

FORENSIC ENTOMOLOGY

A Fly for the Prosecution: How Evidence Helps Solve Crimes. By M. Lee Goff. 2000. Harvard University Press (79 Garden St., Cambridge, MA 02138). 216 pp. Paperback \$22.95.



Forensic entomology, the subject of this book, is a specialized branch of entomology that studies the insects and other arthropods that inhabit an exposed, decaying human body. The author, a practicing forensic entomologist, describes the particular species and life form (i.e. maggots and other larvae, pupae, and adult) of these organisms as well as details concerning the body, such as appearance, extent of decay, and nature of the wounds. For these reasons, this book is not for everybody. Those interested in forensics and special areas of entomology, however, will find it fascinating.

Shortly after death an exposed (unprotected) animal body becomes a miniature ecosystem complete with a succession of various inhabitants, most of which are insects and other arthropods. By studying the decay process along with the insects associated with this process, forensic entomologists have developed an idea of how the body decays and the particular insects that inhabit the body at various stages in this process. Most of the insects are involved with the breakdown of the body tissues, while others are predators feeding upon the larvae and adults of the species that feed on the tissues and products of decay.

Forensic entomology has become an important part of the processes involved in gathering evidence in cases of accidental death or homicide. The primary role of forensic entomology is to determine the time of death. Based upon the presence or absence of various insect or other arthropod species, an estimate for the period of time since death, or post mortem period, can be made. The author describes numerous such cases in which he has been involved. He also discusses topics such as experiments with animal carcasses used to simulate the decay of human remains, studies on the effects of drugs and other factors on the rate of decay, and how the information gathered by the forensic entomologist is used in legal proceedings.

The book contains information on the biology of many of the insect species described as well as pen and ink drawings of certain species. No graphic photographs are found in the book and the author has done a good job of dealing with subject matter that

may be unpleasant or unsettling to many.

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NATURAL HISTORY

The Nearsighted Naturalist. By Ann Haymond Zwinger. 1998. The University of Arizona Press (Tucson, AZ 85721). 293 pp. Paperback \$19.95.

Driftwood Valley: A Woman Naturalist in the Northern Wilderness. By Theodora C. Stanwell-Fletcher. 1999 reissue. Oregon State University Press (101 Waldo Hall, Corvallis, OR 97331-6407). 338 pp. Paperback \$17.95.

Waiting for Aphrodite: Journeys into the Time before Bones. By Sue Hubbell. 1999. Houghton Mifflin Co. (222 Berkeley St., Boston, MA 02116). 242 pp. Hardback \$24.



Natural history writing that includes the author's personal perspective or contains autobiographical accounts offers an added richness and dimension to our understanding and appreciation of biology. Each of these authors succeeds in offering the reader a fresh opportunity to come to know a place and its organisms. A theme that connects these books is each author's passion for the experience of her subject. Being in a place, seeing and touching the organisms, and doing research fuel the exuberance that inspires the writing.

Ann Zwinger claims she began as a fairly timid, home-centered housewife who metamorphosed into an adventuresome naturalist. She suggests that her physical nearsightedness may have led to the up-close observation of nature evident in her writing. In one of the essays, she states that writing of the type she does must be scientific in its accuracy but literary in its intent, providing an accurate conduit between the lay and scientific worlds. As for the hard work in the field, laboratory and library that obviously precedes Ms. Zwinger's writing, she states that it is the life blood of natural history writing. "If you ain't been there, seen it, done it, you cannot write about it."

This sentiment is echoed by Dr. Stanwell-Fletcher in *Driftwood Valley*, a reissue of the 1946 nature classic, "Yet the fact that we lived in the wilderness just as the Indians did, subsisted on it almost entirely, used the same modes of traveling and camping in all seasons, perhaps afforded us the rather different type of insight into their char-

acters as a whole." Sue Hubbell also shows us that close observation and immersions into the world of invertebrates provides a pathway to evaluate our vertebrate bias and demonstrates through her essays that "When we learn something about the way invertebrates live, they become familiar to us and we develop charity and friendliness toward them."

Many of Ms. Zwinger's essays in the present volume were previously published in journals and magazines, so it is good to find them collected here where they are more readily available. The following are some favorites from the present work: "Every Valley Shall Be Exalted," not only for its gorgeous title, but also for the beautiful word pictures of Canyonlands National Park; "The Eagle's Fate and Mine are One," again for an evocative title and descriptions of Idaho's Snake River Birds of Prey Natural Area; "A Cave With a View," a most interesting essay about Isla Mas a Tierra in the Juan Fernandez Islands off Chile where Alexander Selkirk spent five years as a lonely castaway, and became the model for Defoe's Robinson Crusoe; "Birds in the Bush," about a visit to a New Zealand island sanctuary; and "Last Look at Long River," about a cruise through the Three Gorges of the Yangtze River, an area soon to be flooded by the world's largest dam.

