Book Reviews

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FAUNAL REMAINS: TAPHONOMICAL AND ZOOARCHAEOLOGICAL STUDIES OF THE ANIMAL REMAINS FROM TELL HESBAN AND VICINITY. Hesban 13. Andrews Univ. Press, Berrien Springs, Michigan. xxv + 236 pp., 114 fig., 186 plates, 135 tables, index, hard cover. ISBN 0-943872-29-4. *LaBianca, Ø.S. & A. von den Driesch, 1995.*

As the title implies, this volume deals with the faunal remains recovered at the site of Tell Hesban, located approximately 20 Km to the south of Amman, Jordan. The site was inhabited from ca. 1500-1200 BC to the end of the 15th century AD. Excavated between 1968 and 1976 by members of Andrews University, the site produced approximately 100,000 bone fragments. During the first campaigns, the faunal remains were sorted and identified on the spot by archaeologists and students of archaeology, and «*all unidentifiable fragments, and of disarticulated material, all ribs and long bone fragments that were not part of proximal and distal ends*» were discarded (p. 5). This «strategy» was abandoned only during the last excavation season, when professional archaeozoologists took over the faunal analysis. Some 20,000 animal remains could still be analysed properly, and Hesban 13 essentially focuses on the results of the analysis of this material.

The book has ten chapters, of which the first, by Ø.S. LaBianca, deals with the history and background of the archaeozoological work at Tell Hesban. Of more interest is the second chapter, in which the same author describes the results of ethnoarchaeological work in the modern village of Tell Hesban. These data contribute to our understanding on how pre- and postdepositional processes can influence the species and skeletal part composition of an archaeozoological assemblage. For anyone dealing professionally with the analysis of animal remains from Tells and other sites in the Near East, chapters 3 «*The Nature of the Zooarchaeological Record at Tell Hesban*» and 4 «*The Effect of Postdepositional Contexts on the Preservation and Interpretation of Bone Samples*», both written by Ø.S. LaBianca, are of limited interest, because the interpretations and conclusions are not new.

The results of the faunal studies are presented in chapters 5 to 9. Especially chapters 5 «*Final Report on the Zooarchaeological Investigation of Animal Bone Finds*» by J. Boessneck & A. von den Driesch, 8 «*Birds, Reptiles, and Amphibians*» by J. Boessneck, and 9 «*Fish Remains from Tell Hesban, Jordan*» by J. Lepiksaar, provide a wealth of information about the 13 domestic and at least 95 wild species found at the site. The finds of deer and weasel are discussed in more detail in two separate smaller chapters (6 and 7). Whilst the finds of the wild species are presented in a very detailed way, including individual measurements, one would have wished a similar approach for the archaeozoological data obtained for the domestic species. The latter account for over 95% of the material, but unfortunately only a few measurements appear in the text. For those archaeozoologists who want to compare the osteometrical data of the mammalian bones in their material with those obtained at Tell Hesban, the work by Weiler (1981) will, therefore, remain the only source of information.

If in the final chapter the reader expects to find an elaborate discussion of the results of the faunal analysis and how these fit in the overall picture, based for example on the results of archaeological, paleobotanical, geological, etc., research, he or she will be extremely dissappointed by Ø.S. LaBianca's dull four pages of «*Interpretive Conclusions*». This volume simply deserved better, especially if one is aware of the fact that the manuscripts on the fauna were submitted to the senior editor between 1979 and 1981, *i.e.* some 15 years ago. Agreed, circumstances can be invoked to explain the delay (see preface by Ø.S. LaBianca p. xxjv), but 15 years is definitely too much. J. Boessneck (1985) once criticised in another book review:

