



Book Reviews

Mammal Teeth. Origin, Evolution, History by Peter S. Ungar. Baltimore: Johns Hopkins University Press, 2010. viii + 304 pp. £49.50. Abundantly illustrated with monochrome drawings. ISBN 0801896681/9780801896682.

This is a fascinating compendium, and the surprise is that it has not been written/illustrated before. In the main section of the book, Section III, Ungar documents the range of dentitions and tooth morphology, family by family, for all extant mammal families. Each family has its dentition, upper and lower, shown in lateral and occlusal view. Even the toothless pangolins, anteaters and lorises are depicted. The taxa are treated in accordance with modern concepts of the families (largely following Wilson & Reeder 2005 *Mammal Species of the World*) and within the modern genetically-based phylogenetic relationships that recognise Afrotheria, Xenarthra, Laurasiotera and Euarchontoglires as the four main groups of placentals. Each set of drawings follows the same standard. It is good to be reminded that elephant tusks are upper incisors, and deserve to be illustrated in the dentition as much as the distinctive cheek teeth. The wear sequence of the latter is however the subject of a specific additional drawing, as is the wear sequence of ruminant cheek teeth.

However, this taxonomic detail is preceded by an extensive presentation of the background to mammalian teeth. Section I covers the structure and form of teeth, their histology, development and basic function. Ungar's own expertise in microwear, especially of primates, comes to the fore here. Understanding of just how teeth develop, how that development is controlled genetically, and what this means for the interpretation of gross morphology is fast advancing, but Ungar describes this well. Section II covers the evolution of teeth in vertebrates and of mammalian jaw function, dental morphology in Mesozoic mammals and presents an overview of dental evolution in Tertiary mammals. This allows some discussion and illustration of some of the more bizarre teeth that evolved in fossil species that have no modern equivalents, such as the fossil monotreme *Obdurodon*, the marsupial *Thylacoleo* and the weird, pillar-toothed, placental *Desmostylus*. The Cope-Osborn nomenclature is explained here, but the well-used descriptive

terms that derive from it are introduced, just as descriptive terms and without phylogenetic implications, very early in Section I.

Ungar concentrates very determinedly on his main target, the description of the range of teeth seen in modern mammals. There is surprisingly little on the differences in jaw musculature that allow these different morphologies to function; the muscle names masseter, temporalis and pterygoideus do not even appear in the index, though their evolutionary differentiation from the general adductor muscles of the reptilian jaw musculature is described. Similarly, not much attention is given to the patterns of occlusion, chewing movements and tooth wear that the different molar patterns allow and guide.

Perhaps that would require another, larger, book. This one is long enough, but it is comprehensive in its coverage. In this it is reminiscent of the illustrations of dentitions in Grassé's *Traité de Zoologie*, on which (*faut de mieux*) student mammalogists of my generation depended. Now there is a better treatment more accessible to an English reader. This is an impressive and thorough summary of its subject.

D.W. YALDEN

Wild Mammals in Captivity – Principles & Techniques for Zoo Management (2nd Edition), edited by Devra G. Kleiman, Katerina V. Thompson & Charlotte Kirk Baer. Chicago: The University of Chicago Press, Ltd., 2010. ISBN 0226440095. Price £55 (Also available as an ebook).

For those of us who eagerly seized the first edition of this mighty tome, Edition Two was always going to find it a hard act to follow, and yet it does not disappoint. It is dedicated to the memory of Devra Kleiman, the inspiration for both publications, and many others devoted to the *in situ* and *ex situ* management of a host of species with whom we share the planet, and as such its numerous authors have produced a fitting tribute to one of the modern zoo community's greatest mentors.

The hardback version with its 600+ pages is well bound and the switch from white to 'magnolia' coloured paper is in keeping with the cover. But for

those who like their books to meet more than 'the minimum requirements of the American National Standard for Information Sciences – Permanence of Paper for Printed Library Materials' I felt that the quality of the paper let it down. I appreciate that promoting recycled paper and sustainability comes first, but personally I like any book that I will have paid nearly \$100 for to be able to withstand a dripping coffee mug!

I was also a bit disappointed that the photographs were still in black and white (albeit with more of them than in the first edition), and in some cases not very clear. I am still trying to decide if figure 18.15 on page 213 is indeed a fruit bat or not! However, it should be stressed that this is not a 'coffee table' book and once you get into the text you soon appreciate that it is essential reading for the serious zoo and conservation biologist.

