

Dental Anthropology Newsletter

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Presidential Address

Daris Swindler

Six years ago (April 11, 1986), the Dental Anthropological Association held its first meeting at the Albuquerque Hilton Hotel in Albuquerque, New Mexico. There were 42 Charter Members in attendance at this historic event (their names appear in the *Dental Anthropology Newsletter 1(2)* 1986). Since then we have changed our name to the Dental Anthropology Association, increased membership to 246, sponsored at least two Dental Anthropology Symposia at the annual AAPA meetings, and acquired a beautiful new logo (a Boley gauge and a shovel-shaped incisor) for DAN. Our membership has always been eclectic, drawing from scholars representing numerous backgrounds, but all with an interest in teeth. I know we will continue to increase our membership and I look forward to the day when our association will have meetings with dental organizations outside of North America and eventually publish a Journal of Dental Anthropology.

We have dedicated this issue of DAN to the memory of Edward E. Hunt who died on September 30, 1991. Ed was a charter member of this association, a member of the editorial board of DAN, and a long time contributor to the field of dental anthropology (see Garn, this issue). His loss is felt among his colleagues, students, and friends all over the world. With his passing, dental anthropology has lost one of its most active and vocal members. Ed was a good and true friend who will be sorely missed.

This was my last year as president and I wish to thank the members in general, and particularly the editors of DAN for making these last two years so pleasant and memorable. Without their able and willing assistance my tenure as president would have been much more difficult. In my opinion, DAN has continued to improve yearly and this has been for two reasons: one, the editors have always been a dynamic group of individuals interested in improving each issue of the Newsletter; and two, the members have continued to contribute papers, reviews, notes, and letters. I know that I express the wishes of the editors when I ask you to please continue your contributions to DAN, for in some parts of the world this is the only news available on what is happening in dental anthropology today.

Edward Eyre Hunt 1922-1991

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Edward Eyre Hunt, one of the co-founders of the Dental Anthropology Association, died six months short of his 70th year. He led two separate careers of approximately equal length. The first was at the Forsyth Dental Infirmary in Boston, with instructional and then assistant professorial rank at Harvard. During that time he was the recipient of two successive Career Development Awards. The second, after a brief period of teaching at Hunter and C.U.N.Y., was at the Pennsylvania State University, until his retirement in 1985. At the Forsyth he had influence on a long series of dental interns and initiated studies on tooth formation timing that included data from three different growth studies. At Penn State he extended his teaching to include epidemiology and health education and gained a singular reputation as an inspired teacher, ever ready to help graduate students plan and execute their research.

Ed Hunt frequented libraries, deeply delving into the literature and retaining what he read, a singular advantage in the pre-Medlar years. He could, therefore, recover from his memory bank a rather complete bibliography on any selected subject, saving students hours of searching in their own, and adding depth to his subject-reviews and position papers. That ability, plus his broad-knowledge of mathematical statistics, is fully evident in his now classic 1966 paper on developmental genetics. No wonder Carleton Coon was delighted to have Ed Hunt as collaborator on numerous books.

During World War II, Ed served as a psychological statistician with the Flying Safety Branch, Army Air Force. In the course of his graduate career at Harvard, which began in 1946, he was involved in studies on depopulation in Yap adding demography to his expertise. Though later afflicted with a form of lymphoma, he responded to chemotherapy.

In 1952 Ed married an Australian dentist (Vilma Maxine Rose Dalton-Webb), and in 1956 held a Fulbright Lectureship at the University of Melbourne. At several points in time Ed and Vilma contemplated relocation in Australia.

Ed Hunt devoted an extraordinary amount of time helping others both in his academic positions and in his expansive Victorian home in Magnolia, Massachusetts, where he maintained a kind of residential salon for years. When he retired to Magnolia, he did not retire, continuing to work on the history of Science, and on the history of physical anthropology in the U.S.A. up to the time of his death.

Mesolithic Hunters and Foragers of the Gangetic Plain: A Summary of Current Research in Dental Anthropology

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The modern city of Allahabad is a very sacred place for Hindus, since three spiritually significant rivers merge there: the Ganges, the Jamuna and the invisible, or imaginary, Saraswati. While few westerners are aware that bathing in January in the *tri samgam*, or triple confluence, absolves devout Hindus of sins and guilt, most are familiar with the cremation platforms on the banks of the Ganges in Varanasi (Banares). Fortunately, the funerary rite of cremation practiced by Hindus today was not popular during the Mesolithic period of Indian prehistory.

Burial of the dead and the locally carbonate-rich soils have resulted in the preservation of abundant human skeletal remains -- some of which are heavily mineralized -- at three principal archaeological sites: Damdama, Mahadaha, and Sarai Nahar Rai. These sites are located in close proximity to one another in Pratargarh District about 40 kms. north of the city of Allahabad (Fig. 1).

The osteological and dental remains recovered from these aceramic, microlithic sites in the Gangetic Plain provide a unique opportunity to discover, through skeletal and dental studies, the health status, lifeways, and genetic affinities of these hunter-foragers of northern India.

Previous Paleoanthropological Research

The first anthropological reports on the human remains from Sarai Nahar Rai were made in the early 1970's by P.C. Dutta and his associates, officers of the Anthropological Survey of India, Calcutta. I began my association with Allahabad University in January 1975, when through the courtesy of G.R. Sharma, I conducted a preliminary examination of the dentition of the Sarai Nahar Rai and Lekhahai skeletal series. The results of this study were appended to my doctoral dissertation which was devoted to documenting morphological and metrical variability in the dentition of the living peoples of North India (Lukacs, 1977).