«*Die Osteoarchäologie ist ein naturwissenschaftliches Fach, das im Rahmen der Archäologie im weiteren Sinne ausgeübt wird. Sie ist deshalb in ihren Veröffentlichungen weitgehend von den Archäologen abhängig. Die Archäologen übernehmen als Ausgräber und Leiter archäologischer Projekte, für die sie naturwissenschaftliche Hilfe in Anspruch nehmen, die Verantwortung für den Abdruck der naturwissenschaftlichen Beiträge ... Bedauerlicherweise nehmen die schwarzen Schafe unter den Archäologen -von den weißen ist nicht die Rede- diese Verantwortung aber offenbar nicht wahr oder versuchen, ihr zu entgehen. Sollten*

doch Gewissenszweifel aufkommen, beruhigt die Auffassung: Wird das Knochenfundgut eines Grabungsunternehmens osteoarchäologisch untersucht, bringt das Ergebnis als Materialvorlage eine zeitlose Dokumentation, die kaum veraltet. Man darf die Befunde zunächst einmal ablegen, selbst verwenden, und, wenn die archäologischen Belange abgedeckt sind, wird man sie -möglichst im Rahmen anderer naturwissenschaftlicher Hilfsuntersuchungen -schließlich auch veröffentlichen. Dieses hier einmal als conditio sine qua non unterstellte Flämmchen einer guten Absicht ist allerdings stark windgefährdet und erlischt nur allzuleicht ... Die Jahre vergehen. Der Osteoarchäologe erlahmt seinerseits in seinen Mahnungen, er fügt sich in sein Schicksal und gerade als er aufgegeben hat, trifft ihn der Überraschung: Er wird aufgefordert, seinen Beitrag zu überarbeiten ... Nur der geduldigste Osteoarchäologe ... ist bereit, diese Überarbeitung so umfassend durchzuführen, daß kein Flickwerk entsteht. Aber auch er ist selbstverständlich verärgert über diese Einstellung seinem Fach und seiner Mitarbeit gegenüber. Die Überraschung kann natürlich auch anderer Art sein: Der Beitrag wird nach 10-20 Jahren doch noch gedruckt! Dem Autor bleibt ein Pyrrhus-Sieg. Er hat sein Ziel erreicht, aber die Informationen sind weitgehend wertlos geworden. Niemand braucht die Befunde mehr. So makaber es klingen mag, die Probleme können sich auch einfacher lösen: Der Verfasser stirbt ...»

Irony of fate, the founder of the Munich school of archaeozoology passed away in 1991, four years before the publication of the volume on the animal remains of Tell Hesban.

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EXPLOITATION DES ANIMAUX SAUVAGES À TRAVERS LE TEMPS. Actes du IVe Colloque de la Société interdisciplinaire «*L'Homme et l'animal*», Juan-les-Pins, 15-17 octobre 1992. Ed. APDCA, Juan-les-Pins, 539 p. *Desse, J. et F. Audoin-Rouzeau (eds.), 1993.*

La publication de ce riche ouvrage est la concrétisation d'une volonté de relier entre elles des disciplines souvent fort éloignées comme par exemple l'archéozoologie et l'histoire des religions ou l'ichtyologie et la parfumerie. Ce colloque, consacré à l'exploitation des animaux sauvages, en fut une brillante illustration. Elargissant la vision diachronique annoncée dans le titre par une ouverture à des zones géographiques aussi éloignées que les Alpes du Nord et les Aléoutiennes ou la Syrie et l'Argentine, les diverses communications abordèrent des sujets aussi différents que les activités de subsistance au Paléolithique inférieur ou l'emploi des sécrétions animales pour la fabrication des parfums.

L'exploitation des animaux dans un but alimentaire, allant du charognage à la chasse aléatoire, puis sélective, fut abordée dans plusieurs communications traitant aussi bien du Paléolithique inférieur et moyen, du Magdalénien, du Néolitique et du Moyen-Age, dans des zones géographiques variées. Les aspects complexes des activités cynégétiques sont mises en évidence dans plusieurs présentations. Ainsi, on peut citer la nette liaison existant entre les taux de chasse au cerf et l'évolution de l'élevage dans le Néolithique européen, ou le rôle symbolique que joue cet animal dans de nombreuses cultures préhistoriques européennes.

L'étude fine des âges de certains gibiers, le bison par exemple, permet d'aborder le problème des chasses saisonnières et de montrer, dès le Paléolithique moyen, une exploitation cyclique du monde animal.