The same format has been retained with an editorial introduction to each of the seven 'Parts' giving a personal view on what to expect in the ensuing pages. Each paper within has bold sub-headings that break up the text into easily digested portions making it an enjoyable as well as informative read. As alluded to in the preface, many of the original edition's papers have stood the test of time and are as relevant today as they were when first published in 1996. They have not just been duplicated in lightly updated form, and over three-quarters of the book is new material with many leaders in their fields contributing. The latest subject matter will form a new benchmark for the next generation of zoo professionals and confirm to those who have been in the business for a while how much further zoos have advanced in the last decade and a half.

Predictably perhaps, the section on Exhibitory has the most contributions, with eight varied papers including content on managing mixed species exhibits, the ever-growing influence of zoo horticulture and the way forward for sustainable zoo design. The only section that seemed lacking in breadth was that on Nutrition with only two papers, but both respectively cover concisely the different mammalian feeding strategies and principles of quality control, and as such provide a good background especially for animal keeping staff. Improvements in enclosure design, behavioural enrichment and restraint techniques that facilitate better animal management should always be forefront in our minds, as should advancing our knowledge of animal nutrition and contraception techniques, to name just a few of the topics covered. It is also pleasing to see Regional Collection Planning, an initiative of the 'noughties', and the most recent views on Reintroduction getting an appropriate airing.

Three of the four appendices might have formed a worthy Part Eight, on Records and Identification, but

the editors have chosen instead to collate these papers with an annotated bibliography. The latter has been divided according to the seven preceding sections for ease of reference and nearly 25% of the entries are internet websites reflecting the major change in how society now accesses information as compared to when Edition 1 was published. To me it just emphasises that 75% of us still like a good book!

Speaking of which, whilst the measure of a good book is in its reading, you cannot beat a clear, concise index of which there are two here, following an impressive list of contributors. The Taxonomic Index reassures you that you know your Latin by giving the common names in parentheses, but if struggling one can locate the various families and more colloquial terms for some species in the Subject Index. Ironically as an Englishman who has to put up with 'color' and 'behavior' (and possibly 'exhibitory') throughout the book, in the index the correct use of 'aquariums' versus 'aquaria' is evident even if some regional zoo associations have actually opted for the latter, most notably the European Association of Zoos and Aquaria!

Quips aside, 'Wild Mammals in Captivity II' is an excellent publication and essential reading for those of us in the zoo business. I commend it as a most welcome addition to my office bookshelf.

NEIL BEMMENT

Sea spiders (Pycnogonida) of the North-east Atlantic by Roger N. Bamber, *Synopses of the British fauna* (new series), no. 5 (Second edition). Published for The Linnean Society of London by Field Studies Council, 249pp. ISBN 978 185153 273 5. £37.50 + postage.

The taxonomic community is lucky in having The Linnean Society continuing to support such a valuable initiative as its *Synopses of the British Fauna* series of publications. Sadly, there are becoming fewer and fewer capable of producing such volumes – perversely at a time when the need for their existence becomes ever more pressing. The Society is also to be congratulated in seeking to return to groups that have been covered in earlier volumes to bring them up-to-date and to extend their geographical scope (besides acceding simply to marketing advice in the 1990s to drop the word 'British' from the titles).

The Pycnogonida is not a taxon with a high profile and, as such, we are fortunate in having an expert on hand to revise and extend Phil King's 1974 first edition. That edition covered twenty-one, mainly intertidal, species in a slim volume of 68 pages. Roger Bamber has now, thirty-five years later, included detailed data on eighty-four species; including species

from the continental shelf, with the volume swelling to 249 pages to accommodate them.

The format followed is now familiar and well established, with illustrated keys and figures of all species covered. Not being an expert on pycnogonids I can only comment on the production in general terms. British students on field courses these days have very little taxonomic knowledge for the most part and will probably find the added complexity of this Synopsis a barrier. It is likely that they will continue to rely on the first edition for their inshore identifications, or even probably King & Crapp's (1971) *Littoral pycnogonids of the British Isles* without realising that a simplified key to the shallow-water species is included in the new Synopsis. Professional practitioners, such as environmental consultants, undertaking ecological surveys or monitoring programmes offshore, however, will find this a valuable source of reference. It is a pity that the quality of the illustrations is a bit uneven; some look rather fuzzy, as if they might have been drawn using a felt-tip pen. The price is reasonable since the publishers must realise that demand will not be huge for a treatise on a relatively obscure group.

