

Book Reviews

Biological Anthropology of the Human Skeleton.

Edited by M. ANNE KATZENBERG and SHELLEY R. SAUNDERS. (Pp. xxiii + 504; illustrated; £61.50 hardback; ISBN 0 471 31616.4). Chichester: Wiley-Liss. 2000.

This is an authoritative volume that addresses a wide range of interlinked topics relating to human osteology. These topics are skilfully woven together by the editors through the anthropologically important theme of interaction between the environment and the genome in determining skeletal morphology at gross and microscopic levels. This volume extends the topics covered in *Skeletal Biology of Past People: Research Methods* by the same editors. It updates this earlier volume and particularly reflects the considerable changes in methodology which have occurred in relation to the study of human osteology. An impressive group of contributors from Europe and North America have contributed chapters to this volume and the breadth of interests pursued and described by these workers is well organised in 5 parts by the editors.

Part one, 'Theory and application in studies of past peoples', presents 2 chapters, the first, by Philip L. Walker, is timely in that it addresses the diverse and mounting ethical issues that impact upon the work of human osteologists. In so doing he provides an interesting historical review of beliefs about the dead and of research on human remains before moving on to consider sources of skeletal material, their value in terms of science and relevant cultural issues. These reviews lead on to a consideration of the ethical responsibilities of skeletal biologists and how conflicts between science and cultural values might be addressed and appropriately resolved. The second chapter in this first part is by Douglas H. Ubelaker and it addresses the relationship between forensic anthropology and human skeletal osteology. Ubelaker approaches these by reviewing the history of the relationship between these 2 areas before moving on to consider methodological aspects of forensic osteology. This consideration emphasises the need for a sound knowledge of skeletal biology as a background to the determination of such important things as age at death, sex, ancestry, stature, and facial morphology. The chapter finishes with a consideration of future prospects, including the need for research in such things as estimation of time of death, taphonomic change, and identification.

Whilst the first part of this volume provides a broad overview of 2 important aspects of human osteology, the remaining parts focus on more specific topics. Part 2 presents 5 chapters addressing the topic of 'Morphological analyses and age changes'. The first of these by Christopher B. Ruff, considers the biomechanical analysis of archaeological human skeletons. This chapter begins by reviewing biomechanical models of long bones and considers how basic biomechanical parameters such as bone cross-sectional areas, second moments of area and bending strength might be computed and compared between individuals or samples. The remainder of the chapter provides illustrations of the application of biomechanical approaches to problems in human evolution and adaptation. In considering these issues, Ruff rightly places them in the context of distinguishing genetically regulated differences in morphology from those regulated during the ontogeny of individuals.

This leads on to a consideration of how sexual dimorphism might be interpreted in a cultural context with reference to different physical loads experienced by the sexes. The chapter concludes with a consideration of how changes in skeletal morphology during ontogeny can inform in relation to health and the relative effects of genetics and the environment in modulating skeletal growth. The second chapter in this section by John T. Mayhall provides an account of techniques and strategies for assessing dental morphology. This chapter is divided into 3 sections that address methodology for assessing tooth size, tooth morphology, dental pathology and wear. The emphasis is on providing skeletal biologists with sufficient details and reference to techniques to allow identification of the biological and cultural background of dental material. Growth related studies of sub-adult skeletons are addressed in the third chapter in this section by Shelley R. Saunders. The focus of this chapter concerns the practical problems of analysing immature skeletal material from archaeological samples. The focus is on the issues of sampling bias when dealing with immature archaeological material, sex and age estimation and growth studies of archaeological samples. Appropriate methodologies to address these problems are discussed and the chapter ends with a useful section that makes suggestions for future research in these areas. Charles M. Fitzgerald and Jerome C. Rose provide an interesting fourth chapter in this section. It focuses on age assessment using the microstructural growth markers of teeth. This chapter provides a useful and very clear account of dental anatomy and the histology of tooth growth, together with practical advice on the preparation of teeth for histological examination. It then goes on to provide a clear account of methodologies for age estimation and for estimation of the timing of developmental events using histological approaches. The final chapter of this section by Alexander G. Robling and Sam D. Stout addresses histomorphometric age estimation techniques applied to cortical bone. It reviews the physiological basis for these techniques by providing a useful and informative account of bone remodelling before going on to explain how age estimation methods are built on such knowledge. Consideration is given to the effects of sexual dimorphism, physical activity, population variation, and pathology on cortical bone remodelling and their effects in relation to the estimation of age. The chapter ends with 2 very useful worked examples of age estimation methods, based on cortical bone histomorphometry and a tabulated review of previous age estimation studies.

