British economy decline (did Britain lose its position as economic leader) from the late nineteenth century, and has this alleged decline continued? In examining these questions, David Edgerton focuses on the link between science and technology, on the one hand, and industrial performance, on the other. He takes care to define the issues, noting that the "declinists" (unfortunate word) never used "decline" in an absolute sense but rather as a term of comparison among countries: the pessimists, that is, have seen *relatively* slow growth as fail-