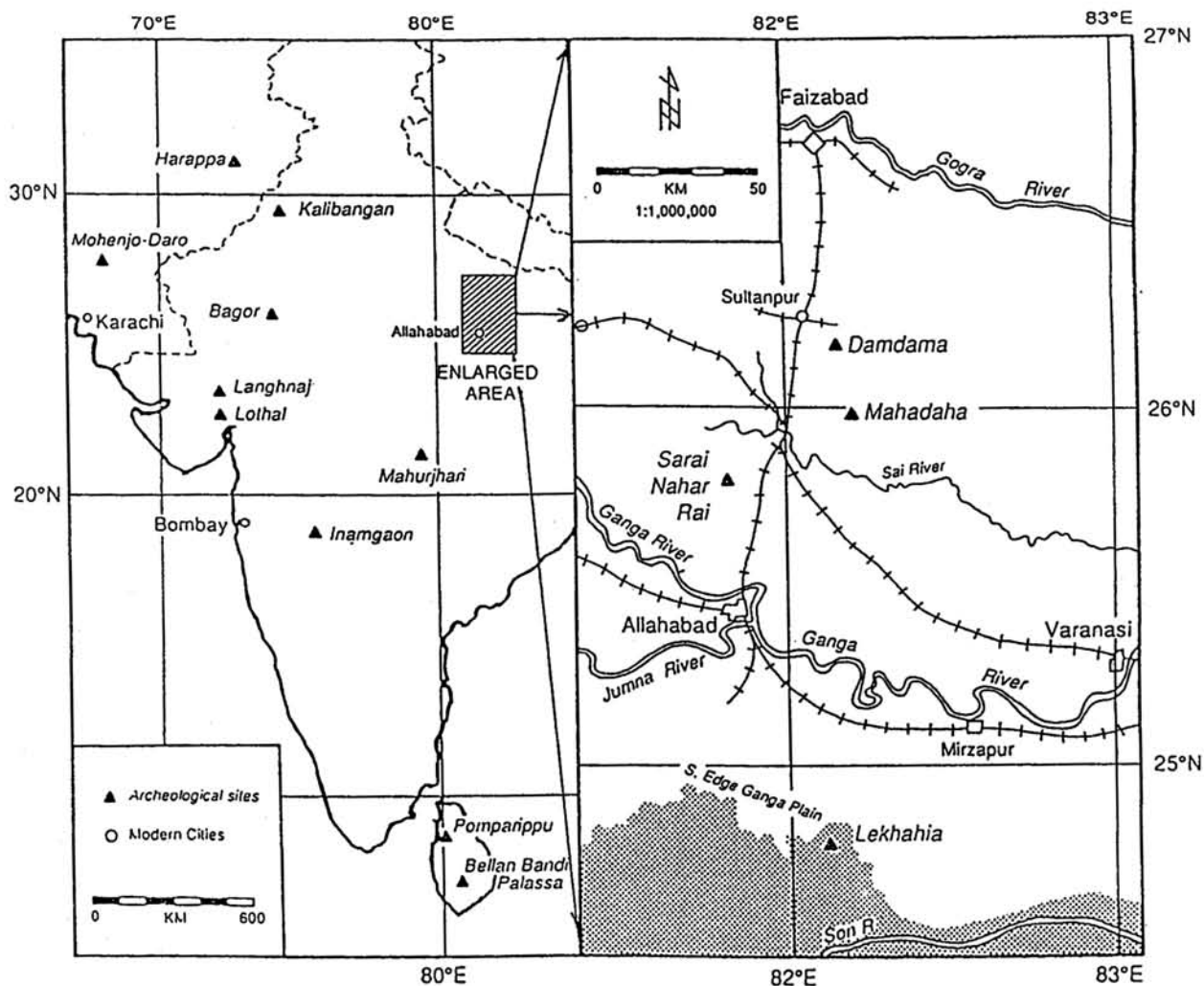
In the autumn of 1980, K.A.R. Kennedy examined the human bones from Mahadaha and Sarai Nahar Rai during a research visit to Allahabad University. The results of his investigations were published in the form of a comparative summary of the Sarai Nahar Rai and Mahadaha skeletal series (Kennedy, 1984), and as monograph reports on the Sarai Nahar Rai (Kennedy et al., 1986) and the Mahadaha human skeletal series (Kennedy et al., 1992). In February 1988 I returned to the Department of Ancient History, Culture, and Archaeology, Allahabad University, with my then student and research assistant Dr. Brian E. Hemphill, to restudy the Sarai Nahar Rai dental remains, and to conduct a comprehensive study of the Mahadaha dentition. The results of this research visit appear in the dental anthropology section of the Mahadaha monograph (Lukacs and Hemphill, 1992; Pastor and Johnston, 1992), in the discussion and comment section of *Current Anthropology* (Lukacs,

Mesolithic Hunters and Foragers of the Gangetic Plain (cont'd)

1990), in the Indian journal *Man and Environment* (Pal, 1992; Lukacs and Pal, 1992), and are briefly summarized below. It was during the course of research on the Mahadaha dentition in 1988, that I was invited to undertake a study of the 46 human skeletons from Damdama, another Mesolithic Lake Culture site, and plans for the current 1991-92 research project were initiated.

News of archaeological artifacts and human skeletal remains derived from Sarai Nahar Rai (n = 14 skeletal specimens), the first Ganges Plain Lake Culture site discovered, was reported by Sharma (1973) to an international audience of prehistorians in 1973. The nearby sites of Mahadaha (n = 32 skeletal specimens), excavated in two seasons (1977-78 and 1978-79), and Damdama (n = 46 skeletal specimens), excavated between 1983 and 1987, have both yielded abundant skeletal remains (General: Varma, 1981-83; Mahadaha: Pal, 1985; Sharma et al., 1980; Damdama: Pal, 1988; Varma et al., 1985).

Figure 1. Map of India and adjacent regions with sites discussed in the text.



Mesolithic Hunters and Foragers of the Gangetic Plain (cont'd)

Research in Progress: Human Skeletal and Dental Remains from Damdama

Current research activity focuses on the skeletal biology and dental anthropology of Mesolithic human remains from Damdama. This research is a joint project in collaboration with Dr. J.N. Pal of the department of Ancient History, Culture and Archaeology, University of Allahabad². As field excavator of the Damdama skeletons, Dr. Pal has recorded the stratigraphic context, compiled a field inventory of skeletal elements, and photographically documented each burial. In addition, his assistance in the preparation and analysis of skeletal remains in the laboratory is indispensable to the project's success.

