

Book Reviews

THE HUMAN FOSSIL RECORD: VOLUME 1: TERMINOLOGY AND CRANIODENTAL MORPHOLOGY OF THE GENUS *HOMO* (EUROPE). By Jeffrey H. Schwartz and Ian Tattersall. New York: John Wiley & Sons, Inc. 2002. 388 pp. ISBN 0-471-31927-9. \$125.00 (cloth).

Jeffrey Schwartz and Ian Tattersall have authored a nicely bound, illustrated, and referenced volume on the craniodental fossil record from Europe. For each site included, they report the location, details of the discovery, list of material recovered, dating and stratigraphic context, archaeological context, overview of previous descriptions and analyses, detailed morphology, references, and repository of the specimens. The introduction presents the schedule of the descriptions and the details and terminology of the anatomical traits to be discussed. There are nine regional maps, with little detail and of varying accuracy (Georgia, for instance, does not border the Caspian Sea, and Croatians will no doubt be thrilled to see that Croatia occupies the space where the former Yugoslavia once was).

The several published catalogs of fossil hominids covering Europe are comprehensive and complete in site coverage and information, but do not describe morphology. More anatomically oriented guides such as Day's *Guide to Fossil Man* have the morphological details, but only describe key specimens. Schwartz and Tattersall intend to take the best elements of each of these and provide "a resource in which hominid fossils are described in detail on their own individual terms, using a constant protocol from one fossil to the next" (p. IX). With a consistent approach and a constant protocol, they expect "the reader will be able to make direct comparisons among whatever fossils he or she desires" (p. 3). They have indeed presented some of the best descriptions around for crania, ranging from the very newly found Dmanisi D2280 and D2282 to the long-known Forbes' Quarry Neandertal.

"These books," the authors write (because there is to be a series of them), "began as an attempt to understand systematic diversity among later Pleistocene hominids, specifically the Neandertals" (p. IX). As it turns out, many things about this volume are diverse, but not as many are systematic. For starters, the spelling is inconsistent, and at times simply inaccurate. The occasional word appears with the proper diacritical marks, e.g., Vérteszöllös and its discoverer Vértes are correctly rendered, and Régourdou, Pech de l'Azé, and Saint Césaire get their acute accent. However, Předmostí is inconsistently misspelled as Predmosti or Predmostí, but as far as I can find, never spelled correctly; Mladeč is written without the háček over the "c," but the alternative (incorrectly) given for it, Lautscherhöhle,

is written with the umlaut over the "o." Fontéchevade and Velika Pečina lack the acute accent, and Zlatý Kůň lacks everything. As it turns out, dropping diacritical markings was purposeful. The authors write that "we follow the precedent set by F.H. Smith and F. Spencer in *The Origins of Modern Humans* in not presenting site and person names with the attendant diacritical marks" (p. 3). There was no such precedent set by Smith and Spencer, either implicitly or explicitly. In that well-produced volume, the use of diacritical markings was quite correct, barring the few mistakes that are inevitable in any long work. The fact is that *purposefully* omitting diacritical markings is a Schwartz and Tattersall precedent. Without the correct marking, Sala, the Slovakian site with an important Neandertal frontal, becomes Sala, a town in Sweden. Even if geographic confusion is not the issue, omitting the diacriticals guarantees mispronunciation of the sites and personal names.

The quality of the photographs is not systematic, ranging from acceptable to poor and washed out, and some are not in focus. The focus problem is particularly unfortunate. Some of the illustrations, such as the comparisons of homologous Krapina teeth, would really be quite useful with proper focus and perhaps better contrast. Lateral views of the crania are not regularly in the Frankfurt horizontal, and it is impossible to guess which other views may or may not be in this orientation. Given the authors' intent to make their work the basis for further comparisons, this is a most unfortunate approach to scientific photography. Finally, identifications of the specimens pictured are not always accurate. For instance, in the figures of the Brno specimens, Brno 2 (p. 84) and the specimen identified as Brno 3 (p. 85) are actually the same individual (Brno 2), and the real Brno 3 is not illustrated.

