Figure 14. Horse maxilla from Verulamium, showing wear on upper canines and incisors.

BOOK REVIEWS AND NOTICES

Baker, Sue (1993). *Survival of the fittest.* Dulverton: Exmoor Books. ISBN 086183-220-5 Available from Rare Breeds Preservation Trust (RBPT), National Agricultural Centre, Stoneleigh, Warwickshire. £16.50.

This is a highly readable book comprising the history, evolutionary biology and behaviour of the Exmoor pony. The first two chapters describe the author's fascination with the Exmoor pony and its habitat and an evolutionary history of the horse in general, and this race in particular. She gives a particularly good account of the complex Holocene development.

Dr Baker (this volume includes the data gathered for her thesis) believes that the Exmoor pony has been *in situ* since glacial times. She next relates the Exmoor to other pony breeds and then relates their written history from medieval to modern times, including the relevant history of the moor, including the formation and history of the breed society and notable owners and supporters.

Numbers were at their lowest in the 1940s when the meat-starved British public was prepared to eat them, but at least the society kept track of numbers; when they next reached danger point the Rare Breed Preservation Trust took them under its protective wing. Despite this, and the establishment of a herd in Scotland and another on a Danish island, the animals are still too few for comfort. They could still disappear as a gourmet dish on the Continent and their function as children's ponies. Some of them are successful as driving ponies, though of course pit ponies are no more.

The next few chapters deal with biological aspects of the ponies, and with moorland climate and survival rates, as well as a

detailed study of their diet, derived from an arduous study of faeces. Veterinary problems, in particular parasites, are included here.

The ponies live in a number of herds located in the different areas of Exmoor. Herd structure, recruitment and territorial relationships are considered, including stallion hierarchies. Dr Baker loves the moor almost as much as the ponies, and the reader will also learn a lot about moorland geography and ecology. The individual animals and their blood-lines are safely on the computers of the RBPT and it seems likely that they will continue to be 'survivors'.

The book is extensively illustrated with photographs, maps, tables and specially-commissioned drawings. Scholarly, well-researched and well-written, Dr Baker communicates her enthusiasm and leaves you with the desire to own one of these delightful animals, which I suppose was one reason for writing the book. There is an excellent index.

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Markov Chains for the archaeologist: a short review of textbooks on ecology

This is a review with a standpoint which some colleagues would, I am sure, dispute, namely that archaeology *is* human ecology, and that environmental archaeology in particular needs to be informed by an ecological outlook. This point of view has been expressed at length by Butzer (1982), and more succinctly by Martin Jones and Ken Thomas in their responses to Bill Boyd's paper in an earlier *Circaea* (Boyd 1990). Fear not! The debate will not be reopened here. The purpose of this review is simply to take a look at some of the more generally available textbooks on ecology which grace our library shelves, and to which environmental archaeologists may turn for information and ideas. The review has its origins in part in persistent requests from students for sources in which to read up particular ecological topics, and in part in the realisation that ecology has moved on quite dramatically over the last decade, and that environmental archaeology may not have kept up. The choice of books is a personal selection, not a comprehensive survey.

There is still much of value in some of the oldest texts in ecology, such as the writings of the late Charles Elton (1927; 1966) and of Sir Arthur Tansley (1946). As with many other disciplines, including archaeology, ecology seems to have had an early phase of broad-mindedness before received wisdom became too entrenched. Elton, in particular, approached the natural world with an eye for structure and interaction which later ecologists often seem to have lacked, and which is so valuable when trying to understand the fragmented palimpsest of the archaeological record.

Despite the value of these earlier texts, the earliest book likely to be widely read today is Odum's *Ecology* (Odum 1963; 2nd edition 1975). Odum's book was influential in its day, and still makes an interesting source to compare with more recent texts. It presents an intergrative view of natural systems, working from the ecosystem level downwards. Thus the limitation of numbers, and the interplay of population growth rates and predation, are discussed after a general review of ecosystems. The outlook is essentially trophodynamic, and the book's origins in the 1960s show through in its attempts to equate human socio-economic systems with natural ecosystems, and the lengthy closing chapter on pollution and resources.