The fieldwork phase of the project began in November 1991, with the American Institute of Indian Studies providing financial support and arranging Government of India clearance³. Mr. Greg C. Nelson, a doctoral student in the Department of Anthropology at the University of Oregon, is providing essential assistance in the field laboratory for a two month period this winter.

Forty-one graves at Damdama have yielded 46 skeletons, with some graves containing more than one skeleton. Grave numbers VI, XVI, XX, XXX, XXXVI are double burials and Grave Number XVIII is a triple burial. On the basis of field identification by Dr. Pal, about half of the skeletons are male, 40% are female, and 9% are of uncertain gender. The Damdama skeletal series is predominately adult, although the crania of two children are present. These observations await laboratory confirmation by me, and precise estimates of age at time of death are among the goals of this field season.

While most specimens consist of between 40% and 80% of the skeleton, a few individuals from disturbed areas of the site are represented only by the skull or by selected post-cranial remains. Just over 80% of the collection includes well preserved dental remains, often in maxillae and mandibles that are affected to varying degrees by post-burial diagenesis. These remains were transported to the laboratory with minimal cleaning and reconstruction of damaged bones, Lab work presently consists of a healthy amount of preparation work, mixed with skeletal and dental analytic observations. Diophtographic drawings, photographic documentation, and radiography of the collection will be completed during the final phase of research in May.

An important ancillary goal of this project is to establish with greater precision the absolute chronology of Damdama. The Ganges Valley Lake Culture sites are thought to date to between 10,000 and 3,000 B.C., but the basis for the earlier date is problematic (Kennedy et al., 1986). This season thermoluminescence and ¹⁴C dates from fired clay balls and bone samples, respectively, are anticipated from the Physical Research Laboratory, Ahmedabad.

The ultimate goal of our study is to provide a comprehensive descriptive and comparative analysis of the skeletal biology and dental anthropology of all 46 specimens from Damdama. These data, when combined with existing data on dental and skeletal variability in other Lake Valley Cultures, will enable us to formulate preliminary answers to important research questions, which have yet to be answered for the Indian subcontinent, for example:

Mesolithic Hunters and Foragers of the Gangetic Plain (cont'd)

- 1) What is the relationship between mode of subsistence (hunting and gathering vs. agriculturalism) and the patterns of dental and general health among prehistoric populations?
- 2) How did the stresses associated with a Mesolithic technology and lifestyle affect the skeleton and dentition of these early human populations?
- 3) Is there close correspondence between archaeologically based culture history and biologically based population history of the subcontinent?
- 4) Has human occupancy of the Ganges River Valley been characterized by a single continuously evolving group of human populations, or discontinuously by repeated replacements of one human population by another?

Conclusions from Previous Studies

In order to provide some idea of present knowledge regarding the dental characteristics of these microlithic hunter-foragers, conclusions derived from earlier studies of the Mahadaha and Sarai Nahar Rai dentition are briefly summarized below:

- 1) Teeth were subjected to heavy occlusal wear implicating primitive food preparation technology and a coarse diet. Excessive anterior dental wear in specific specimens implies use of incisors and canines as a manipulative device in occupational activities. Root stumps are often fully functional and tooth dislocation is present. Interproximal wear grooves are probably due to habitual tooth-picking with a bone needle.
- 2) The types and prevalence of dental disease strongly suggest a hunting and gathering lifestyle. The low caries rate, in particular, is due to the combined effects of a significant proportion of meat in the diet and the coarsely textured nature of the produce consumed. Rapid dental wear due to coarse food erases cusps and fissures from the teeth, denying food particles suitable locations for entrapment and caries formation. Antemortem tooth loss is due to attrition-induced pulpal exposure, not to dental caries. This finding also suggests a hunting and collecting subsistence strategy, independent of the archaeological record.
- 3) Tooth size is large. Despite the failure of specific dental indices to indicate this, the cross-sectional crown area of 1,314 mm² reflects the large size of both anterior and posterior teeth. Large teeth are biologically and evolutionary adaptive, given the tough diet and manipulative stresses to which they were subjected. A large tooth wears more slowly and has a longer functional life than a small tooth.
- 4) Genetically, the Mesolithic Lake Culture people of the Gangetic Plain are not closely related to any of the four skeletal series to which they can be compared (Sarai Khola and Timargarha in northern Pakistan; Neolithic Mehrgarh in Baluchistan Province, Pakistan; and Inamgaon in Maharashtra, western India). While they bear some resemblance dentally to the Neolithic inhabitants of Mehrgarh, Pakistan, the Mesolithic people of the Ganges drainage can only be regarded as having a distant relationship with them. It appears that the people of Sarai Nahar Rai and Mahadaha may have contributed little biologically to later populations of the Deccan Plateau.

Mesolithic Hunters and Foragers of the Gangetic Plain (cont'd)

Notes

1. After May 15, 1992, please send correspondence to Department of Anthropology, University of Oregon, Eugene, Oregon 97403, USA.
2. In addition to Dr. Pal, his colleagues Dr. V.D. Misra, Dr. R.K. Varma, Dr. J.N. Pandey and Dr. D. Mandal of the Department of Ancient History, Culture and Archaeology, University of Allahabad, have been involved in the excavation of these Ganges Lake Culture sites. I should also like to thank Dr. S.C. Bhattacharya, Head of the Department of Ancient History, Culture and Archaeology for providing research affiliation, for his interest in the project, and for providing a comfortable work environment.
3. The assistance of AIIS officers Dr. Joseph Elder, Dr. Frank Asher, at home, and the encouragement and council provided by Dr. Pradeep R. Mehendiratta in India, helped make this project a reality.

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Offer at a Special price to members of Dental Anthropological Association

Culture, Ecology and Dental Anthropology

Editor: John R. Lukacs
University of Oregon, Eugene, USA
With a Foreword by A.A. Dahlberg

An international group of experts in dental anthropology address key issues involving the impact of cultural and ecological factors on human dental development and variability. Living and prehistoric human populations from Africa, Australia, Europe and North America are included in this comprehensive volume which gives special attention to Asian populations.