The quality of the bibliographic references is not systematic. To take some examples from their section on "Previous Descriptions and Analysis," Schwalbe's "Der Neanderthalschädel" and "Über die spezifischen Merkmale des Neanderthalschädels" are not mentioned as a reference for Feldhofer, although two of Tattersall's books are; neither Ascenzi and Segre's "A New Neandertal Child Mandible From an Upper Pleistocene Site in Southern Italy" nor Mallegni and Trinkaus's "A Reconsideration of the Archi I Neandertal Mandible" are mentioned for Archi; Tillier is not mentioned for Roc de Marsal (L'Enfant Néandertalien du Roc de Marsal (Campagne du Bugue, Dordogne)) or for Devil's Tower (Les Enfants Néandertaliens de Devil's Tower (Gibraltar)). The volume edited by Ferembach et al. is not mentioned for Pech de l'Azé; two key papers by Trinkaus, Ruff, Churchill, and Vandermeersch are not mentioned in the description of Saint Césaire; Sergi's classic paper "Morphological Position of the *Prophaneranthropi*" is not referenced for either

Swanscombe or Fontéchevade; and for some reason, Vallois' AJPA paper is not referenced for the latter; Howell's key paper "European and Northwest African Middle Pleistocene Hominids" is not mentioned for Mauer or Steinheim, although it is for Swanscombe; and most unexpected is the absence of Vlček's "Die Mammutjäger von Dolní Věstonice," Jelínek's "Nález Fossilního Člověka Dolní Věstonice III," and "The People of the Pavlovian: Skeletal Catalogue and Osteometrics of the Gravettian Fossil Hominids From Dolní Věstonice and Pavlov" by Sládek et al. for Dolní Věstonice. The authors admit from the outset that the references they provide are not meant to be comprehensive or complete, but merely to point the reader to the literature. The problem here is that referencing decisions were not consistent. Sometimes the appropriate literature is cited, and at other times only secondary or tertiary sources are given. The missing references *are* the literature. This expensive volume is clearly meant for professionals, and the substitution of coffee-table books for the primary literature is not appropriate.

One decision made by the authors obscures and at times prevents systematic understanding of these specimens, in either meaning of systematic. This was their refusal to provide measurements, or any numerical depiction, of what "small," "large," "moderate," "not very large," and so on might mean. Why take this unusual step? To cite the authors (p. 3), the reasons are:

1. To save space.
2. Measurement criteria vary so much among practitioners.
3. Concern with the need to better understand and incorporate morphology in systematics.
4. Because it is "morphology" that metrical studies are trying to capture, we must first focus on developmental constraints.

The second reason is particularly ironic, as anatomical terminology is by far more variable than metric definitions (which have their different schools, but each with quite clear and well-published definitions of measuring points and procedures). Case in point: the terminology used for occipital structures is certainly valid, but as paleoanthropology has developed, other namings of these structures have come into general use, so for instance what the authors refer to as "Waldeyer's crest" is widely called the "occipitomastoid crest" (in this, and other similar cases, there is no discussion of these equivalent names).

The decision not to present metric data is symptomatic of what is actually a very unsystematic approach in this volume, since metrics are nothing if not replicable and comparable. But there is a deeper problem here, one that reflects the other meaning of systematic study, i.e., the phylogenetics of the sample. The great advantage of metric analysis is that it allows the consideration of samples, the examination of sample characteristics, and estimates of the characteristics of the populations from which they

were drawn: mean tendencies, distribution, and variability. Populational approaches are not where the authors are at, and they won't be easy for anyone who uses this book.