The Nearsighted Naturalist is a good-looking volume, illustrated with Ms. Zwinger's pleasing illustrations of wildflowers, insects, shells and marine invertebrates. If we can be a bit nit picky, we would say that the book would be improved by the identification of the drawings, and by the addition of maps. There was one essay about a protected southwest valley, "A'aly Waipia," in which the reader was never told in which state the valley could be found.

Dr. Stanwell-Fletcher goes to the wilderness of British Columbia to extend the understanding of what species live there, their season cycles, migrations and how they behave. She was one of the first women to receive a Ph.D. from Cornell in the new science of ecology. She and her husband lived for three years on mile-long Lake Tetana in the Driftwood Valley wilderness of remote north-central British Columbia during the years before WWII when the Province had not yet fallen prey to run-away logging. The couple observed and catalogued plants and animals of the region, collecting for the Provincial Museum in Victoria. They lived a genuine wilderness adventure, building their own log cabin on Lake

Tetana and surviving a subarctic winter when the snow was over 10 feet deep. In the introduction to the book, Wendell Berry points out that some readers might object to the author's "anthropomorphizing of animal thoughts and feelings." Stanwell-Fletcher does allude to her bias here and discusses the balance between "scientific accuracy" and human interpretation.

Ms. Hubbell's essays take us on a journey into the world of a dozen invertebrates, some as common as the pill bug, and others elusive and unknown like the sea mouse, *Aphrodite aculeata*. She has done an exceptional job of gathering disparate and enticing information to provide the reader with the requisite information to feel friendliness toward each animal. Each chapter is not only an illumination of a particular invertebrate but explores its evolution, the role of geologic events, and the variety of attitudes and relationships humans have had and continue to have with the organism. She parallels the account of the organisms with a description of how biologists explore biology. When we learn about horseshoe crabs we also learn about punctuated equilibrium. The chapter about spiders includes a discussion of classification "systems" and cladograms. Every chapter includes an illustration of the topic invertebrates by Liddy Hubbell and ends with a list of cited references.

The combination of biology, adventure and personal stories these authors present makes the books appealing to a wide audience. For beginning students the books offer an introduction to exciting ways to exploring biology; for professional biologists they offer unique interpretations of our field.

These three books are welcome additions to our instructional offerings because students can be drawn into the subject through personal accounts.

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GENETICS

Chance's Choices. By Edward M. Kloza & Paula K. Haddow. 1997. Published by the Foundation for Blood Research (69 US Route One, PO Box 190, Scarborough, ME 04070-0190). 207 pages. Loose-leaf binder \$75.00 + \$6.00 s&h.



Chance's Choices is a set of human genetics modules that covers common disorders such as Huntington disease, cystic fibrosis, and breast cancer. The modules utilize a fictitious family, the Chance family, and the issues they face as they make decisions concerning their health.

Different family members tackle a variety of decisions including pre-natal screening, paternity testing, alcoholism and smoking. This is done in 12 "scenes" that can be used alone or combined. The scenes are designed for students to "offer their opinions, debate the issues, take sides in arguments and assume the positions of various characters (including the genetics service providers)" (p. i.). It is done in a soap opera style reflected in section titles such as "Will Alan ever play for the Celtics?" (p. 19) and "Deborah shares a secret" (p. 113). This set of modules is appropriate for

high school biology. Discussion questions, assessment suggestions, enrichment activities, writing activities, portfolio suggestions, guest speaker suggestions, overhead masters, a web site list, and a glossary are provided.

I was impressed with how a complicated procedure such as Southern blotting was explained in a clear and simple manner on an overhead master. This is an exciting unit designed to engage students in the practical applications of human genetics. Originally created in 1988, the authors have taken suggestions from teachers and improved and incorporated new up-to-date information into their second edition. Each scene has written instructions that walk the teacher step-by-step from when to use an overhead, to when to discuss a procedure. Factual information about the genetic disorder is given on the side of the page opposite the instructions. This makes reference material available to the teacher to answer most of the questions students might ask about a particular disorder. Family pedigrees are included with each scene. It would be easy to build the master pedigree with your students as you went through each module.

Chance's Choices is not only about genetic disorders; it is about people and their choices. I am looking forward to using it with my students next fall.

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ASSESSMENT

Assessing Science Understanding: A Human Constructivist View. Edited

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