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Equations for Predicting Age from Crown Height Measurements

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As part of our tooth wear research we have developed a series of equations for predicting age from crown height measurements (Table 1). These equations are based on measurements of modern North American blacks and whites of known age whose remains are in the Terry Collection at the National Museum of Natural History.

We have found these equations to be useful in forensic investigations of highly fragmentary modern skeletal remains. When isolated teeth, or jaws are discovered, dental anthropologists are often asked to provide a rough estimate the person's age based on tooth wear. The equations in Table 1 provide a statistical basis for making such estimates for people whose wear rates are comparable to those of the Terry collection (Figure 1).

To use the equations, measure the crown height from the cementoenamel junction to the occlusal surface with the calipers held perpendicular to the occlusal plane. For the incisor, canine, and premolar equations make a single crown height measurement on the side of the tooth along its mid-sagittal plane. For the molars, the total crown height measurement used in the equations is the sum of the heights of each quadrant of the tooth (see Walker et al. 1991: figure 1). The age estimate is then the average of the estimated ages obtained for all the measured teeth of an individual.

Table 1: Equations for Estimating Age from Measurements of Crown Heights in Millimeters.

Mandibular Teeth

$$\begin{aligned}\text{Estimated Age} &= (\text{I1 Crown Height} \times -4.890) + 75.800 \\ \text{Estimated Age} &= (\text{I2 Crown Height} \times -5.555) + 84.288 \\ \text{Estimated Age} &= (\text{C Crown Height} \times -4.200) + 79.017 \\ \text{Estimated Age} &= (\text{P3 Crown Height} \times -3.960) + 68.582 \\ \text{Estimated Age} &= (\text{P4 Crown Height} \times -4.204) + 67.754 \\ \text{Estimated Age} &= (\text{M1 Total Crown Height} \times -1.658) + 76.955 \\ \text{Estimated Age} &= (\text{M2 Total Crown Height} \times -1.885) + 85.044 \\ \text{Estimated Age} &= (\text{M3 Total Crown Height} \times -1.535) + 74.175\end{aligned}$$

Maxillary Teeth

$$\begin{aligned}\text{Estimated Age} &= (\text{I1 Crown Height} \times -4.061) + 82.147 \\ \text{Estimated Age} &= (\text{I2 Crown Height} \times -4.715) + 85.079 \\ \text{Estimated Age} &= (\text{C Crown Height} \times -2.597) + 66.706 \\ \text{Estimated Age} &= (\text{P3 Crown Height} \times -5.213) + 82.222 \\ \text{Estimated Age} &= (\text{P4 Crown Height} \times -5.392) + 81.627 \\ \text{Estimated Age} &= (\text{M1 Total Crown Height} \times -1.423) + 77.240 \\ \text{Estimated Age} &= (\text{M2 Total Crown Height} \times -1.059) + 68.524 \\ \text{Estimated Age} &= (\text{M3 Total Crown Height} \times -1.054) + 66.284\end{aligned}$$

$$\text{Age Estimate: } \bar{x} = \frac{\sum \text{Estimated Ages}}{\text{Number of Teeth Aged}}$$

Age Prediction from Crown Height Measurements (cont'd)

We have used a "jackknife" procedure to test the equations. An individual was dropped from the sample and the regression line fitted to the remaining observations. This person's age was then predicted using the resulting equation. This was done for every person in the sample. These age estimates were then used to calculate the average inaccuracy (absolute difference between the estimated age and known age) and average bias (difference between the estimated age and known age) equations (Table 2).

Table 2: Average Inaccuracy and Bias In Years of Age Estimates
Derived from Crown Height Measurements

Tooth	<u>Mandible</u>			<u>Maxilla</u>		
	N	Inaccuracy	Bias	N	Inaccuracy	Bias
I1	93	9.79	-0.07	28	10.19	-0.24
I2	104	8.71	-0.01	43	10.46	-0.07
C	109	10.40	-0.03	51	10.17	0.06
P3	114	9.05	-0.02	47	10.57	0.01
P4	111	10.07	-0.01	47	10.33	0.02
M1	107	9.99	-0.02	45	9.90	-0.08
M2	116	10.36	0.01	46	9.58	0.03
M3	92	12.05	0.00	38	9.83	-0.16

N= number of individuals

Inaccuracy (years) = average absolute value of (estimated age) - (actual age)

Bias (years) = average value of (estimated age) - (actual age)

We found that the error of the estimate was lowest when the average of the age estimates obtained for each tooth of an individual was used as that person's estimated age (Table 3). This procedure resulted in an average inaccuracy in the age estimate of 9.36 years and an average bias of -0.25 years. These average values are comparable to those obtained by Lovejoy and co-workers (1985:7) in their analysis of age estimates based on several commonly used skeletal age indicators.

Table 3: Inaccuracy and Bias of Average
Crown Height Age Estimates

Actual Age (years)	N	Inaccuracy	Bias
18-29	35	13.65	-13.65
30-39	35	4.22	-2.2
40-49	20	4.52	2.31
50-59	27	10.21	9.63
>60	12	18.08	18.08
<u>All Ages</u>	<u>129</u>	<u>9.36</u>	<u>-0.25</u>

N= number of individuals

Inaccuracy (years) = average absolute value of (estimated age) - (actual age)

Bias (years) = average value of (estimated age) - (actual age)

Table 4: Correlations Between Crown
Heights and Crown Areas for Unworn Teeth

Tooth	<u>Mandible</u>		<u>Maxilla</u>	
	n	r	n	r
I1	16	-0.08	--	---
I2	18	0.31	4	-0.43
C	19	0.69	6	0.77
P3	19	0.32	6	0.18
P4	20	0.01	6	0.38
M1	21	0.30	6	-0.78
M2	22	0.04	6	-0.68
M3	18	0.03	6	-0.31

n = number of unworn teeth in sample

r = Pearson's r

Age Prediction from Crown Height Measurements (cont'd)

These average error values, however, are misleading. Although the equations perform quite well when used to age middle aged people, they have a strong tendency to underestimate the ages of elderly people and overestimate the ages of young adults (Table 3; Figure 2).