All this might be overlooked if the details of the descriptions were accurate, interpretable, and comparable. To the extent allowed by the absence of numbers of any sort, many of them are quite detailed and accurate, and sections such as the description of the Dmanisi crania D2280 and D2282 will probably stand as the descriptions of record for these specimens. The morphology section for Forbes' Quarry, a specimen that (perhaps surprisingly) has never received monographic treatment, is equally long and detailed. Descriptions such as these are marred only by the purposeful lack of metrics (as noted above) to specifically indicate size and distance, and to facilitate comparisons. But other descriptions are inconsistent, neither equally as detailed nor as accurate. For instance, with regard to detail, Pavlov, a vault about equally as well-preserved as D2280 and not any better described in print, is given one column of description, compared with the four columns for the Dmanisi vault, and the description of Ceprano is equally limited. With regard to accuracy, the Mladeč 2 vault is described as "gracile," but the mastoid region of the temporal is so pneumatized that the greatest breadth across this Aurignacian vault is at its base. The Mladeč specimens are said to have been recovered from "talus cone deposits" when many were excavated from cave floor strata. The nasal bones of Chancelade are described as "too damaged for much comment" (p. 91); the authors seem unaware that they were complete when recovered and were illustrated as such, with the damage they describe occurring much later. Description of their original form is important, because it informs the question of whether this specimen shows that Upper Paleolithic Europeans were descended from Eskimos as was once claimed, a key issue in the history of ideas about how Europe was populated that is unmentioned. The Předmostí remains are said to have been "described piecemeal" by Matiegka, when his descriptions were actually comprehensive, long, detailed, and well-organized, in the form of two systematically laid out monographs in the Czech language with long French abstracts and photographs of extraordinary quality, far better than any in this volume. It is fortune that Matiegka gave us detailed anatomical and metric descriptions and comparisons, since the specimens were destroyed at the end of World War II. There are too many other examples to enumerate.

Moreover, the text of the morphological descriptions is shortened and disjointed, full of abbreviations, and often lacking verbs, and the descriptions read like field notes. This no doubt saves space, and is often interpretable, but there are sentences that simply defy useful meaning, such as "Potential parietal fragment bears muscle scar" (p. 239, as part of the description of La Ferrassie 3), or for the Krapina maxillary central incisors (p. 210), "both sides of the

crown flare laterally”—part of a description from which one would never gather that the crowns are highly curved around a vertical axis in the mesiodistal direction. If publishing field notes in expensive volumes is to become a convention, let us at least hope for *edited* field notes.

Further hampering comparisons, the use of standard conventions is uneven, and not just over anatomical terminology, as noted above. For instance, deciduous incisors of the Pech de l’Azé child are depicted in the text (p. 290) as “I” rather than “di,” although the deciduous molars are referred to as “dm.” The normal convention of superscripting maxillary teeth and subscripting mandibular ones is not followed. The description of the Guattari 3 symphysis asserts (p. 188), “below [the] subalveolar depression, symphyseal region gently convex.” Anybody can see from the accompanying photograph of the mandible in lateral view (p. 192) that below the subalveolar depression there is a vertical, convexly bulging eminence in the mental region. Let’s call a chin a chin, or explain why not.

The authors write that they will document “the principal fossils that constitute the European record of the genus *Homo*, from the first Europeans until close to the end of the Pleistocene” (p. 33). Given this intent, the reviewer wonders why they included Figueira Brava (a single worn P⁴), or the questionably dated Combe Capelle, Hahnofersand, Svitavka, or Velika Pečina, and not Arcy-sur-Cure (a key site with many well-stratified Neandertal remains, including some of the few diagnostic specimens associated with the Châtelperronian), Bañolas (a mandible with a highly worn but complete dentition), Carigüela a Piñar, La Chaise (an entire monograph was written about the Neandertals from the two La Chaise caves, Condemi’s “Les Néandertaliens de La Chaise (abri Bourgeois-DeLaunay) Comité des travaux historiques et Scientifiques”), Chateauneuf, Cioclovina (a key early Upper Paleolithic specimen), Caverna delle Fate, Gánovce (a natural endocast and other remains), Genay (an excellent dentition), La Quina H9 (the only La Quina Neandertal mandible with a mental eminence), Lazaret (including a parietal with significant pathology), Montgaudier (the mandible with a small, morphologically simplified dentition), Šala (the Neandertal frontal with the

small supraorbitals that is *not* from a Swedish town), Sidrón (with 24 teeth and a hyoid), or the second mandible and other materials recovered by the French excavators at Zaffaraya—possibly the latest Neandertal site. And of all the earlier Upper Paleolithic specimens to leave out, given the details they have already published in support of their position on its phylogenetic status, why did the authors omit Lagar Velho?