Les autres catégories, mammifères marins, oiseaux, batraciens et poissons ne sont pas oubliées. Leur rôle dans l'alimentation humaine n'est pas à négliger et parfois, les techniques modernes de fouille permettent de montrer qu'en termes de ressources en protéines, les poissons ont été largement sous-estimés. L'étude détaillée de leurs restes osseux permet aussi de montrer des phénomènes de surpêche en Méditerranée, cela dès le Néolithique. Mais l'exploitation de l'animal ne se limite pas à la consommation de sa chair. Il livre bien des produits dits «secondaires» mais dont l'absence eut entravé

considérablement le développement de l'espèce humaine dans un milieu relativement hostile.

Plusieurs communications présentent ces aspects: outillage en os néolithique du midi de la France ou exploitation des plumes d'oiseaux en Argentine, mais aussi recherche de l'ambre gris, calcul intestinal des cachalots, fort prisé des fabricants de parfums ou sur divers produits animaux utilisés comme fixateurs en chimie. A propos des produits secondaires, on peut regretter qu'aucune présentation n'ait été consacrée aux activités de pelleterie et de tannage dont la préhistoire nous livre tant de vestiges probants. L'animal sauvage fut aussi utilisé comme auxiliaire de la chasse. La fauconnerie médiévale donna ainsi lieu à une présentation. Enfin, plusieurs communications insistèrent sur les aspects non économiques de l'exploitation des animaux sauvages. Nous citerons ici les bucrânes d'aurochs de Syrie, le culte des trophées en Europe occidentale, la morale de la chasse dans la Grèce antique ou encore l'ichtyologie d'une religieuse bénédictine du 12e siècle.

Comme on peut le voir, au simple énoncé des quelques approches glanées parmi les 42 communications publiées dans cet ouvrage, la matière est fort riche et le sujet, loin d'être épuisé.

Nous avons là, avec ce livre, une somme considérable d'informations sur les relations ayant pu exister entre l'homme et les animaux sauvages. Le rôle alimentaire de ces derniers est certes prépondérant, mais une vision par trop économique cache trop souvent d'autres aspects, moins évidents peut-être mais essentiels au développement de l'humanité.

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TOWARDS A HOLISTIC ARCHAEOZOOLOGY? ANIMALS IN THE URBAN LANDSCAPE IN THE WAKE OF THE MIDDLE AGES: A CASE STUDY FROM VÁC, HUNGARY. B.A.R. (International Series) 609. Tempus Reparatum, Oxford. (Price: £35). *Bartosiewicz, L. with contributions by Miklós, Z. & F. Gyulai, 1995.*

Because of their data content combined with usually limited heuristic scope, faunal reports constitute both the cornerstones and the cinderellas of archaeozoological research. In the financial heydays of this discipline, some 25-30 years ago, partly forced by the hectic pace at which developments were taking place, partly due to the pride which exposing a hitherto unknown portion of the national cultural heritage implied, we learned, through voluminous monographs, about places like Burgasische-Süd, Eketorp and Manching (Boessneck *et al.*, 1963; Boessneck *et al.*, 1971; Boessneck & Driesch, 1979). Since those «good old days», funding shortages, shifts in focus from data to methods and theoretical studies, together with the rising costs of publications, have precluded for the most part those types of monographs, and have condensed information in faunal reports to the strict minimum (i.e. through descriptive statistics and the like) a matter of much concern and debate at present. One of the very few ways an author has of circumventing this state of affairs is to turn the faunal report into something of larger scope than a mere «list of bones».

This is essentially the approach taken by Bartosiewicz with apparent success. Blessed with a culturally diversified series of urban sites (i.e. Germanic, Slav and Turkish) and an expanded diachronic sequence from a historically relevant city, Bartosiewicz states that: «*Conclusions ... from the archaeological record ... reflect an inseparable mix of biological facts, past human behavior and current knowledge*» (p. 1). He incorporates a historian and a paleobotanist in the team of co-authors in an effort to insure an adequate evaluation of the faunal remains themselves.

Documentary sources, as a matter of fact, turn out to be exceedingly scarce in Vác, something which one should expect due to the often turbulent history of this city, so that the development of trade, guilds, taxes, etc., had to be partly inferred from those of neighbouring urban centers, in particular the ones of the future capital, Buda-Pest.