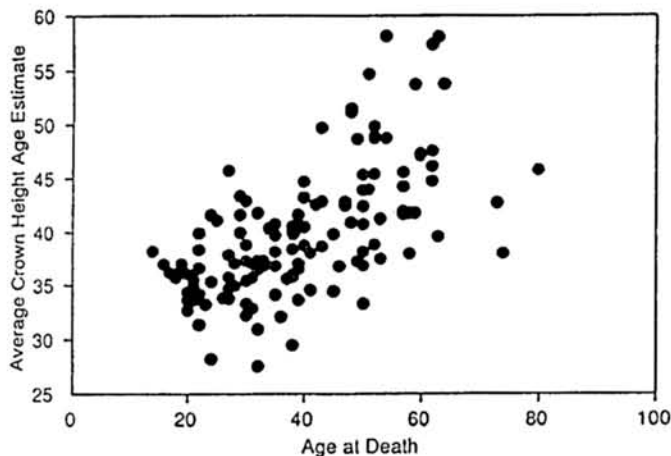


Figure 1. Age estimates based on the equations in Table 1 plotted against the actual age at death. The age estimates are the average of the age estimates obtained for all of the measurable teeth of an individual.

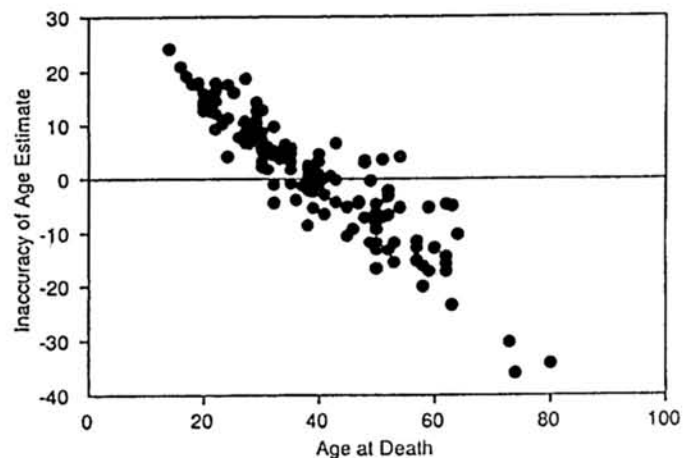


Figure 2. Inaccuracy of age estimates (estimated age) - (actual age) based on the equations in Table 1 plotted against the actual age at death.

We have attempted to improve the performance of these equations in a variety of ways. Variation in tooth size is a major source of error inherent in the use of crown heights to predict age. People with large unworn crown heights are underaged and people with smaller initial crown heights are overaged by these equations. To correct for this problem we standardized our crown height measurements by dividing them by crown area (buccolingual diameter x mesiodistal diameter) and then used this standardized dimension as an age predictor. Instead of improving our age estimates, this size standardization increased the inaccuracy of our age estimates. The explanation of this surprising finding is simple; for most teeth there is an unexpectedly weak correlation between crown area and unworn crown height (Table 4).

We have also explored the use of multiple regression models that include information on race, sex, and data on the crown heights of more than one tooth. These more complicated models only produced a small improvement in age prediction.

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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.

A.M. Haeussler

Minutes of the Seventh Annual Meeting of the Dental Anthropology Association

Las Vegas, Nevada - April 3, 1992

Daris Swindler, presiding

I. REPORT OF THE SECRETARY-TREASURER (Diane Hawkey):

A. Status of the Treasury: As of April 3, 1992, the Association's net assets are \$1,210.11. A total of 55 new members have joined since the last meeting, bringing the total membership to 246 individuals. Foreign membership has continued to increase, and represents approximately 35% (n=84) of our Association, with members in 25 countries outside the United States. On behalf of the DAA, the Secretary-Treasurer thanked all of the members who have donated towards foreign sponsorship.

B. Membership status: DAA members were reminded to check their *Dental Anthropology Newsletter* mailing label in order to determine their membership status. If you have active status, the year that your membership dues are paid through will appear after your name. Inactive status is denoted by a series of asterisks. In order to return to active status, you will need to send in your membership fees.

II. NEWSLETTER EDITORS' REPORT (Sue Haeussler):

A. E.E. Hunt: Members of the DAA were saddened to hear of the death of Ed Hunt, a member of the editorial board. The spring issue of the Newsletter will be dedicated to his memory.

B. New Associate Editor: Liu Wu, Research Associate in the Institute of Vertebrate Paleontology and Paleoanthropology in Beijing, has agreed to serve as a Newsletter editor during 1991-92. Liu is currently a visiting scholar at Arizona State University.

C. Increase in size and quality of the Newsletter: DAA members and some non-members who have volunteered or willingly answered requests for articles are responsible for the improvement in the *Dental Anthropology Newsletter* during the past year. The editors thanked these individuals and hope that the support continues.

D. DAN Selected Bibliography: Members were asked to send information on new publications to be included in the Selected Bibliography feature. This bibliography is a particularly important source of information for our foreign colleagues.

III. OLD BUSINESS

A. Changes in By-Laws and Constitution: The proposed changes (printed in the *Dental Anthropology Newsletter* 6(2):16-19) were adopted by a 2/3 majority vote. The duties of Nominations-Elections Officer, Program Chair, and Meeting Facilitator are now performed by a single Executive Board officer, who will serve for three years.

B. Temporary change in length of term: The newly elected Secretary-Treasurer will serve a term of three years (1992-95), rather than two. After that time, the office of Secretary-Treasurer will return to a two year term. This action will stagger the elections of President and Secretary-Treasurer, in order to facilitate transition of office.

IV. NEW BUSINESS

A. Elections: The following individuals were elected as new officers of the DAA:

President: Stephen Molnar (Washington University)

Secretary-Treasurer: Joel Irish (Arizona State University)

Executive Board Officer: Linda Winkler (University of Pittsburgh at Titusville)

The retiring President (Daris Swindler) and retiring Secretary-Treasurer (Diane Hawkey) were thanked by the membership for their service.

B. AAPA/DAA Symposia: M. Y. Iscan noted that this year the DAA sponsored two symposia along with the American Association of Physical Anthropologists.