Why were the isolated teeth from Krapina worthy of discussion, at least by type, when the isolated teeth from Hortus were not? Hortus is quite late in the Neandertal sequence, and some of those isolated anterior teeth are small and weakly structured, lacking the significant development of ridges and tubercles that are characteristic of the anterior teeth from Krapina. But the only bias acknowledged in the text is the alleged bias of others. Thus, they wrote, “paleoanthropologists have been unanimous in viewing the Krapina hominids as fully Neandertal, *at least to the extent permitted by their favored evolutionary models*” (p. 206, reviewer’s italics).

Schwartz and Tattersall set themselves a huge and estimable task in attempting to describe the major specimens in the European fossil record in detail, and in a way that allows for valid comparisons. They only partially accomplished this task. The book is of limited value as a primary reference; to paraphrase a saying about little boys, “what is good is very good, but what is bad is horrid.” The problem is to know which is which. Perhaps the most troublesome words in this volume come on the first page, in describing the future volumes they expect to publish: “each of the volumes in the series will be published . . . as close together in time as possible” (p. IX). The authors might do well to consider whether further haste in preparing these volumes will best serve their future usefulness.

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THE FIRST AMERICANS: THE PLEISTOCENE COLONIZATION OF THE NEW WORLD. Edited by Nina G. Jablonski. Wattis Symposium Series in Anthropology, Memoirs of the California Academy of Sciences, Number 27. San Francisco: California Academy of Sciences. 2002. 331 pp. ISBN 0-940228-50-5. \$35.00 (paper).

What is particularly striking about this volume, which arose from the California Academy of Sciences Fourth Wattis Symposium held in 1999, is its representation of the diversity of possible interpre-

tations for the peopling of the Americas that have emerged in recent years. As David Meltzer points out, not that long ago, the story was fairly straightforward: a small population from northwest Asia migrated across Beringia sometime near the height of the last glacial maximum, paused briefly in Alaska, and then blew through an ice-free corridor between the Cordilleran and Laurentide glacial masses. Once south of the ice sheets, Clovis technology was invented, and the population continued its blitzkrieg across North America and southward to

the tip of South America, all in less than a millennium. The simplicity of this narrative recalls the neat ape to *Australopithecus* to *Homo erectus* to Neanderthal to modern human story I first learned too many years ago in my first biological anthropology course. Like that unilineal version of human evolution, the land bridge and Clovis scenario has exploded in the face of new data and increasingly sophisticated research frameworks. Meltzer, accepting that Clovis represents the earliest well-documented groups in North America, asks not when and from whence they came, but instead explores the context of their rapid spread across the continent. He notes that we have no ethnographic analogues for colonizers of a continent, and we need to theorize afresh what that situation might have been like. His initial conclusion is that their rapid expansion was in fact a very effective adaptive strategy of wide-scale exploration. Two chapters focusing on South American sites, one by Anna Roosevelt, John Douglas, and Linda Brown, and the other by Tom Dillehay and Jack Rossen, stretch the envelope in a different direction. Although disagreeing on whether the South American evidence is of the same age or predates (respectively) Clovis in North America, both chapters stress the highly variable, generalized nature of subsistence throughout the continent. In this light, the big game hunting focus of Clovis in the western US was simply one of many regional adaptations to local conditions. Possibly outside the envelope is the chapter by Dennis Stanford and Bruce Bradley, outlining their argument for a Western European Solutrean origin for Clovis technology. I say outside not because of a lack of plausibility of their argument, but because none of the other lines of evidence relating to the colonization of the Americas lends support to their case.

