

Book Review

***Human Adult Odontometrics*. By Julius A. Kieser.** Cambridge Studies in Biological Anthropology 4. Cambridge University Press, Cambridge, United Kingdom. 1990. ix - 194 pp. 28 Line Drawn Figures, 5 Tables, Appendix with Mesiodistal and Buccolingual Diameters of Maxillary and Mandibular Dentition in Human Populations. ISBN 0-521-35390-4. Retail Price \$54.50. Through May, 1992, \$43.60.

Human Adult Odontometrics is a source book, whose ten chapters deal with every important concept relating to the metric study of the human dentition. Following a *Forward* by Phillip Tobias and a first chapter introduction, the second chapter goes right to the heart of the matter of odontometrics: methods for measuring teeth. The chapter also covers causes for imprecision, or error.

The issue of inheritance of tooth size takes up the third chapter. Concepts about genetic and environmental determinants, heredity effects during odontogenesis, heritability and its estimation through family and twin studies, assessment of heritability and environmental effects through path analysis, as well as non-genetic (environmental) influences on tooth size are taken up in turn. The fourth chapter deals with types of comparative analysis of tooth size: t-tests, size and shape Penrose analysis, multi-dimensional analysis including plotting in space, principal components analysis, canonical analysis, and a procedure called allocation, whereby a dentition is placed in an ethnogeographical group.

The book's middle three chapters cover theoretical issues. The fifth chapter reviews hypotheses for selective mechanisms behind both decrease and increase in tooth size. Sexual dimorphism of teeth in general and canines in particular occupies the sixth chapter. The chapter briefly looks to odontogenetic and chromosomal explanations for dimorphism, after consideration of mathematically based models. Variability in tooth dimensions is the subject of the seventh chapter. Therein, Butler's field theory, Osborn's clone theory, Waddington's epigenetic canalization theory, and Mizoguchi's group variation theory are explained and reviewed.

Theories dealing with the relation of the size of teeth to the skull, to one another, and to the rest of the body are examined in the last three chapters. Facial reduction and accompanying tooth size reduction are briefly dealt with in the eighth chapter. The ninth chapter is devoted to metric asymmetry and the tenth to craniodental allometry.

In *Human Adult Odontometrics* Julius Kieser has achieved his aim "to provide an introduction to variation in human adult tooth size, with emphasis on general principles rather than specific applications". Fortunately, this statement pertains only to the text. The book does contain the *specifics* in the form of thorough referencing of each subject and a bibliography of 572 citations by an array of international experts. Kieser, himself, has previously dealt with most of the material covered in the book in numerous papers in major international journals which are listed in the bibliography.

Human Adult Odontometrics is a valuable reference for all dental anthropologists, especially for teachers and students. Dental metric analysts will appreciate the 34 page appendix of previously published tooth crown measurements of world populations.

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