

dendron; no maybes, we *are* in an interglacial (p. 36); great quantities of sediment were transported eastward (not "westward") from the Rocky Mountains as a basis for the Cypress Hills (p. 30); although *Brontotherium* (p. 30) is said to be the largest land mammal ever found in North America, there seems to be competition with *Moropus* (also said to be 2 m high at the shoulder (p. 32). Further, but normally regarded as "horse-size" in paleontology texts the Canadian Arctic Islands (and recent interesting findings of Tertiary fossil forests and vertebrates, such as alligators, made there) are completely neglected on the maps and in the text. This is unfortunate in a Canadian book. Also woolly mammoths are not using their tusks to clear snow as stated in the caption on p. 36. In the Pleistocene portion, it would have been useful to show a map of the maximum extent of

glaciation, as well as dotted outlines showing the greatest extent of glacial Lake Agassiz and the Champlain Sea (a major post-glacial geographic feature of eastern North America not mentioned in the text).

George Lammers has produced an interesting, data-packed sketch of water, land and life on this continent during the last 4.5 billion years of earth history, but I think that the message would fail to reach many (other than highly gifted) children. Certainly, it is important that scientists continue to provide clear summaries of important findings in their fields to non-experts, including children.

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Treasures of the Tropic Seas

By René Catala. 1986. Translation of: *Offrandes de la mer. Facts on File*, New York. 334 pp., illus. U.S.\$50.00.

In 1956, Dr. René Catala founded the Aquarium of Noumea. For the next 20 years he and his wife collected, nurtured and studied the inhabitants of the tropical lagoons at their doorstep. At the same time they accumulated quantities of photographs and observations of their aquarium "guests". It is these that are presented in this book.

Treasures of the Tropic Seas professes to present a "kaleidoscope of marine organisms". This indeed it does, through anecdotes and a multitude of colour photographs. It tells us how a squid fillets a fish before eating it; of the aggressively destructive behaviour of the mantis shrimp and of its endearing habit of "sitting" on its abdomen. The decorator crabs obsessively disguise themselves by attaching algae, sponges, corals, or even bits of coloured paper all over body and legs; and the fantastic shrimps *Hymenocera elegans* — looking like the richly caparisoned horses of knights in armour — nibble at live starfish, only moving on to a new source of food when the old one gets too small to stand on! And we learn about the little fish, called by the author *Gergobius taeniura*, that clean out their sand house each morning and rebuild it each evening. The observations are accompanied by a quantity, at times almost a surfeit, of photographs, many of quite spectacular

organisms, culminating with that of a crinoid perched on a sponge growing on a scallop sitting on a helmet shell.

The author also speaks out on topics related to his aquarium interests. His concern for the animal both as an individual and as a member of a community is refreshingly unsentimental, but many of his comments betray his lack of scientific fundamentals. Thus, he asserts that the name *Dactyloptena* is misspelled, as it must be derived from "pteron" (wing). It could just as well derive from "ptenos" (winged); and even if originally misspelled it still has to be retained according to the rules of nomenclature. However, when Dr. Catala expresses his anger at the desecration caused by traffickers in shells through their wholesale destruction of an area, we can only agree. The need for conservation measures to protect the beauties of nature, whether shell, coral or bird, butterfly and beetle, is urgent and may indeed be too late for some species.

Unfortunately, Dr. Catala has been poorly served both technically and by his translator and editors. He has an unsophisticated style of writing with an archness that I found tiresome. However, this cannot excuse the convoluted misuse of English in the translation, nor the poor editing. There are just too many sentences that are grammatically or semantically incorrect or wholly mistranslated: "The time of molting always takes

place in the second half of the night . . ." and "We had to place a fine net against the three concrete sides of the tank to avoid these 'guests' wearing out their rear ends . . ." and "Clown-fish . . . fascinating symbiotic hosts of sea-anemones . . ." are readily found examples. Also unforgivable is the use of misspelled (Hyroidia) and incorrect (Placophora for the chitons) scientific terms and names. The translator appears not to have been provided with any source for scientific terminology; and the editors have not checked scientific names, so that different spellings for the same genus occur within a few lines (*Camposcia/Composcia*, *Gomphia/Gomophia*, etc). Finally, many of the photographs, some of marginal quality to begin with, suffer from poor colour separation and are thus as irritating as the text.

Treasures of the Tropic Seas has the dimensions of a coffee table book, at 2.5 kilos and 25 x 30 cm format. This makes it physically hard to read, though I am sure that the author considered the text as important as the photographs. It is the sort of book that could clearly demonstrate how the observant amateur can contribute much to science. Unfortunately, the information it contains is too anecdotal and too poorly presented to be of much significance. With its many shortcomings and considerable price, I am unable to recommend it to any but the most ardent tropical naturalist.

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Bumblebees

By Oliver E. Prys-Jones and Sarah A. Corbet. 1987. *Naturalist's Handbook 6*. Cambridge University Press, Cambridge. 83 pp., illus. + plates. U.S.\$24.95.

Bumblebees are charming insects. This book makes them merely interesting. I once served as joint supervisor for an honours thesis on aspects of foraging behaviour of bumblebees. Watching the student work with her bees in Chris Plowright's flight room at the University of Toronto, I was struck by her intimate knowledge of them as individuals and could easily believe that she had wept with grief when one of her "best" queens died. You will find no such anthropocentric nonsense in this austere little book.

Nor will you find any North American bumblebees. Unless there have been some recent sweeping revisions of bumblebee nomenclature, all the species described in this book are British. In any case, there is a warning for aspiring taxonomists that the dominant diagnostic of hair colour varies geographically and that "features of coat colour used in the keys are not necessarily appropriate when identifying bumblebees from outside Britain and Eire."

This is in no way a criticism of the book, which is explicitly addressed to British students and amateur naturalists. The authors, both on the staff of the Department of Applied Biology at Cambridge, are clearly authorities on the Hymenoptera in general and bumblebees in

particular. In conformity with the objective of the *Naturalists' Handbook* series, this is a proselytizing book, designed to recruit amateur naturalists to serious studies of bumblebees by pointing out gaps in our knowledge and providing the techniques for exploring them. Amateur naturalists are clearly valued in Britain.

So, much of the book is inappropriate for Canadian naturalists. Still, chapters on the natural history of true bumblebees (*Bombus*) and cuckoo bumblebees (*Psithyrus*) contain material of general interest. So, too, does the authoritative and up-to-date chapter on foraging behaviour. This chapter begins with a consideration of "optimal foraging theory" but with the caveat, ". . . it is important to bear in mind that this mathematical treatment of biological systems requires simplifying assumptions . . . and requires, perhaps, a deeper understanding of bumblebee biology than is yet available." And again, the proselytizing theme emphasizing that ". . . major theoretical advances will depend on patient observational studies of natural history."

True grist for the amateur's mill is a chapter on nests and their establishment in captivity, which sounds like great fun. The terminal chapter on "Techniques and approaches to original work" assumes the seriousness of the coterie of British naturalists — ready to read the original literature, equipped with a species intimacy with British flora, and with a dissecting as well as a compound



Laubitz, Diana R. 1989. "Treasures of the Tropic Seas, by René Catala [Review]." *The Canadian field-naturalist* 103(1), 111–112.
<https://doi.org/10.5962/p.356074>.

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