Scott Elias surveys the environmental conditions in Beringia during the Last Glacial Maximum and rapidly changing Late Glacial period, including his own work on temperature estimation based on beetle assemblages. He offers both an intriguing suggestion, that a lack of wood (for warmth) may have been the limiting factor to human occupation of Beringia during much of the glacial period, and an important reminder, that the occupation of Eastern Beringia may have been a separate migration from the coastal route affording access to the rest of this hemisphere. Following in this vein, Jon Erlandson makes a strong case, based on a global perspective on maritime adaptations, that humans had the knowledge and ability to undertake a coastal migration to the Americas, and that in fact this is the most likely scenario.

The origin of the first inhabitants of North and South America is also an important question, but one for which there is not a complete consensus. Three of the chapters in this book address the issue of origins from a biological or genetic perspective. Gentry Steele and Joseph Powell examine the North American fossil record, summarizing their decade of research utilizing principal components and canon-

ical variate analyses of cranial metrics. Though admittedly based on small samples, they find an unequivocal pattern. The earliest Americans were most closely related to Southeast Asian populations, or generalized Northeast Asian populations, unlike their modern counterparts. Mid-Holocene populations are more like early than late Holocene or modern populations. There is less agreement between the authors when it comes to the underlying processes, although it would appear that modern Native American populations also show evidence of later Northeast Asian additions to the gene pool, and possibly of the effects of subsequent genetic drift. Christy Turner uses archaeological, linguistic, dental, and other data to examine the broad questions of the colonization of the Americas. While he continues to support an inland migration route, more relevant here is his long-argued Sinodonty-based Northeast Asian (northern China, Mongolia, and southern Siberia) origin for the ancestral Americans. Andrew Merriwether explores the origin and timing problem using mitochondrial DNA, verifying the generally accepted Asian ancestry for Native Americans. Interestingly, his data also suggest Mongolia as the geographic origin of the common ancestral population. The linguistic research of Johanna Nichols seems only to confound the picture. She finds that the American languages probably involved two primary migrations, one very early and one sometime in the early Holocene. Both, however, are East Asian coastal in origin, by way of Siberia on their way to the Americas. The question should be, I suspect, not whether there is a northeastern or southeastern Asian origin for Native Americans, but what it means that these different lines of evidence are not convergent.

In the current climate, a reviewer might note that there is a conspicuous absence, except for a few passing references, of contemporary Native American views on their own origins. Likewise, there is no discussion of the right of primarily Euroamerican scientists to pronounce upon the past of another culture, particularly one victimized by European colonizers. What comes through in reading these chapters is not, however, the divisiveness of a perspective rooted in the present or the recent past, but rather the inclusiveness of a worldview encompassing deep time. Viewed from within the evolutionary framework of Western science, it is not an issue of who is or isn't a descendent of Kennewick Man. Rather, it is a curiosity about what our Kennewick cousin was up to that drives these researchers.

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EAT OR BE EATEN. Edited by Lynne E. Miller. Cambridge: Cambridge University Press. 2002. 297 pp. ISBN 0-521-01104-3. \$40.00 (paper).

This edited volume, investigating predator-sensitive foraging in primates, focuses on the trade-offs that primates make while simultaneously avoiding predators and attempting to acquire the nutrition necessary to live and reproduce. The editor introduces the topic with a chapter that briefly reviews predator-sensitive foraging in other animals. The remainder of the book is divided into three sections, with articles devoted to "Biological Variables" (4 chapters), "Social Variables" (6 chapters), and "Environmental Variables" (5 chapters), respectively.