A piece of advice that I recall being given at the start of my career was 'make yourself an expert in a small taxonomic group and thereby ensure your employability'. It was advice that I never heeded, being too fascinated by the totality of biodiversity to focus on one group to start with but, it is to be hoped, some student with a bent towards the systematics of marine organisms might well be encouraged to take up the challenge of the Pycnogonida, inspired by Roger Bamber's laudable example. The deep sea beckons; now that's a place for sea-spider research.

P. G. MOORE

REFERENCES

- King PE. 1974.** *British sea spiders. Synopses of the British fauna Volume 5.* London: Published for The Linnean Society of London by Academic Press.
- King PE, Crapp GB. 1971.** Littoral pycnogonids of the British Isles. *Field studies* **3**: 455–480.

British Butterflies: A History in Books, by David Dunbar. The British Library, 2010. ISBN: 978-0-7123-5096-9. Hardback. 176 pp. £45.00.

Butterflies have been collected, studied and loved by people of all ages and generations. They touch the childhood of each of us, and for some they become a lifelong passion. So it is understandable that these insects have generated an extensive literature, and

one that is often as varied and colourful as its subjects. David Dunbar, a man with a lifelong love of these insects, their conservation and their literature, is a collector and seller of works on Lepidoptera, including antiquarian volumes. As such he is well placed to write about the history of books on British butterflies, and this is indeed a book about books – not British butterflies as such. Buyers should look below the several appearances of the large font of the title 'British Butterflies' (on cover, flap and title page) to the less conspicuous subtitle 'A History in Books'.

Butterfly cognoscenti will be unsurprised that there is more than enough to fill a volume on this topic, for the literature is extensive. The seventeen chapters are arranged in five Sections, the first of which provides a short description of how the earliest books on British butterflies were conceived and produced. There is also a chapter citing bibliographies of butterflies and including key lists and species catalogues. Section 2 is composed of a single chapter with short pen portraits of major 17th and 18th Century contributors to the butterfly literature. The style is along the lines of that adopted in *The Aurelian Legacy* (Salmon, 2000), but the information is largely complementary – although both volumes feature the evocative frontispiece of Moses Harris' *Aurelian* (published in 1766), with a dreamy and rakish young man (probably Harris himself) reclining in a woodland glade with collecting gear to hand. Nineteenth Century contributors form the theme of Section 3, some of whom wrote for those of a more scientific inclination, others for a wider readership, and a few for those seeking advice on specimen collecting. Authors of butterfly books for children also figure. The 20th and 21st Centuries are treated in Section 4, where Dunbar notes a change in the literature from the earlier emphasis on collecting, towards studies on butterfly biology, conservation and recording. Knowledge grew rapidly, including that about immature stages, and new printing processes made well-illustrated books more affordable and thus accessible to a wider readership. The books cited remind us of just how extensive and copious the work on British butterflies has been. The final part (Section 5) includes a short chapter entitled 'Art and Romance', but somewhat incongruously includes wall charts and cigarette cards. In the Epilogue, the author notes with some concern the impact of the internet on the selling of books, airs his regrets on the diminishing number of antiquarian and second hand bookshops in our cities and towns and expresses his fears of the threat of e-books to printed versions.

The volume is a slim one, is extensively illustrated and includes many full-page colour plates. The pub-

lisher's description suggests that the work will appeal to antiquarian booksellers and book collectors. Although it makes no pretence of being comprehensive, all the major, and many lesser, works on British butterflies are included. As such it provides a valuable survey of British butterfly books through the ages, written as a light narrative. Might its content have been rendered more accessible to its proposed readership as an illustrated and annotated catalogue? I'm not sure, but it is less richly written than the *Aurelian Legacy*, which, admittedly, was aimed at a

somewhat different readership. The book has been compiled with a genuine love of its subjects – books and butterflies – and is a welcome addition to the very literature it describes.

MALCOLM J. SCOBLE

REFERENCE

Salmon, M.A. 2000. *The Aurelian Legacy: British Butterflies and their Collectors*. Harley Books. 432pp.