

## Book Reviews

ASPECTS OF DENTAL BIOLOGY: PALAEOLOGY, ANTHROPOLOGY AND EVOLUTION. Edited by Jacopo Moggi-Cecchi. Florence: International Institute for the Origin of Man. 1995. xvii + 460 pp. (ISBN 88-86720-08-4) \$80.00 or 120,000 lira for individuals and institutions, \$60.00 or 90,000 lira for students (paper).

As the title implies, this book contains a potpourri of useful articles focusing on key themes in dental biology of interest to scholars and students of anthropology, palaeontology, and evolution. The volume contains research papers presented at the Ninth International Symposium on Dental Morphology, which convened in Florence, Italy in September 1992. Symposium papers are devoted to five major topics that comprise the main sections of the volume; these include: 1. Structure, 2. Function, 3. Development, 4. Morphology, and 5. Populations.

This European symposium series typically embraces an immensely broad spectrum of topics and taxa in its treatment of the dentition. Fossil fish, amphibians, and reptiles are as frequently the subject of study as primates or humans, and topical coverage is equally broad including genetics, embryology, histology, as well as pathology, morphology and odontometrics. For these reasons, anthropologists lacking a broad evolutionary perspective of human dental variation often find the proceedings of the International Symposia on Dental Morphology too diffuse in subject matter or feel they offer little of relevance to the study of human dental variation. Readers will be pleased to learn that this volume is clearly an exception to tradition. By my count, fully three-quarters of the volume (29 papers) deals directly with the analysis of human or hominid dental remains. For those with more catholic interests, 25 percent of the papers (ten chapters) are devoted to non-human dental concerns. The range includes lungfish, sharks, insectivora, bear, mole rats, equids, rhinos and proboscideans.

While each section contains valuable results of interest to dental anthropologists, I found the papers in the sections on Structure, Development and Morphology most stimulating and rewarding. In the Structure section papers by Radlanski et al. and by Macho were especially informative and worthy of study. Radlanski and colleagues review the controversy over the arrangement of prisms in human dental enamel. Scanning Electron Microscopy and geometrical analysis lead these researchers to conclude that prisms are of a fixed diameter and that their sinuous route to the outer enamel surface has complicated prior analyses of enamel prism arrangement. Multiple factors influencing variation in the thickness of hominid enamel between tooth classes, sexes, and species is the focus of Macho's paper. When viewed in the context of developmental timing and functional adaptation, the understanding of variation in enamel thickness is crucial to phylogenetic and life-history reconstruction.

Also contained in the Structure section are articles by Alvesalo and colleagues on sex chromosomes and molar morphology, and on intercuspal distances of maxillary premolar teeth of Turner Syndrome females. These papers continue the valuable investigation of how sex-linked genetic factors influence tooth size and morphology.

Part 3, the Development segment of the volume includes some very useful and insightful articles on hominid dental maturation. Differences in dental development between human and chimpanzee are summarized by Anemone based on his longitudinal analysis of lateral head radiographs of 33 lab-reared chimpanzees. Important differences are described and their implications for understanding age-at-death of Plio-Pleistocene hominids is discussed. New data and insight into hominid crown formation times (Ramirez-Rozzi) and modern human crown formation and root extension rates (Liversidge) are also presented in this important section of the volume. A valuable critical review of the literature relating to periodicity of incremental lines in primate dentine is provided by Dean. This review sets the stage for new observations on incremental lines in humans, orangs, and macaques and tentative insights regarding root development in *Homo habilis*.

In the Morphology section, anthropologists will find much of interest, including articles on root number polymorphisms in hominid P<sup>3</sup>s (Tobias), morphometric variation in Carabelli's trait among early South African hominids (van Reenen and Reid), a partitioning of shovel-shape variation into three separate components (Crummett), morphological analysis of teeth from Kostenki sites (Haeussler), lateral incisor variants in Tuscany (Pinto-Cisternas et al.), *tuberculum intermedium* variation in Negroid and San-hybrid groups in South Africa (Navsa), and polythelia (supernumerary nipples) and cusp number of lower molars (Heikkinen et al.). This diverse range of topics should provide something new and rewarding for everyone.

Several of the papers on the Populations section are exceptionally particularistic, concentrating on a single tooth (the Visogliano premolar; Puech and Albertini) or a single abnormal Etruscan specimen (Kocsis et al.), and two deal with non-human taxa (mole rats, insectivora). Dental paleopathologists will benefit from Clarke and colleagues use of strict criteria for assessing the status of alveolar bone which differentiates between bone damage and loss from dental vs. gingival origin. Questioning the assertion that high levels of periodontal disease typify the Carrier Mills skeletal series from southwestern Illinois, and adopting rigorous standards of evaluation permits Clarke et al. to reach conclusions very different from prior investigators of this series.