V. Other: Daris Swindler wished to make a special mention of the contributions of Ed Hunt not only to the DAA, but to the field of physical anthropology, and noted that he will be greatly missed.

Minutes prepared by Diane Hawkey
Submitted April 8, 1992

Dental Anthropology Association - AAPA Symposium and Poster Session Presentations¹

Sixty-First Annual Meeting of the American Association of Physical Anthropologists

Las Vegas, Nevada

April 2 to 4, 1992

- Blakey ML, and Reidy J: Chronological distribution of dental enamel hypoplasia in African American slaves: a test of the weaning hypothesis.
- Buschang PH, and Alexander RG: Dental arch changes in Class I adult females.
- Calcagno JM, and Gibson KR: An early case of root caries in the hominid fossil record: a reexamination of the dental pathologies of the Kabwe cranium ("Rhodesian Man").
- Corruccini R, Nesbit R, and Ciochon R: Occlusofacial morphological change in relation to masticatory function.
- Drier FG: Quantification of molar tooth wear: a new method.
- Duray SM: The intertooth pattern of enamel defect occurrence.
- Grine FE: Variability in enamel thickness and structure among molar tooth classes in *Homo sapiens*.
- Haeussler AM: The place of the skeletons from Oleneostrovski' Mogil'nik in the Mesolithic and early Neolithic world of Russia and Ukraine.
- Halbertstein RA, Abrahamsohn FL, and Abrahamsohn GM: Vitamin C and dental healing: testing the placebo effect.
- Hildebolt CF, Rupich R, Cohen S, Avioli LV, and Vannier MW: DER-BWX bone-loss interrelationships.
- Irish JD, and Turner II CG: Further evidence of dental discontinuity between Mesolithic and recent Nubians.
- Karhu S, Amon J, and Van Gerven DP: Childhood stress patterns among the Hohokam of Pueblo Grande as suggested by enamel defects.
- Lampl ML, Mann AE, and Monge JM: Tooth clocks or population markers?
- May RL, Goodman AH, and Meindl RS: Nutritional improvement and LEH formation among malnourished Guatemalan children.
- Pietruszewsky M, and Douglas MT: Tooth evulsion in Ancient Hawai'i.
- Protsch Von Zieten RR, and Eckhardt RB: Enamel hypoplasias in the deciduous dentition of free-living Liberian chimpanzees (*Pan troglodytes versus*).
- Rega EA: The effect of linear hypoplasias on tooth size in a prehistoric sample.
- Ritter EB: Dental indicators of developmental disruption and aspects of Afro-American biohistory.
- Rosado MA, and Madariaga J: Oral pathologies of two prehistoric populations from Chile's semi-arid North.
- Santos RV: A diachronic view of Tupi-Monde health as seen from their dental enamel.
- Winkler LA, Siebert JR, and Swindler DR: An analysis of sexual dimorphism in the dentition of the perinatal chimpanzee (*Pan troglodytes*).

Compiled by A.M. Haeussler

Additional Papers and Posters Pertaining to Dental Anthropology Presented at the AAPA Annual Meeting¹

- Arnold WH, and Ohlig E: Comparative studies of the tri-dimensional palatal shape of *H.s.s.* and different hominids and hominoids.
- Aspillaga EA, Castro MM, and Paredes CA: Early human remains from Patagonia: Cerro Sota, Palli Aike and Cañadon Leona.
- Benefit BR: The phylogeny and paleodemography of *Victoriapithecus* - new evidence from the deciduous dentition.
- Blakley ML, and Leslie TE: Chronological distribution of dental enamel hypoplasia in African American slaves.
- Broadfield DC: Dental microwear and diet in northarctine primates.
- Cachel S: Early to middle Miocene East African fossil hominoids and australopithecine megadontia.
- Chiu C-H, Sheridan SG, and Van Gerven DP: Trace elements in the dental tissues of an ancient Sudanese Nubian population.
- Conroy GC, Pickford M, Senut B, and Van Couvering J: *Otavipithecus namibiensis*, first Miocene hominoid discovered from Southern Africa (Berg Aukas, Namibia).

¹Abstracts published in the American Journal of Physical Anthropology Supplement 14 (1992).

Presentations pertaining to dental anthropology at AAPA Meeting (cont'd)

- Dumont ER: Primate higher level relationships: evidence from tooth enamel microstructure.
Fuller K: The improbability of multiple australopithecine taxa at Swartkrans and Kromdraai.
Grey PE: Preliminary application of a mathematical model to hominid mastication.
Hemphill BE, and Kennedy KAR: A multivariate analysis of biological continuity within the prehistoric Indus Valley.
Jacobs K: Intra-site variation in a socially divided(?) Mesolithic cemetery: Oleneostrovskii mogilnik (Karelia USSR).
Kay RF, and Williams BA: Dental evidence for anthropoid origins.
Martin LB: Enamel thickness in Miocene hominoids.
Malville NJ: Analysis of a human bone assemblage from the medieval Hindu kingdom of Vijayangar.
Mann A: The issue of Zhoukoudian dental maturation.
Meldrum DJ, Kay IL, and Kay RF: A new specimen of pithecin primate from the Miocene of Columbia.
Plavcan JM, and van Shaik C: Female canine size in anthropoid primates.
Pope GG: Taxonomic diagnosis and morphological definition of anatomically modern *Homo sapiens* in China.
Rae TC, and Simmons EL: The significance of the facial morphology of *Aegyptopithecus*.
Rafferty K, and Teaford MF: Diet and dental microwear in Malagasy subfossil lemurs.
Ramirez-Rozzi F: Teeth development pathways in 3 mya hominids.
Smith BH: Human growth and development in the fossil record.
Spencer MA: Zygomatic arch form and masticatory muscle development in primates.
Strait SG: Dental morphology and molar microwear in Omomyidae.
Stroud IL, Buschang PH, and Alexander RG: Dental arch changes in Class I adult females.
Swails NJ: Relative growth of primate tooth germs.
Teaford MF, and Leakey MG: Dental microwear and diet in Plio-Pleistocene cercopithecoids from Kenya.
Tomkins RL: Relative dental development in Upper Pleistocene hominids.
Ungar P: Feeding behavior and dental microwear in Sumatran anthropoids.
Wanner J: Clinal variation in Eskimo craniofacial morphology.
Williams BA, and Covert HH: A new species of *Anemorhysis* from the Washakie Basin, Wyoming.
Yamashita N: Mechanical variation in the diets of four Malagasy primates.
Zhang Yinyun: Chouhu and the question of *Homo erectus* contemporaneity in China.

