

The last half of this period was when more species were imported into this country than either before or since. Descriptions of the origins or biology of the species are lacking. Those featured most frequently are elephants, parrots and kangaroos, but references are also made to the cassowary and Queen Charlotte's zebra. Of the animals named in the text, fewer than half appear in the index.

A heavy reliance on eighteenth-century sources, such as sensational newspaper accounts of court cases against owners whose animals have killed or injured people; insurance policies against accidents (which provide interesting prices for the value of various animals); law suits against thieves who stole valuable animals; trade cards and advertising bills of showmen, has created some imbalances, for example the three best, largest and most diverse menageries all occurred in the reign of George IV (1820–1830). The author confines these to an epilogue of ten pages that describes the menageries of Cross, Wombwell and Cops. The description of Edward Cross's menagerie at Exeter 'Change 1814–1830 features one and a half pages devoted to the bungled execution of his elephant Chunee. Cross is not listed in the index. The account of the large travelling menageries of George Wombwell, a dealer in London who took to the road in 1805, comprises one and a half pages devoted to the destructive activities of his lion Wallace. Alfred Cops is referred to on one page only as "Mr Cops" despite the fact that he was appointed in 1822 to oversee the Tower Menagerie where he was encouraged by George IV to expand the number and variety of animals.

There is a lot of information about Gilbert Pidcock (the owner before Cross of Exeter 'Change) and his travelling menagerie (c. 1790–1810) with many anecdotes such as the llama, that when alarmed by a visitor, spat at him and was soundly beaten for this "misdemeanor". Plumb does not flinch from graphic accounts of the way the animals were housed in too small, malodorous enclosures, starved, beaten, and when sick and lethargic, poked into activity by visitors with umbrellas and sticks.

Further use of animals was made possible by the increasing skills of taxidermists who preserved them after death for exhibition in museums. By the reign of George IV, the housing, care and nutritional needs of live animals were better understood and the idea that kindness was preferable to beatings led to healthier animals being exhibited.

Christopher Plumb uses tales of exotic animals in London to entertain and inform readers in a light-hearted manner about Londoners' attitudes to them. To do this, he has researched a large number of obscure sources and has explored the availability of many venues for viewing wild animals. With this increased access to many more species came a greater understanding of the natural world than had been possible before the late 1700s.

Since this was the "Age of Elegance", such inelegant phrases as "spoilt rotten" and "middling lot" or "middling sort", so often repeated to describe the emerging middle class, ought to have been edited out.

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CHRISTINE E. JACKSON

EATHERLEY, Dan. *Bushmaster: Raymond Ditmars and the hunt for the world's largest viper*. Arcade Publishing, New York: 2014. Pp xxiv, 303; illustrated. Price US\$ 24.99 (hardback). ISBN 9781628725117.

Ditmars's distinctive name is known to anyone with an interest in reptiles: his *Snakes of the world* was published in 1931 and has been reprinted many times. Living on the outskirts of New York in the 1880s, Raymond Lee Ditmars (1876–1942) showed an early interest in natural history, especially reptiles and particularly snakes which his parents and most others viewed with distaste.

Using research materials gathered for a film that failed to materialize, Dan Eatherley has interleaved his own attempt to follow in the footsteps of Ditmars with as much as he can find from published material of his hero's original journeys. Only towards the end of his 15 chapters does the author admit to the total absence of manuscript material – apparently thanks to Ditmars's wife, Clara, who was less sympathetic to her husband's interests than was apparent during his lifetime when she

often accompanied him on his foreign travels! An interview with Ditmars's more sympathetic granddaughter, Gloria, acts as recompense to round off the Ditmars story. Others to cross these pages may be as unknown as Gloria: Dr Slover Allen of New York, Richard Mole of Trinidad, snake performers John and Dot Sonwell; or as famous in other quarters as novelist Arthur Conan Doyle, medical researcher Hideyo Noguchi with whom Ditmars "milked" snakes of their venom; or those more recently connected to the Bronx Zoo such as Peter Brazaitis, James Oliver and Charles Snyder.

This most thoroughly researched, well written, imagined and engaging book provides an insight into other less-known aspects of Ditmars's life: first as a reporter for the *New York times*, then as an assistant in the American Museum of Natural History pinning dead insects, later as the first curator of live reptiles and eventual curator of the mammals of the Bronx Zoo, where he pioneered "habitat" diorama exhibition of live animals and produced "movie films" of his captives. By becoming a skilful publicist and popularizer of his menagerie he also became a household name. Ditmars's career as a newspaper reporter served him well in these respects, as has Eatherley's as a film researcher and producer.

Each chapter of this book is headed by a quote from Ditmars and that associated with Chapter 5 is, I think, as relevant today as when published by Ditmars in 1899: "The modern scientist prefers to pickle his specimens and enter into heated squabbles with other scientists concerning the creatures' places in zoological nomenclature. And during this useless controversy all thoughts of the habits of these creatures . . . have been cast aside."

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BARRY HUGHES

HOPWOOD, Nick. *Haeckel's embryos: images, evolution, and fraud*. Chicago University Press, Chicago & London: 2015. Pp viii, 388; illustrated. Price US\$ 45, UK £ 31.50 (hardback). ISBN 9780226046945.

Images are not always illustrations, they can also act as evidence. In the early struggles over Darwinism, Ernst Haeckel, self-fashioned bulldog of the German lands, used images of human and animal embryos as evidence for common descent. Drawing the embryos in the same style and scaling them to the same size, placing them in the same position and next to each other, Haeckel used graphics to draw home the point of embryonic similarity across the species. Ever bombastic, he proclaimed that embryos were a better source of knowledge "than most other sciences and all so-called revelations put together" (p. 31).

Haeckel's argument was that ontogeny recapitulated phylogeny, meaning that individual embryos re-enacted the evolutionary past of the species. Because in Darwin's theory all vertebrates shared a common ancestor, this meant that early-stage embryos would resemble one another – and they did in Haeckel's drawings. This also meant that human embryos climbed up the evolutionary tree as they developed. Even as humanity thus remained on top, it was provocation enough to say that humans were not fundamentally different. At the early stages of embryonic development, Haeckel teased, it was not possible to detect any difference between an aristocrat and a dog.

Bringing his images to court as evidence against God, Haeckel was playing for high stakes. When other scientists contested the integrity of his embryos, the faithful were alert and ready to pounce: soon they campaigned against scientific fraud. In *Haeckel's embryos* Nick Hopwood, a historian of biology and medicine at the University of Cambridge, charts a history of the contested images, ranging from the early and mid-nineteenth-century embryological research that Haeckel drew upon, to the infected evolutionism-versus-revelation debate of present-day America. The result may well be, as the author himself believes, "the most comprehensive history of a scientific image" available (p. 4).

Hopwood expertly attends to the nitty-gritty of the story: printing technologies and conventions of drawing, university politics and personal networks. Reading private letters and re-staging public debates, he recreates Haeckel's often agonized interactions with his peers, who largely shared his