The urban context, ripe in terms of intra-site comparative analyses, poses the problem of short-lived excavations carried out at a frantic pace. In the case of Vác a side-effect was the hand collecting of zooarchaeological remains. Thus, no mites, no microvertebrates and little information to address paleoenvironmental or archaeological issues. This has been the case with fishing and fish trade which, despite the city's location on the banks of the Danube river, has been impossible to infer (a mere of 40 bones out of a total of 12.000 remains!). Partial recovery can also be inferred from the unexpectedly large amount of identified remains (95%) but, from the author's standpoint, it

seems as though its main effect would have been to bias the age profiles, leading to underestimations of non-adult cohorts of domestic stocks. Numerous papers since the now classic contribution of Payne (1972) evidence a whole series of withdrawals from the strictly methodological domain to the conceptual one, which make us feel that the issue is more complex and merited a more thorough discussion at some stage (Gautier, 1984; Grayson, 1984).

Even though the interaction between culturally heterogeneous stockbreeding strategies was typical for the Hungarian Middle and Modern Ages, it seems that cattle provided most of the meat consumed at Vác and that this dominance of beef was boosted by large scale cattle drives that crossed the Danube at this point (p. 112). Temporal «lows» (i.e., pigs during turkish times) and «highs» (i.e., mutton in the early medieval deposit from site XI) in the general pattern have been interpreted as a combination of factors, including ethnic traditions and socioeconomic status. At this point, Bartosiewicz carries out a very interesting analysis comparing meat quality, carcass parts, retail prices and bone fracturing patterns in 21 countries, in addition to those in published sources and his own samples, which might prove of great value as an inferential tool for faunal analysts (p. 35-42). The author postulates that: «*the degree of culturally determined variability, rather than absolute prices, may be useful in ranking cuts by the range of values they potentially represent beyond their biochemical composition*» (p. 38), a statement with obvious archaeozoological repercusions due to the correspondence between butchering patterns and bone fracturing patterns (Morales, 1988).

Many more issues are discussed at length in this monograph. Sometimes, as in the case of intraspecific variability of cattle, the discussion focuses on the osteological evidence. In other cases, as in the status assessment of dogs in Vác, non-biological data, historical or otherwise, are incorporated. The result is a highly instructive, at times overwhelming and occasionally disconnected treatise on medieval crafts, symbols, stockbreeding practices and landscape evolution around the city. The author evidences a command of English language and a prose rarely seen in the scientific literature.

This same story-telling structure is apparent in the chapters on paleobotany and history. The exhaustive documentation is well integrated in the discussions of «ecofacts» conveying the impression not only of the authors' thorough knowledge of their subject, but also of the cooperative teamwork throughout the volume.

Although every work is prone to criticism (i.e. why so many inconsistencies between bibliographical citations in the text and the references section?) and although the partial recovery of remains at Vác casts some doubts on the validity of a series of conclusions, Bartosiewicz, Miklós and Gyulai should, nevertheless, be congratulated for producing such a readable book and for trying to overcome that bias which plagues a lot of publications, namely (in the authors' words): «... *the feeling that members of one's own group deserve special consideration* ... » (p. 114) ¡Bravo!

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ARCHAEOZOOLOGY OF THE NEAR EAST II: PROCEEDINGS OF THE SECOND INTERNATIONAL SYMPOSIUM ON THE ARCHAEOZOOLOGY OF SOUTHWESTERN ASIA AND ADJACENT AREAS. Leiden: Backhuys Publishers. 155 pp. NLG 76,00. *Buitenhuis, H. & H.-P. Uerpmann (eds.), 1995.*

At a cost of more than 30 US cents per page, this is an expensive book, paperbound as it is and not identified as having been printed on acid-free or archival quality paper. One continues to be amazed and always appalled at the price of books published in northwestern Europe (particularly Germany and the Netherlands, but also Britain), and as a result personal libraries contain fewer and fewer new works produced in this part of the world. The same is true for institutional libraries around the world which, due to budget constraints, are being forced to reduce their orders for new items, with the first books to go being the expensive European ones. Thus even as the English (or American) language is becoming the scientific *lingua franca* (and twelve out of fourteen articles in the volume under review are in some form of English and none by a native speaker), a divide between European and American but especially between «first» and «third world» scholarship continues to be perpetuated. This is particularly unfortunate in Archaeozoology where practitioners around the world can benefit greatly from reading each other's work.

