

most difficult problems—yes, if there is time enough. The human species can so easily destroy itself or render its earth uninhabitable.

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THE YEAR OF THE CRAB. *Marine Animals in Modern Medicine.*

By William Sargent; illustrated by Robert Jon Golder. W. W. Norton, New York. \$14.95. 191 p.; ill.; index. ISBN: 0-393-02403-2. 1987.

We scientists are poor at explaining ourselves. Herein lies the necessity of elegant stories told in appealing style about our work and its products. Alas, Sargent is not Gould, Roueche, or De Kruif.

As I came across teleology, anthropomorphism, and bursts of sensationalism in the book, I reminded myself of its intended audience. After all, who among us has not used teleology as shorthand for explaining some adaptation? But Sargent's misleading scenarios, amounting to just-so stories, suffer as well from the multiple solecisms of factual error/misinterpretation, poor organization, and flawed language. Equally insidious in the subgenre of science popularization currently in vogue is the prostitution of fact in the interest of making moral points, in this case environmentalism. Indeed, *The Year of the Crab* stands as a type specimen of the pitfalls in popularizing science.

Trifling and not-so-trifling errors of fact abound. *E. plurius* are these three: Fireflies flash synchronously in Malaysia (not Melanesia) (p. 102); transmission of kuru, a slow viral disease of *only* the South Fore, has been related to endocannibalism (p. 143); each Lion's Mane jellyfish is an individual medusa, not a colony (p. 86).

Chapter 22, a rambling account of physiological adaptations in diving vertebrates, typifies the book's lack of focus and logic. It begins and ends, reasonably enough, with a natural history of seals. Consideration of diving bradycardia centers on birds. After its discovery in ducks, "modern researchers felt they should study the response in unrestrained animals. One way of doing this was to raise diving animals as pets" (p. 154). This non sequitur is followed by an anecdote of pet cormorants disrupting a cocktail party. Whether or how the errant birds furthered knowledge of bradycardia is not addressed.

Sargent's less than deft use of scientific terminology and concepts can be disconcerting: "The planula descend and metamorphose into an inconspicuous polyp" (p. 86). Stating "Striped bass were originally related to freshwater species" (p. 91) implies that they no longer are. Sargent apparently considers the Ice Age a more recent phenomenon than continental drift (p. 89).

The author himself reveals, perhaps unwittingly, what is obvious to knowledgeable readers by stating "I probably spent more time verifying Tallulah Bankhead's quote about Woods Hole than any other fact in this book" (p. 168). Is it any wonder that so many scientists feel that our best interests are not well served by popular science writing?

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THE THORN IN THE STARFISH. *How the Human Immune System Works.*

By Robert S. Desowitz. W. W. Norton & Company, New York. \$16.95. 270 p.; ill.; index. ISBN: 0-393-02435-0. 1987.

Robert Desowitz has undertaken a formidable project—to acquaint the non-scientist with the workings of the immune system and then to bring the reader up to date with the effects of diet, smoking, and the AIDS virus on that system. As any scientist (immunologist or not) will tell you, the function of the immune system is complicated at best.

One's first remembered lesson in immunology is usually an unpleasant experience involving a needle jabbed into the upper arm—a tetanus shot. Historically, the science of immunology began with the development of vaccines—the first to succeed was immunization against smallpox by use of the cross-reacting cowpox virus. Desowitz begins his book with this tale and with the story of the beginnings of cellular immunology. Elie Metchnikoff showed that starfish possess large phagocytic cells that protect them from microbial invaders from the sea.

After the historical introduction, the book turns out to be a brief, yet readable description of the cellular basis of the immune response. The roles of T cells, B cells, and macrophages are given in sufficient detail so that the reader can progress to the third and largest section in which the author tackles subjects near to his heart. The effects of diet on immune functions are addressed first. Although it is common knowledge that malnourished children in developing countries are prey to many viruses and bacteria that normally are sloughed off, it is less well known that ultra-thin but well-nourished people and mice have the best immune function. They also live longer. Desowitz is particularly interested in the effects of trace metals on immune function and he recounts his experiences with zinc and selenium. He tells us next of the additional deleterious effects of smoking—this time on the immune system. And lastly in this section, he gives a down-to-earth and realistic account of the effects of AIDS on immunoresponsiveness. He attempts to analyze the risk factors in homosexual behavior that might lead to increased susceptibility to full-blown AIDS. The