Primatologists are well aware of the difficulties in measuring predation pressure, and accordingly must rely on creative study designs and indirect measures of predation. This volume provides good examples of such creative solutions. Given that captive animals are usually protected from predators and insured a sufficient food supply, using them as models to understand predator-sensitive foraging is especially challenging. Caine's study of individual differences in color vision with captive Callitrichids and how these may relate to an individual's role in a social group (e.g., as sentinel) is especially intriguing and creative. It should inspire similar studies with other species, and is theoretically stimulating as well. Prescott and Buchanan-Smith use captive red-bellied and saddleback tamarins in a series of controlled experiments comparing risk and food availability in an example of a model that primatologists will want to replicate under controlled field conditions. Garber and Bicca-Marques employ controlled field experiments to assess the trade-offs between avoiding predation and obtaining nutrition in Callitrichids. Studies that combine such rigorous experimental testing with naturalistic behavior of wild primates may provide the best insights into predator-sensitive foraging for a broad range of primate species.

Various authors recognize a general trend in that social group size does affect predator-sensitive foraging (Overdorff, Strait, and Seltzer: rufus and red-bellied lemurs; Miller: wedge-capped capuchins; Sauther: ring-tailed lemurs; Hill and Cowlshaw: chacma baboons; but see Sterck's analysis of Thomas's langur). The proximate mechanisms involved differ according to species, demonstrating that a group-size effect is more complex than previously thought. Many authors point out the need for standardizing data on primate predators, along with better measures of food and cover availability. One of the most challenging aspects of these types of studies may be determining the relative importance of different predator types (e.g., terrestrial vs. avian, or mammalian vs. reptilian) in influencing primate behavior and ecology and even predator-species-spe-

cific reactions (as Gleason and Norconk suggest for white-faced sakis). Certain chapters provide especially useful reviews of predation in related taxa (Garber and Bicca-Marques; DiFiore), while others offer data on potential primate predators (Isbell and Enstam; Uhde and Sommer). Bearder, Nekaris, and Buzzell provide quantitative data on predator behavior (spotted owl calls) to examine antipredator responses of Mysore slender lorises. This particular study design is likely to be emulated by future researchers.

Several authors note that their data do not support traditional assumptions about predation pressures. Specifically, Garber and Bicca-Marques find no support for the premise that mixed-species tamarin troops are a response to predation pressure. In contrast, the formation of mixed-species groups serves as an antipredator tactic for both blue monkeys (Cords) and ring-tailed lemurs (Sauther). In addition, Treves argues, based on two Old World Cercopithecids and *Alouatta*, that opportunities for vigilance, rather than vulnerability or exposure, may help explain antipredatory behavior (or the lack thereof) among arboreal primates. DiFiore reaches a similar conclusion for atelines such as woolly monkeys.

Technically, this volume could be improved in several ways. Species representation is fairly equal for New and Old World monkeys (5–6 chapters each), but prosimians are represented by three chapters only, and apes are represented by a single chapter on antipredatory behavior in gibbons (Uhde and Sommer). Additionally, I would argue with the editor when she notes that the issue of intragroup feeding competition (as a potential factor influencing the foraging efficiency of social primates) is beyond the scope of this volume. In fact, the issue of conspecific competition over food is one that should be considered when addressing group size effects especially, and could greatly influence our interpretations of predation-related trade-offs (see Isbell and Enstam; Cords; and DiFiore on this point). Finally, hypotheses posed in several chapters warrant more rigorous testing, as noted by Miller in the first sentence of the introduction and by DiFiore. Clearly, rigorous examination of predator-sensitive foraging is still in its infancy in primatology. Thus, many of the chapters test hypotheses using data from related studies. Often such studies do not specifically focus on predator-sensitive foraging in primates. This does not detract from the authors' efforts, but does indicate the need for more focused hypothesis-testing among primatologists, or at least the inclusion of appropriate variables in related studies. The latter point may be especially relevant for understanding predation effects on primates, because directly assessing predator pressure is so difficult. Anyone conducting long-term studies of primates would do well

to consider many of the studies in this book in assessing predator pressure on primates.

In all, this volume provides a good starting point for the serious study of predator-sensitive foraging among primates. I recommend it to any primatologist who is directing a long-term study, to students of primatology, and to those with a specific interest in predator-sensitive foraging. The question of how primates balance trade-offs between finding food and avoiding being eaten is one that is far from

being answered. Miller's volume brings this issue to the forefront of primatology in a coordinated effort.

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