Another way that researchers take advantage of each other's experiences, of course, is at international conferences, large and small, with the latter being the more effective forum for real communication. Some of the «working groups» recognized by the International Council for Archaeozoology (I.C.A.Z.) have actively sponsored such smaller conferences, among the most active and successful being the Fish Working Group, the Bird Working Group, and the one that produced the volume here under review: the I.C.A.Z. Working Group on the Archaeozoology of South-Western Asia (and Adjacent Areas). The ASWA(AA) group was formed at the VIth International Congress of the International Council for Archaeozoology (I.C.A.Z.) held in Washington DC in 1990. Its first meeting was in Groningen in early June of 1992 with the proceedings published in 1993 under the same title and by the same publisher as the proceedings here under review. These latter stem from the second ASWA(AA) meeting held in Tübingen in late September 1994 prior to the VIIth ICAZ Congress.

In reviewing my notes and the program of the Tübingen meeting, I notice some omissions in the List of Participants printed on Page 4 of the present volume. Included among these are Chiara Cavallo (Amsterdam) and François Poplin (Paris) both of whom have papers in these proceedings (!) as well as Ajita Patel (Dept. of Archaeology, M.S. University of Baroda, India) who does not. In all, individuals from twelve countries attended this small two-day affair coming from as far as Japan, India, Israel, and USA as well as from around Europe, although British scholars are notable by their absence. In spite of this wide representation at the conference, however, the proceedings contain contributions only by European and Israeli researchers. Even so, they reflect well the wide range of concerns being addressed by archaeozoologists working on materials from Southwest Asia.

The longest of the 14 contributions, its 40 pages making up more than one quarter of the volume, is an important article by Rivka Rabinovich and Eitan Tchernov. In it they present a detailed paleoecological and taphonomic overview of the fauna from the Paleolithic site of Qafzeh in northern Israel within the framework of a discussion of the dating, archaeology, and hominid remains from that site. As the authors emphasize, the assemblages of micro- and especially macro-fauna from the various strata are small, with the total being 1594 identified rodent and insectivore specimens from 11 «Mousterian» levels (XV-XXV) and 2254 identified specimens of larger animals from 61 «layers» of the Middle and Upper Paleolithic. These small numbers, of course, affect the results of the analysis. Even so, in this first relatively complete modern study of a Middle Paleolithic cave fauna from the Levant, the authors raise a number of important issues, including scavenging versus hunting, seasonality of site occupation, and the behavior of particular rodent species. In the next three paragraphs I provide short takes on each.

Tchernov and Rabinovich (p. 38) note: «*Maybe today after so much research has been undertaken on this controversial topic, we have to admit that hunting and scavenging are not necessarily mutually exclusive in Hominid history, but rather a much more general behavior related, as previously mentioned, to the food - meat - fat acquisition and to social interaction of the group members ...*» I agree! And what about the other half of what some

have learned, namely, that we just cannot tell from the remains at hand and should begin asking other questions?

On seasonality, the authors take issue with the results of a study of incremental structures in a very small sample of gazelle teeth sectioned by Lieberman that indicates a changing pattern of seasonal occupation different from that suggested to them by the rodent remains, especially «*commensal animals like Mus musculus*» (p. 33; but see the discussion in the next paragraph). Regretfully they do not point out that seasonality in gazelle procurement is just that. Evidence for year-round use of gazelle may well indicate year-round occupation or reuse of the site at different seasons of the year. But the inverse is not true - seasonal exploitation of gazelle means only that and need not have any direct implication for seasonality of settlement except that the site may have been in use at that time of year.

On rodent behavior, I would question the characterization of *Mus musculus* and *Mastomys batei* as commensal in the Mousterian. Certainly *Mus musculus* became commensal later, in part, but the ancestral form as well? And *Mastomys*? This needs some justification. I think what should be emphasized more is the great adaptability of these rodent forms. And if segregation is said to take place between domestic and wild forms, one needs to support that assertion. In addition, what is not addressed here is the means by which the rodent and insectivore remains got into Qafzeh in the first place. Did they live there or were their remains dropped by owls, and if they were resident, did their remains actually come from layers that were uppermost when they were alive or from younger burrows into older sediments? In this paper, taphonomic analysis is for larger mammals only, which may reflect the different interests of the two authors which, in turn, may explain why the paper seems really to be two papers put together as one.