Compiled by A.M. Haeussler

Some Recent Publications

- Aguirre E, Arsuaga JL, Decastro JMB, Carretero M, Gracia A, Martinez I, Perez PJ, Rosas A (1991) Ibeas fossil hominids, updated inventory 1989. *Anthropologie* 95(2-3):473-500.
Alvesalo L, and Laine T (1992) Occlusion in 47,XXY (Klinefelter Syndrome) men. *American Journal of Physical Anthropology* 87:161-165.
Anemone RL, and Watts ES (1992) Dental development in apes and humans -- a comment on Simpson, Lovejoy, and Meindl (1990). *Journal of Human Evolution* 22:149-153.
Bakke M, and Moller E (1992) Cranio-mandibular disorders and masticatory muscle function. *Scandinavian Journal of Dental Research* 100(1):32-38.
Bartsiokas A, and Middleton AP (1992) Characterization and dating of recent and fossil bone by X-ray diffraction. *Journal of Archaeological Science*. 19(1): 63-72.
Bass NM (1992) Increased anterior crowding in the dentition. *British Dental Journal* 172(2):47.
Batt RAL (1992) Abnormal incisor teeth and body weight in the obese mouse (genotype ob/ob). *International Journal of Obesity* 16(1):29-34.
Begun DR (1992) *Dryopithecus crusafonti* nov. sp, a new Miocene hominoid species from Can Ponsic (northeastern Spain). *American Journal of Physical Anthropology* 87:291-309.
Begun DR (1992) Phyletic diversity and locomotion in primitive European hominids. *American Journal of Physical Anthropology* 87:311-340.
Boughman JA, Astemborski JA, and Suzuki JB (1992) Phenotypic assessment of early onset periodontitis in sibships. *Journal of Clinical Periodontology* 19(4):233-239.
Brauer G, and Mbua G (1992) *Homo erectus* features used in cladistics and their variability in Asian and African hominids. *Journal of Human Evolution* 22:79-108.
Broklebank L (1992) Post mortem identification of a body by use of dental evidence. *British Dental Journal* 172(6):229.

Recent Publications (cont'd)

- Cesnys G. (1991) The Neolithic and Bronze Age of man in the south-east Baltic area. 2. A multivariate approach. *Homo* 42(2): 130-149.
- Cesnys G. (1991) The Neolithic and Bronze Age of man in the south-east Baltic area. 3. An essay on the genesis of cranio-facial types. *Homo* 42(3): 232-243.
- Chen M, and Scully (1992) Tongue piercing - a new fad in body art. *British Dental Journal* 172(3):87.
- Cheverud JM, and Midkiff JE (1992) Effects of fronto-occipital reshaping on mandibular form. *American Journal of Physical Anthropology* 87:176-171.
- Conry JP, Beyer JP, and Pintado MR (1992) An initial comparison of odontometric methods: caliper versus computer guided profilometry. *American Journal of Physical Anthropology* 87:231-233.
- Covert HH and Williams BA (1991) The anterior lower dentition of *Washakius insignis* and adapid-anthropoidean affinities. *Journal of Human Evolution* 21:463-467.
- Daegling DJ, and Grine FE (1991) Compact bone distribution and biomechanics of early hominid mandibles. *American Journal of Physical Anthropology* 86:321-339.
- Dean MC, Jones ME, and Pilley JR (1992) The natural history of tooth wear, continuous eruption and periodontal disease in wild shot great apes. *Journal of Human Evolution*. 22:23-39.
- Decastro JMB, Rosas A (1992) A human mandibular fragment from the Atapuerca Trench (Burgos, Spain). *Journal of Human Evolution*. 22:41-46.
- Dyer GS, Harris EF, and Vaden JL (1991) Age effects on orthodontic treatment - adolescents contrasted with adults. *American Journal of Orthodontics and Dentofacial Orthopedics*. 100:523-530.
- Fink TM (1991) Prehistoric irrigation canals and their possible impact on Hohokam health. In CD Breternitz (ed.): *Prehistoric Irrigation in Arizona: Symposium 1988*. Soil Systems Publications in Archaeology No. 17. Phoenix.
- Fink TM, and Merbs CF (1991) Paleonutrition and paleopathology of the Salt River Hohokam : a search for correlates. *The Kiva* 56(3):293-218.
- Greenfield LO, and Washburn A (1992) Polymorphic effects of male anthropoid honing premolars. *American Journal of Physical Anthropology* 87:173-186.
- Hanihara T (1991) The origin and microevolution of the Ainu as viewed from the dentition. The basic populations in East Asia, 8. *Journal of the Anthropological Society of Nippon* 99(3):345-361.
- Harris EF, Dyer GS, Vaden JL (1991) Age effects on orthodontic treatment - skeletodontal assessments from the Johnston analysis. *American Journal of Orthodontics and Dentofacial Orthopedics*. 100:531-536.
- Hewlett BS, and Walker PL (1991) Social status and dental health among Aka and Mbuti Pygmies. *American Anthropologist* 93:943-944.
- Honkala E, Kolmakow S, Nyssonen V, Kuzmina E, and Vasina S (1992) Background factors affecting dental caries in permanent teeth of Finnish and Soviet children. *Journal of Dentistry for Children* 59(1): 28-33.
- Horwarth JW (1992) Post mortem identification of a body by use of dental evidence. *British Dental Journal* 172(4):158.
- Hugoson A, Laurell L, and Lundgren D (1992) Frequency distribution of individuals aged 20-70 years according to severity of periodontal disease experience. *Journal of Clinical Periodontology* 19(4):227-232.
- Keene HJ (1991) On heterochrony in heterodonty - a review of some problems in tooth morphogenesis and evolution. *Yearbook of Physical Anthropology* 34:251-282.
- Kent S (1991) Cause and effect as dental health, diet, and status among foragers. *American Anthropologist* 93:942-943.
- Kerr WJS, Jelly J, and Geddes DAM (1991) The areas of various surfaces in the human mouth from nine years to adulthood. *Journal of Dental Research* 70:1528-1530.
- Klock RS, and Haugejorden O (1991) Primary reasons for extraction of permanent teeth in Norway - changes from 1968 to 1988. *Community Dentistry and Oral Epidemiology* 19(6):336-341.
- Leggott PJ, Robertson PB, Jacob RA, Zambon JJ, Walsh M, and Armitage GC (1991) Effects of ascorbic acid depletion and supplementation on periodontal health and subgingival microflora in humans. *Journal of Dental Research* 70:1531-1536.
- Lele S, and Richtsmeier JT (1992) On comparing biological shapes - detection of influential landmarks. *American Journal of Physical Anthropology* 87:49-65.
- Lukinmaa PL, Vaahtokari A, Vainio S, and Tesleff I (1992) Expression of type-I collagen pro-alpha2 chain messenger RNA in adult human permanent teeth as revealed by *in situ* hybridization. *Journal of Dental Research* 71(1):36-42.