The third part of this book addresses the impact of health and disease on the human skeleton. The first chapter in this section by Nancy C. Lovell, considers the description and diagnosis of pathological changes in archaeological remains. It provides a review of a broad range of methods available to paleopathologists studying skeletal remains before moving on to consider how the results of such studies can lead to diagnosis of specific pathological conditions. The second chapter by Simon Hillson addresses dental pathology. It does this by providing reviews of defects of dental development in the enamel, tooth wear, and plaque related disease (including, amongst others, caries, periodontal disease and alveolar bone loss). The chapter ends with a useful appendix containing suggested scoring systems for caries and periodontal disease. In the third chapter Susan Pfeiffer considers histological approaches to the study of

health and disease in archaeological material. Her emphasis is inevitably on bone and histomorphology and how this might provide information about diagenesis, activity and health.

The fourth section of this volume addresses chemical and genetic analyses of hard tissues. M. Anne Katzenberg provides the first chapter in this section. In it she addresses how stable isotope analysis might be applied to the study of past diet, demography and life history. First she reviews the basic concepts of stable isotope variation and methods for isolating specific tissue components for stable isotopes. The chapter then moves on to consider the application of such analyses to certain specific problems. These include the analysis of palaeo-diet, including infant feeding and weaning and residence and migration studies. The second chapter in this section by Mary K. Sandford and David S Weaver reviews the application of trace element analysis of human bone in the reconstruction of prehistoric diets. It provides a valuable historical review of such studies that raises important caveats before moving on to describe the underpinnings of trace element analysis in bone chemistry, biogenetic processes and diagenetic processes. The second half of this chapter considers anthropological applications of trace element analysis and methodological issues in such studies. In the final chapter of this section, Ann C. Stone addresses a study of DNA from archaeological remains. She reviews early work in this field and advances in methodology that make such studies possible. The chapter then goes on to consider how ancient DNA might be used to address archaeological questions and provides a review of studies using both mitochondrial and nuclear DNA. The chapter finishes with a consideration of studies of DNA in relation to the detection of pathogens and with a consideration of the future prospects for ancient DNA research.

The final section of this volume provides an account of quantitative methods and population studies. The first chapter in this section is contributed by Michael Pietrusewsky. It provides an account of quantitative metric analysis of skeletal remains with an emphasis on multivariate statistical procedures. The chapter begins with an account of classical multivariate methods, the assumptions underlying them and the most commonly used approaches: principal components analysis, discriminant analysis and clustering methods. This will be useful for the newcomer to these approaches as will the 2 example analyses provided in the second half of this account. The second chapter by Mary Jackes addresses adult age determination in archaeological material. The author provides a brief historical introduction and a review of some available methods for adult age estimation together with controversies surrounding their application. The chapter then goes on to provide a critical review of a diverse number of approaches to the assessment of age at death in an effort to establish viable methods for describing the adult age at death distribution of past populations. The final chapter in this section and of the volume, by George R. Milner, James W. Wood and Jesper L. Boldson provides a review of the study of palaeodemography. In this chapter the authors address the study

of the demographic characteristics of past populations using skeletal samples. They begin by presenting a brief history of palaeodemographic studies before moving on to consider what can be learnt from archaeological samples of skeletal material through the application of sophisticated numerical methodologies.

This volume provides a broad and fairly deep account of important and interesting issues in human osteology. It will probably have limited appeal for many readers of this Journal but I am sure it will be well received amongst anthropologists and archaeologists. The editors have done an excellent job of arranging the contributions of diverse authors into a single coherent and well structured volume. The contributions are uniformly well written and highly informative. This book is certain to provide an enlightening point of first contact for students and of continuing reference for established workers in human osteology.

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Terminologia Anatomica. International Anatomical Terminology. By the FEDERATIVE COMMITTEE ON ANATOMICAL TERMINOLOGY (FCAT). (Pp. x + 292. with CD-Rom; EUR 40.39 hardback; ISBN 3 13 115251 6.) Stuttgart: Georg Thieme. 1998.

This is a handsome volume. The first 155 pages consist of an anatomical Latin-English dictionary—first general terms, then systemic anatomy. There is little to say about this except that it is exhaustive. It is good to see that fibular is replacing peroneal, and that omental is replacing epiploic, but of course the surgical fraternity largely ignores whatever anatomists say and do. I have recently worked on a surgical project in which young(ish) surgeons still refer to the axillary nerve as the circumflex, the internal thoracic artery as the internal mammary, and the common fibular/peroneal nerve as the lateral popliteal. And this in 2001! On page 157 there begins a history of international anatomical terminology, and this account is a valuable record.

For me, the most interesting part of the book is the index of eponyms on pages 163–166. I like these naughty but nice cream-cakes; they might be said to lend an air of humanity to an otherwise bald and sometimes indigestible narrative, if I might be allowed to defile W. S. Gilbert. For this reason, I hope that they will not fall into disuse. My experience is that students of all ages find them more memorable than the proper terms.

The remainder of book, pages 167–292, make up the index. A CD-ROM accompanies the text.

The book is well produced and I should imagine that it would find a home in a university library. I am not sure whether it will be much used by English-speaking anatomists, but at the quoted price of Euro 40.39 it will not break the bank.

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