The remaining 13 contributions in this volume are much shorter, ranging between 4 and 16 pages each. Eight are concise preliminary reports of the analyses of fauna from sites dating between the Neolithic and Medieval periods. Chiara Cavello (Amsterdam) reports on an assemblage of 3127 specimens from sixth millennium BC levels of Tell Sabi Abyad in northern Syria. The presentation includes one useful technique of data analysis that is absent in the other contributions to this volume. This approach involves documenting the relative proportion of sheep and goat in the collection element by element for selected skeletal parts instead of overall. This provides some idea of the degree of confidence the analyst can have in an overall ratio. Thus, in the Tell Sabi Abyad collection, the percentage of sheep (versus goat) is 84.1, 80.1, and 85.7 percent according to the humerus, radius, and talus, respectively. An improvement, of course, would be to tabulate the proximal and distal ends of the long bones separately and to list all skeletal parts. Nevertheless Cavello's effort is to be noted and applauded.

Elisabeth Stephan (Tübingen) presents a useful if very preliminary report on a collection of 41,546 specimens from Tell Abraq in the United Arab Emirates. This is an important body of material for understanding animal exploitation patterns from the late third millennium onward along the southern shore of the Persian/Arabian Gulf. The author notes the relatively high proportion of terrestrial species represented compared with what has been found at most other coastal sites of the Gulf. Her identification of zebu cattle is also interesting, although use of the flat orbital rim as diagnostic of zebu is not really reliable in my experience (also in the experience of Caroline Grigson, pers. com.). In addition the author herself notes that the pots with zebus painted on them are probably imported, and I do not think that climatic considerations are particularly useful given the adaptability of bovine forms. The differentiation of zebu and taurine cattle remains to be worked out osteologically in a systematic fashion, and until that is done we who work in the «Adjacent Areas» to the east of Southwest Asia need to be careful about making too many assumptions.

The report of Birgit Dechert (Tübingen) presents the first analysis of 13,079 bone remains from the Early Bronze Age site of Hirbet ez Zeraqon in northern Jordan. Of particular interest is the identification of horse (*Equus caballus*) and donkey (*Equus asinus*) remains, and it would be important to know from when in the EB they come, as the author notes. This is the only article to deal with sex ratios in sheep and goat, which are apparently quite different in the two species - much more even in sheep than in goat. Unfortunately, it is difficult to evaluate this finding in the absence of a statement of how sex was determined.

Also in Jordan, but much later, is the interesting sugar manufacturing site of Tell Abu Sarbut. Lambertus van Es (Groningen) reports on 6,759 bones

from the Ummayad-Mamluk Period among which are a particularly high proportion of *Bos* sp., *Equus* sp., and *Camelus* sp. This is unusual in a site in Western Asia and perhaps can be connected to the use of animals for draft purposes in an industrial setting. Rather complete data are presented on the numbers of specimens found for each taxon, on epiphyseal union patterns for *Bos*, *Ovis/Capra*, and *Camelus*, and on evidence for carnivore gnawing (which had quite a high incidence at this site).

The next report is by A.T. Clason (Groningen) in which she reworks and adds to an earlier report on the faunal remains from the first millennium AD site of Ta'as in northern Syria. The ca. 400 specimens were recovered from four small trenches widely spaced across the site. This is the only general bone report that gives measurements and probably can be considered to be the final statement on this small collection.

The famous west Anatolian site of Hissarlik (Troy), where Hans-Peter Uerpmann is leading a team of bioarchaeologists as part of the new excavations, is represented by two reports. Marian Fabis (Nitra, Slovakia) briefly summarizes (using bar graphs) some of the data collected on Hellenistic and Roman remains as well as noting single finds of particular interest. These include parts of the skeleton of a domestic cat, the ulna of a small dachshund-like dog, the first phalanx of a hybrid camel, and the tibiotarsal of a domestic chicken with osteopetrosis, probably reflecting avian leucosis. The first, third, and fourth are illustrated with excellent photographs.

