Book Reviews

DENTAL MORPHOLOGY 1998: PROCEEDINGS OF THE 11TH INTERNATIONAL SYMPOSIUM ON DENTAL MORPHOLOGY. Edited by John T. Mayhall and Tuomo Heikkinen. Oulu, Finland: Oulu University Press. 1999. 492 pp. ISBN 951-42-5481-3. $100.00 (paper).

As the title indicates, this volume presents a compilation of papers given at the recent International Symposium on Dental Morphology in Oulu, Finland. It contains a forward by L. Alvesalo, an introduction by Mayhall and Heikkinen, a short history of the Symposia series by Mayhall, and 54 articles. As detailed by the editors, the first symposium was organized by Dahlberg, Pedersen, and Alexandersen in 1965. Its purpose was to bring together a myriad of international researchers from a variety of fields to discuss all things dental. The meeting was a success, and a symposium has been organized every 3 years since. The present volume shows that the broad, international flavor of the original symposium continues. One hundred eighteen authors from 18 countries, representing the fields of anatomy, archaeology, biological anthropology, dentistry, genetics, histology, oral biology, paleontology, and zoology (among others), address everything from fossil hippopotamus teeth to three-dimensional computer imaging.

The first of six sections, entitled "Dental Anthropology," contains 23 short articles. Due to space limitations it is impossible to list titles, let alone provide article summaries. Instead, I will cite the authors, and highlight some of the more notable contributions. The authors are Butler, Lesot et al., Mayhall, Antoine et al., Haeussler, Swindler et al., Moskona et al., Reid and van Reenen, Fitzgerald et al., Hillson et al., Rinaldi, Watt and Lunt, Brook, Loevy and Goldberg, Peretz et al., Kleber and Eipel, Kondo et al., Nagai and Kanazawa, Sasaki and Kanazawa, Billia and Graovac, Smith et al., van Reenen et al., and Liversidge. Topics include dental formation, growth and development, affinity assessment using morphology and size, developmental defects, aging techniques, and field concept(s). Most articles appropriately pertain to human subjects, both early and recent. However, seemingly misplaced in a section on dental anthropology are studies of the mouse, fossil marmots, and a Pleistocene rhinoceros. Several articles are excellent; I found those on human premolar reduction, root trunk variation, enamel defects, Aborigine molar size, and premolar morphology of particular interest. Other articles are praiseworthy as well, although a few are hampered by small samples, atypical/nonstandardized traits, and curious quantitative analyses.

The second section, "Dental Evolution," contains 11 articles. The authors are Gantt et al., Niskanen, Haydenblit et al., Mazza, Popowics, Turnbull and Cifelli, Kozawa et al., Rustioni, Sasagawa and Ishiyama, Suzuki et al., and Mazza and Rustioni. Three articles pertain to humans; topics include tooth and facial size reduction, evolution of enamel growth, and tooth fracture. The latter article, which describes cusp compression and stress in modern samples, is good but out of place in a section on evolution. The remaining articles use both diachronic and synchronic approaches to investigate dental features in extinct and extant animals, including monkeys, hippopotamuses, triconodonts, reptiles, primitive mammals, Pleistocene steppe asses, teleosts, and fossil deer. Subjects range from histological considerations to morphology. The research and presentation quality in all articles is consistently good. Biological anthropologists may be particularly drawn to the study on origins of the anatomically modern human face.

"Ontogeny" is the title of the third section; it comprises seven papers written by Risnes, Schwartz et al., Harris et al., Honda and Kozawa, Mishima et al., Mukaida and Kozawa, and Renz et al. Two articles concern humans. One engaging study examines the effectiveness of using enamel thickness variation as a sexual dimorphism and ethnic indicator in white and black children. The other involves an SEM analysis of cementum annulations. The remaining five articles pertain to micro- and macroscopic dental features in rats, chimpanzees, opossums, crocodiles, and seals. Some *AJPA* readers may find the chimpanzee study on dental aging useful. The quality of all seven articles is again consistent, though small sample size is a problem in one (n = 2), and most describe work that may be tangential to anthropological research.

The fourth section is entitled "Technology." Four articles, by Brook et al., Smith et al., Willmot et al., and Pirttiniemi et al. discuss computer imaging to measure teeth, CT scans in detecting hominid developmental rates, imaging of enamel opacities in a clinical setting, and three-dimensional recording of occlusal morphology. As a dental anthropologist interested in tooth size and shape, I am particularly taken with the first and last articles. These approaches provide levels of accuracy that old-fashioned recording by eye/hand cannot match. However, the equipment cost, difficulty of transporting it to the field or museum, and other factors (e.g., the last method requires exclusive use of casts) may make these approaches impractical to most researchers. Regardless, the articles are well-written, and provide much to think about.

The fifth section is saddled with the unwieldy title of "Morphological Integration Within the Dental and

Craniofacial Complex." It consists of seven articles, by Osborne et al., Kohn and Osborne, Kohn et al., Nilsson et al., Radlanski et al., Klinge, and Hillmann and Geurtsen. Only the first three papers fit this section; they compare and contrast craniofacial and dental variation in Caucasian twins and Australian Aborigines. The remaining articles represent a mixed bag of topics, including correlations between spinal position/posture and occlusion, three-dimensional animation of craniofacial growth and development, dentin structure in the hooded seal, and collagen types in human pulp. All would be better served in other sections (e.g., the three-dimensional article in "Technology"). All articles are well-written; however, a biological anthropologist might find the craniofacial articles most relevant.

Finally, the sixth section, "Dental Genetics," contains two papers by Townsend et al. and Heikkinen et al. The first explores tooth size and the incidence of Carabelli's trait, using twin studies. The second looks at the effect of sex and ethnicity on eruption timing and symmetry in American whites and blacks. Both are informative articles that might be of interest to *AJPA* readers (e.g., geneticists, dental anthropologists).

Overall, the 118 contributors should be congratulated for producing, in large part, such well-written and researched papers. The 54 articles are often profusely illustrated (many are in color), and most include numerous references that greatly enhance their research utility. I found several articles to be very informative, and relevant to my own research. The editors did an admirable job of assembling such a disparate collection of manuscripts. Regarding the quality of the book, page layouts are good, misspellings are present but few, and the grammar throughout is mostly uneventful. The inclusion of a volume index helps tie the many diverse articles together, and will prove useful as a reference aid.

However, there are a few problems that detract from the volume. First, some articles have enough flaws that they would be hard-pressed to be accepted in most peer-reviewed journals. Such a situation is often an unavoidable artifact of edited works. Second, the volume's organization is somewhat distracting. As noted, several articles are present in unrelated or incompatible sections, and a number of those covering nonhuman teeth may have been better served in sections on paleontology or zoology. Third, the quality of printing (including illustrations) has the look of a manuscript produced on a color ink jet printer that, considering the price, is disappointing. Finally, typical symposium volumes contain contributions that share a unifying theme. Most of the present articles began as contributed papers whose only common thread involves teeth. This fact probably made the editors' job difficult indeed. Thus, the very feature regarded as an asset of the International Symposium on Dental Morphology, i.e., diversity, may limit the volume's appeal. For example, an anatomist may find a few articles useful, a dental anthropologist might read a dozen, and a dentist may be drawn to several. However, it would require an exceptional researcher to benefit from a more comprehensive use of the book. Despite these concerns, the quality and reference utility of many individual articles help make *Dental Morphology 1998,* as a whole, a decent contribution to the ever-expanding literature on dental research.

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