More recently, Odum has produced a second edition of his *Ecology and our endangered life-support systems* (Odum 1993), which develops this theme to a greater extent. Many of the diagrams, and not a little of the text of the 1993 book, draw on *Ecology*, and the text seems dated as a result. The section on successional theory, for example, could have been written a generation ago, and ignores the recent debate as to whether the concept has any useful meaning at all.

An unlikely choice for archaeology students, yet a uniquely valuable book, is Paul Colinvaux's delightful *Why big fierce animals are rare* (Colinvaux 1978). In a comparatively short text (a weekend's reading) which assumes little initial knowledge of biology, the author demonstrates a series of fundamental principles of ecology by addressing seemingly naive questions such as that which entitles the book. The rarity of

big fierce animals is used as a starting point for an account of trophodynamics, with energy attenuation between trophic levels being used to explain why top predators are uncommon. Other chapters ask why the sky is blue, why animals are territorial, and between them deliver a good account of both the theoretical and empirical underpinnings of modern community ecology. Colinvaux writes elegantly and with a certain dry wit, and it is no surprise to learn that another of his books, *Ecology 2*, is used in some North American universities as an exemplar on English Literature courses.

Ecology 2 (Colinvaux 1993) is something of a *tour de force*. Intended as a student textbook, it proceeds from chapters which consider the autecology of individual organisms, on to the population ecology of single species, and thence to complex multi-species communities. There are fewer concessions here to those who want the answers without the evidence. For example, the Lotka-Volterra models of population flux are developed from first principles, and there is a pretty ruthless comparison of the competing theories of Lack and of Andrewartha and Birch on the regulation of animal numbers. Readers to whom calculus is something which develops on teeth will find some chapters rather alarming. None the less, the clarity with which complex ideas are set out, and the copious pertinent examples which illustrate fundamental points, make this an excellent book. The author is a palaeobotanist by persuasion, and there is a useful, if necessarily brief, dip into 'the ecologist's time machine', better known to us as environmental archaeology. So it isn't just a one-way flow of ideas!

Paul Colinvaux's books seem not to be well known in Europe. In contrast, Michael Begon pops up all over bookshop shelves, most conspicuously as co-author of *Population Ecology* (Begon and Mortimer 1986) and of *Ecology: individuals, populations and communities* (Begon, Harper and Townsend 1990). *Population Ecology* is a useful review of such topics as the regulation of population numbers and predator-prey interactions. As such, it gives the detail which underlies concepts such as optimal foraging theory, and which therefore have direct relevance to archaeology. The mathematics can be a little alarming in places, and less numerate colleagues (including this reviewer) might do better to seek sanctuary in Krebs and Davies' (1978) *Introduction to behavioural ecology*.

Begon *et al.*'s *Ecology* covers much the same ground as Colinvaux's *Ecology 2*, though with a rather different style. The contrast is that between a perky, directly appealing English text rather in the Open University style, and a quieter, more wordy American text, with more than a hint of Ambrose Bierce and Thoreau. *Ecology* is comprehensive, very thoroughly illustrated, well referenced, and probably the most useful all-round text which is likely to be available through a bookshop or institutional library. To sum up the difference, this reviewer tends to look things up in Begon *et al.*, whilst reading Colinvaux at length, for pleasure.