Petra Krönneck (Tübingen) reports on 663 bird remains dating from the Early Bronze Age through the Roman Period at Troy. The assemblage is dealt with as a whole with no break-down according to period or skeletal part. Instead the goal is to look at the distribution of species by biotope and likely season of presence in the Troy region. The author emphasizes particularly the presence of 8 bones from the great bustard (*Otis tarda*). Since these animals do not inhabit areas with any significant amount of high vegetation, their presence would seem to indicate large expanses of open ground somewhere in the area of the site (unless the birds were imported from elsewhere in Turkey). It would be interesting to know whether the great bustard bones are confined to a particular segment of the long sequence at Troy or are found throughout.

The final general bone report is one by Jaco Weinstock (Tübingen) on 2062 bones from nine Punic and one Roman layer excavated during the 1991 season at Carthage. Presentation of summary graphs for each layer shows change through time from dominance by *Bos* in the earliest Punic layer to mostly *Ovis/Capra* in the late Punic and Roman layers. There is also an increase through time in the remains of pig. These trends are linked to the political and economic history of the site and its relationship to its hinterland. In addition, by comparing measurements of the *Bos* and *Ovis* remains from Carthage with those from contemporary sites in other parts of the Mediterranean, Weinstock makes a good case that the cattle represent a single population of large animals as do also the sheep, arguing that it is likely that both forms were imported, possibly from the Punic homeland (Lebanon). This is an elegant paper, containing a good deal of information and some interesting discussion in its six pages.

In concluding these brief reviews of the general bone reports, I would like to make two general comments without singling out any particular contribution. First, I think it is preferable to present faunal counts and weights in the form of tables or, if that is not possible, in flat bar graphs or flat pie charts rather than in the form of three dimensional bar graphs or pie charts like those so commonly used by authors in this volume. The three-dimensional ones, while they look elegant, are very hard to actually read and are even harder to reconstruct the original statistics from. Indeed, I sense that, in at least one or two instances, even the author(s) who published three dimensional diagrams in this volume had difficulties in reading patterns from them. Second, I think it would be worthwhile for the younger generation in particular to carefully read what J.P.N. Watson (1978) wrote nearly two decades ago about «*The interpretation of epiphyseal union data*». Even though one might not agree completely with Watson's pessimistic conclusions, many of the observations he makes - and particularly those about what epiphyseal union data represent - are very important.

The remaining five contributions in this volume include two dealing primarily with a single genus, one that is methodological, and two that are in French. Margarethe Uerpmann (Tübingen) presents data on some second or early first millennium BC mongooses from Bahrain in the context of a more general discussion of mongoose distri-

bution. The Bahrain specimens are identified as *Herpestes edwardsi* on the basis of metrical comparisons with both modern and other ancient material. The specimens come from at least ten individuals, and while clearly larger than any known *H. auropunctatus*, are ten percent or more smaller than published modern material of *H. edwardsi*. On this basis, the author feels «*justified, therefore, to consider the present population of gray mongoose in the Gulf area as a group of feral domesticates rather than as an introduced wild species*» (p. 67). Uerpmann does not define what she means by this distinction, which on the face of it seems rather artificial given that she herself talks about the mongoose as a «semi-domesticated» animal in the first paragraph of her article.

The second article dealing primarily with a single species is on the camel in Hungary by Lazlo Bartosiewicz (Budapest). The principal focus is on the Ottoman period site of Szekszárd-Palánk where a total of 14 *Camelus* specimens were identified among a corpus of 6621 fragments. These are considered to be from the dromedary given their relatively small size and gracile dimensions as demonstrated by measurements and scatter plots. This article adds to the growing body of information on the historical distribution of this important secondary domesticate.

Next is the methodological article by Hijlke Buitenhuis (Groningen), who deals with the differentiation of sheep and goat scapulae using principal components analysis of six different attributes. Each attribute was deemed to have four states, with a score-value of 1 being most sheep-like and 4 being most goat-like as per the classic study of Boessneck, Müller, and Teichert (1964). The modern specimens examined included a maximum of 64 from domestic sheep, 30 from wild sheep (4 species), 20 from domestic goat, and 22 from wild goat (5 species). Plotting the scores for Factor 2 (nature of pecten on *collum*, shape of the *fovea articularis*) against those of Factor 1 (shape of *processus coronoides*, nature of *fossa synovialis* in *fovea articularis*, nature of the *fossa subscapularis* in *collum*, and curvature of the *margo cervicales*) led to almost perfect discrimination between the two genera in the case of the modern specimens. Application of the same procedure to archaeological specimens produced excellent discrimination for previously identified early Neolithic material (from Bouqras and Asikli) but a somewhat less good fit for Late Neolithic/Early Chalcolithic Ilipinar. Attempts to discriminate the genera using canonical discriminant analysis and size indices based on bone measurements were less successful, and efforts to identify breeds using any of these techniques were failures.