Recent Publications (cont'd)

- Lukacs JR (1992) Dental paleopathology and agricultural intensification in South Asia: new evidence from Bronze Age Harappa. *American Journal of Physical Anthropology* 87:133-150.
- Macho GA, and Moggi-Cecchi J (1992) Reduction of maxillary molars in *Homo sapiens sapiens*: a different perspective. *American Journal of Physical Anthropology* 87:151-159.
- Madredupouy M (1991) Principal features of the Neanderthalian child from Roc-de-Marsal, Dordogne (France) (in French). *Anthropologie* 95:2-3.
- Michalowicz BS, Aeppli DP, Kuba RK, Bereuter JE, Conry JP, Segal NL, Bouchard TJ, and Pihlstrom JE (1991) A twin study of genetic variation in proportional radiographic alveolar bone height. *Journal of Dental Research* 70(11):1431-1435.
- Miralles R, Hevia R, Contreras L, Carvajal R, Bull R, and Manns A (1991) Patterns of electromyographic activity in subjects with different skeletal facial types. *Angle Orthodontist* 61(4):277-284.
- Mockett RS (1992) A severe case of amelogenesis imperfecta reported in a twin. *British Dental Journal* 172(3):89.
- Monastersky R (1992) Tiny tooth upends Australian prehistory. *Science News* 141:228.
- Morey DF (1992) Size, shape and development in the evolution of the domestic dog. *Journal of Archaeological Science* 19:181-204.
- Pahkala R, Pahkala A, and Laine T (1991) Eruption pattern of permanent teeth in a rural community in northeastern Finland. *Acta Odontologica Scandinavica* 49(6):341-349.
- Plavcan JM, and van Schaik CP (1992) Intersexual competition and canine dimorphism in anthropoid primates. *American Journal of Physical Anthropology* 87:461-47.
- Prapanpoch S, Dove SB, and Cottone JA (1992) Morphometric analysis of the dental pulp chamber as a method of age determination in humans. *American Journal of Forensic Medical Pathology* 13(1):50-55.
- Ripamonti U, and Petit JC (1991) Periodontal diseases amongst Australopithecine fossil remains (in French). *Anthropologie* 95(2-3):391-400.
- Robson J (1992) Forensic odontology and the assessment of dental evidence. *British Dental Journal* 172(3):124.
- Rossouw PE, Lombard CJ, and Harris AMP (1991) The frontal sinus and mandibular growth prediction. *American Journal of Orthodontics and Dentofacial Orthopedics* 100:542-546.
- Schwidetzky I (1991) Descriptive characters of the face in population comparisons. *Homo* 42(3):265-286.
- Scott GR (1991) Dental Anthropology. *Encyclopedia of Human Biology*, Vol. 2. New York: Academic Press, pp. 789-804.
- Seow WK (1991) Enamel hypoplasia in the primary dentition - a review. *Journal of Dentistry for Children* 58(6):441-452.
- Silver DH (1992) A comparison of three-year-olds' caries experience in 1973, 1981, and 1989 in a Hertfordshire town, related to family behavior and social class. *British Dental Journal* 172(5):191-197.
- Simpson SW, Lovejoy CO, and Meindl RS (1992) Further evidence on relative dental maturation and somatic developmental rate in hominoids. *American Journal of Physical Anthropology* 87:29-38.
- Tobayiwa C, Musiyambiri M, Chironga L, Mazorodze O, and Sapahla S (1991) Fluoride levels and dental fluorosis in two districts in Zimbabwe. *Central African Journal of Medicine* 37(11):353-361.
- Turner CG II (1992) New World origins: new research from the Americas and the Soviet Union. In DJ Stanford and JS Day (eds.): *Ice Age Hunters of the Rockies*. Niwot: University Press of Colorado, pp. 7-50.
- Vanderas AP (1992) Prevalence of cranio-mandibular disfunction in white children with different emotional states, 3. A Comparative Study. *Journal of Dentistry for Children* 59(1): 23-27.
- Walker ARP, and Cleaton-Jones PE (1992) Sugar intake and dental caries. *British Dental Journal* 172(1):7.
- Walker PL, and Hewlett BS (1990) Dental health, diet, and social status among central African foragers and farmers. *American Anthropologist* 92:383-398.
- Witt MCR (1992) Pattern of caries experience in a 12-year-old Brazilian population related to socioeconomic background. *Acta Odontologica Scandinavica* 50(1):25-30.
- Zilberman U, Skinner M, and Smith P (1992) Tooth components of mandibular deciduous molars on *Homo sapiens sapiens* and *Homo sapiens neanderthalensis*: a radiographic study. *American Journal of Physical Anthropology* 87:255-262.
- Zilberman Y, Malron M, and Shteyer A (1992) Assessment of 100 children in Jerusalem with supernumerary teeth in the premaxillary region. *Journal of Dentistry for Children* 59(1): 44-47.

Compiled by A.M. Haeussler

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