A recently published book which merits attention is Rory Putman's *Community Ecology* (Putman 1994). This is definitely a textbook from the 'new wave' of ecology, stressing, as Dirk Gently would have it, the interconnectedness of all things, and therefore that the study of communities is the quintessence of ecology. In a remarkably short book, Putman brings together the current state of our understanding of ecosystem function, covering observational data from 'real' systems, but stressing the advances which have been made in the theoretical modelling of systems and communities. The subtext is a search for pattern in communities, whether in terms of dynamics, composition, or structure. Our fragmented archaeological data lack pattern, of course, and we are often in the position of trying to reconstruct past communities of which we only have partial (in either sense) evidence. We tend to assume some degree of structure, therefore, some reliable patterns of trophic relationships and interactions which can be used to fill in the gaps in our data. Putman's book is thus valuable as an overview of what assumptions, if any, we may be able to make. It is also a splendidly opinionated book. The author has a point of view, and makes that very clear. It is heartening to read an author who is prepared to admit *I confess that at a personal level I have never found this rather nebulous, 'armchair' type of reasoning particularly convincing*, before going on to admit that experimental results seem to validate the armchair reasoning in question (Putman 1994, 44). There is even a diagram (fig. 9.3) which readers are actively encouraged to photocopy and modify.

This review set out to be selective, and a number of other books have been wilfully

ignored. Perhaps the main points to make are that the ecological literature is out there, that ecology has moved on since the days of Odum, and that environmental archaeology cannot ignore the research which is undertaken on modern communities and ecosystems. We are investigating past ecosystems, past communities, and must get beyond the simple business of 'environmental reconstruction'. All too often, that term encompasses nothing more than a sort of diorama, a static reconstruction into which we place plants and animals and soils, and in which nothing happens. Yet we know that real ecosystems are dynamic, and that the interest in them, indeed the motivation of them, lies in the interactions between their constituent organisms, and between the organisms and the abiotic milieu. Modern ecology is getting firmly to grips with the dynamics of communities, and environmental archaeology needs to be in close contact with developments in this research, though not in order to transfer concepts and principles blindly from neo- to palaeoecology. As Gee and Giller (1991) have cogently argued, that would be to ignore fundamental differences around, amongst other things, the time-scales of our respective observations. Equally, we should avoid developing 'archaeological' models from first principles which largely re-invent concepts and structures already worked-out and utilised in ecology (see, for example, the interesting but irritating paper by McGlade (1995). None the less, by keeping in contact with developments in neoecology, environmental archaeology can develop its own theory and interpretative methods in parallel with neoecology. To do that, we need to keep in touch with the parallel discipline, and that has been the purpose of this short, selective review.

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Christopher D. Morris and D. James Rackham (eds.) (1992). *Norse and later settlement and subsistence in the North Atlantic.* Department of Archaeology, University of Glasgow Occasional Paper Series No. 1. Glasgow: University of Glasgow, Department of Archaeology. ISBN 1 873132 40 9. 230pp., figures. £19.95 (paperback).

This volume is a collection of nine articles which, as the title suggests, deal mainly with palaeoeconomic evidence from Viking, medieval and post-medieval sites in the

Chapters 4-11 contain the major contributions to vertebrate analysis in archaeology and describe, sometimes in greater detail than is perhaps necessary, a range of principles. Firstly, the biology of bone and teeth is discussed, followed by their comparative strengths and weaknesses. Skeletal structure is described for the main groups of vertebrates and this is followed by a series of chapters explaining zoo-archaeological principles in the recording, interpretation and reporting of vertebrate assemblages.

Chapter 5 covers vertebrate mortality and the first steps in taphonomic history—the skeletonisation, disarticulation, and scattering of hard tissue. The next chapter looks at the accumulation and dispersal of skeletal material by means both of experiment and of studies of modern and archaeological material. Chapter 7 explores the differential survival of skeletal material when subjected to a range of taphonomic processes. Butchery and other anthropogenically derived bone modifications are examined in the next chapter, bone artefacts (such as tools) and their consequent debitage being discussed in some detail. Chapters 9-11 explain the chemical, geological, and biological processes which cause modification to the individual skeletal element and the assemblage as a whole.

The examples used within the core of the work are almost exclusively mammalian, so the author has added examples using fish, birds, and amphibians in the penultimate chapter.

The final chapter attempts to bring the many strands of taphonomic interpretation together into a statistical model where all of the variables are considered. The author admits that we have a long way to go before we can achieve the overall interpretation of a given assemblage or skeletal element and present it as a complete taphonomic history!