Buitenhuis finds the value of his efforts to lie in the «*advantage that the species determination is much more objectively reached and that fragments that show ambiguous characterisation can still be identified as to species with a high degree of certainty*» (p. 154). He urges that other researchers try his method, and I would echo that call. Unfortunately, however, he does not discuss the problem of fragmentary specimens and the resulting missing values nor the benefits or drawbacks of including different species of the same genus (especially of wild forms). In addition, he does not give scores for each specimen nor does he say whether he includes right and left sides (or only one side) for each animal and what effect, if any, statistical non-independence might have on the technique. Indeed, it is necessary that in any such presentation, the requirements and limitations of the statistical techniques used be clearly outlined. I hope that in the final publication of this important study the author will attend to these details, because most faunal analysts are not sophisticated enough with numerical methods to be able to use even such a simple technique as principal components analysis in an informed fashion.

Finally, I turn to the contributions of our two French colleagues. Being in French, I fear that they will not be read by as many colleagues as might read those in English. This is unfortunate because they are the best written, most literate, and among the most informative of all the articles in this volume. The contribution of Jean Desse (Valbonne) provides an overview of the state of archaeo-ichthyological studies in the Persian/Arabian Gulf and the northern Indian Ocean. He emphasizes the need for good comparative collections and notes the locations of some of those that do exist. He provides information on work that has been done and that is in progress, discusses techniques of analysis, including osteometry, and in the end calls for the formation of a special working group dedicated to the ichthyofauna of the Indian Ocean and its particular problems.

To fill out Desse's article a bit from my own perspective, I should like to note that an important collection of Indian Ocean fish was made by Camm Swift of the Los Angeles County Museum

of Natural History in the late 1970s for the specific purpose of identifying the fish remains from the excavations at Balakot (Harappan Period, c. 2600-2000 BC). After he made the collection, however, Swift never carried out the archaeo-ichthyological study that he had intended to do (or at least oversee), and the Balakot material remained unstudied until the middle of this decade. Over the past three years, William Belcher (Madison, Wisconsin) - using the LACM(NH) collection as well as additional modern specimens that he collected - has analyzed most of the fish remains from Balakot, together with those from the site of Allahdino, nearer to Karachi. The results of this work should be available shortly.

Like Desse's contribution, that of François Poplin (Paris) is a progress report of sorts. In an instructive and entertaining piece, Poplin narrates his efforts to follow the trail of ostrich egg shells through collections from the circum-Mediterranean region. He shares with us the results of his search (including photographs), the important differences between South and North African ostrich egg shells (heavily versus weakly pitted –which he found out relatively late in his intellectual journey), and the reason why he thinks that South African shells were polished (to permit their being more effectively painted). In conclusion, he passes to the question of the working of pig canines, points out the relation of boar and elephant tusks to ostrich eggs, and ponders the connection of all three with coconuts. It is always rewarding to make one's way through Poplin's writing; his illumination of features on the margins of Archaeozoology makes them central to our field of enquiry.

In conclusion, in spite of its price this volume is a must buy for anyone working on material from Western Asia with some of the articles having a more general appeal as well. The one thing the book would benefit from is an erratum compiled by the editors on the basis of a careful rereading of their articles by each contributor. There are myriad mistakes in figures and text and references throughout the volume. Whether these are due to poor editing or lack of care on the part of the contributors, future readers would be assisted by their correction. One has the feeling that providing proofs to the authors was sacrificed for speed of production. This is a trade-off that sometimes has to be made, but my firm belief is that authors should take more responsibility for the quality of their original manuscripts, leaving less for the editor(s) to have to worry about. In this day and age, even though we are all terribly busy, care in manuscript production can still pay major dividends, particularly in the speedy publication of high quality reports.

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