The Populations section contains a diverse array of articles that describe the dental status of skeletons from New Kingdom tombs in the Valley of the Kings, Luxor, Egypt (Swindler et al.), taurodontism and enamel hypoplasia in eighth century Hungary (Horváth et al.), double-rooted canines in osteoarchaeological samples (Kocsis and Marcsik),

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and dental arch dimensions in southern India (Kannappan et al.). The last two papers in this section have an odontometric focus: odontometric variation and biological affinities among Italic and Roman populations (Macchiarelli et al.) and tooth size data for Middle Eastern hominids used to address the origin of modern humans by Brace who also reaffirms the validity of the Probable Mutation Effect. Recent developments in assessing ethnic variation in tooth size, known as the tooth size apportionment technique, were developed by Harris and successfully applied to castes and tribes of India by Hemphill. This approach would have added another informative dimension to the paper by Macchiarelli et al. Finally, the absence of a light-hearted limerick from Brace's paper was as disappointing as his continued adherence to the Probable Mutation Effect as a mechanism of dental reduction.

The papers in this volume are diverse topically and variable in quality. Each article begins with a succinct and informative abstract and many have extensive and useful bibliographies. The main sections of the volume are clearly demarcated in the contents, but no subdivisions occur in pagination of the volume. The book lacks topical cross references between sections and chapters and a summary and interpretive contributions by the editor. An index, often lacking from edited conference proceedings, provides a useful guide to topics and taxa. The volume is a must for practicing dental anthropologists and aspiring students. While the price may prohibit its use as a textbook in dental anthropology courses, graduate students with career interests in the field will benefit from the student's discount offered by the publisher.

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### LITERATURE CITED

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PROCEEDINGS OF THE 10TH INTERNATIONAL SYMPOSIUM ON DENTAL MORPHOLOGY. Edited By Ralf J. Radlanski and Herbert Renz, Berlin: "M" Marketing Services. 1995, 471 pp. 120 dm.

In 1962, the Society for the Study of Human Biology organized a conference on the anthropological study of human teeth, culminating in the now classic *Dental Anthropology*, edited by D.R. Brothwell. At this meeting, Al Dahlberg and P.O. Pedersen realized the importance of bringing together scholars from around the world to share their latest findings on and passion for the study of teeth. To meet this end, they organized the "first" International Symposium on Dental Morphology held in Fredensborg Denmark, in 1965.

Regrettably, I never asked Al or P.O. if they had originally envisioned this meeting as a one-time affair or the first in a series. Thankfully, for dental research in general and dental anthropology in particular, it turned out to be the latter. These international symposia have served as a forum for investigators in genetics, embryology, paleontology, dentistry, anatomy, and anthropology to meet on a regular basis (usually every third year) and talk teeth, teeth, teeth. Traditionally, these conferences have been small, with only 50 to 60 participants and a few dozen interested onlookers. Given the size, most conferees have the opportunity to meet one another and exchange tooth-borne ideas across disciplinary boundaries. Except for those overcome by the sightseeing bug (in a spectacular series of cities where the symposia have been held), most individuals attend all the papers, including those on topics far removed from their own dental specialty.

In the 1995 fall issue of the *Dental Anthropology Newsletter* (Vol. 10(1), pp. 9-12), Haeussler and Mayhall reported on the meeting of the 10th International Symposium on Dental Morphology convened in Berlin, September 1995. As this report contains brief descriptions and summaries of papers of special relevance to dental anthropology, my review focuses entirely on the conference proceedings.

Seven of the nine dental morphology symposia held between 1965 and 1992 have associated congress volumes. The Proceedings of the 10th International Symposium on Dental Morphology, edited by Ralf J. Radlanski and Herbert Renz, differs in one significant respect from earlier volumes in the series. The editors solicited early manuscript submittals so the book could be produced in advance and made available for distribution at the conference. Due to an enormous effort on the part of the organizers, all conferees had at their disposal a 471 page volume at the meeting. This contrasts previous symposia that have had lags of two to three years between the meeting and publication of proceedings.

The Berlin volume lists 96 papers and 155 contributors. These numbers double or triple those of the 1986 Paris meeting (34/65), the 1989 Jerusalem meeting (33/56 contributors), and the 1992 Florence meeting (39/70). Of the 96 papers listed in the proceedings, 12 authors did not meet a pre-meeting deadline for manuscript submission so only their abstracts were published. Of the remaining 84 articles, the editors must have imposed a strict page limit. Papers range from three to twelve pages and 70% are either five or six pages in length. If it were not for the inclusion of figures and/or tables, most of the papers could be viewed as extended abstracts with short bibliographies.