The figures and tables vary in their quality and some look as though they have been pasted in by hand; this takes some of the shine away from the book. A range of fonts and line widths are used which also dulls the production of the volume; however, even the obviously digitised graphs and diagrams are readable. The photographs, on the other hand, are of very high quality. The publishers are to be congratulated on publishing both hard- and paperback editions simultaneously, thereby putting this information within the financial means of most interested parties.

Lyman has led from the front in the field of mammalian taphonomy over the past decade and this comes through very strongly in the text. Overall, the content of the book is diverse but well partitioned into chapters and sections, making the reader comfortable with the development of the discussion. This book represents a major contribution to the subject of taphonomy and will be indispensable to students new to the subject as well as being an excellent source book for the established researcher. I strongly recommend this volume as an up-to-date reference book on a very dynamic subject. Indeed, it is worth having for the bibliography, alone!

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BOOK NOTICE

Karali, L. (1994). *A bilingual dictionary of Archaeological—Environmental terms.* Athens: Bibliosynergatiki. 109pp. (Λεξικό Αρχαιολογικών — Περιβαλλοντικών όρων, με εισαγωγή στην Ιστορία της Αρχαιολογίας.) Price: about 1500 drachma (approx. £4). No ISBN.

The fast and unbalanced development of archaeology, characterised by big changes in a short time-span, has caused serious terminological problems. Part of the general effort to settle the terminological 'chaos' is the publication of this dictionary.

This book consists of an introduction of about 30 pages, where the problem of terminology is analysed and the history of archaeology is presented very briefly, and the dictionary itself, which occupies a further 55 pages. It is an English—Greek dictionary, interpretative for most of the terms, too. In general, the terms are followed by an abbreviation of the science they come from. A Greek—English list of terms exists, as well. The book is completed by some simple drawings, by an explanation about its scope and use, and by a select bibliography at the end.

This project has been initiated by Ms L. Karali, Lecturer in Environmental

Archaeology at the University of Athens. The writer of this notice has contributed actively herself, in close co-operation with Ms Karali. It must be mentioned that undergraduate and postgraduate students, as well as archaeologists, helped with comments.

The scope, the nature, and the value of the dictionary are as follows:

> To make the English terms understandable in Greek, and also to exercise the Greek researcher in 'English orthoepy' regarding archaeology; the converse is also true, so from this point of view it could be useful to English-speaking researchers as well.
>
> To prevent as far as possible the confusion of terms, the meaning of which sounds especially complex.

So it is mainly a reference book, useful for quick, easy and scientifically correct consultation.

2. The present edition is, of course, only the first attempt. It must be admitted that there are some printing mistakes, but intense efforts have been made to eliminate scientific errors. The second edition will be ready soon. The number of terms will be increased (to about 1,000 in total). The bibliography will be more extensive and brought more up to date.

3. The book may be useful either to archaeologists and students, or to the general public, as a short guide for the understanding of archaeo-environmental publications, but *not* to scientists who handle subjects of extremely specialised and difficult terminology.

4. The brief speculation on the history of archaeology is placed as an introduction, in order to stress the fundamental changes which have led to the sudden archaeological development and to the confusion of terminology. This is the reason the *extended* reference to the different scientific theories, which constantly appear as explanatory approaches in archaeology, has been considered useless for this dictionary.

5. Sometimes the Greek translation of an English term is proposed with reserve, but in general the modern Greek language is preferred.

6. The attempt to concentrate mainly anthropological, zoological, botanical, geological and ecological terms (both in English and in Greek), connected with archaeology and used by it, is original.

Greek and foreign authorities have appreciated the hard work involved in this project, which may help many people to enter the world of environmental archaeology with more confidence.

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The Editors of *Circaea* would like to offer their sincere apologies to all the contributors to this issue, and to the membership of the Association for Environmental Archaeology, for the unintentionally long delay in publication.