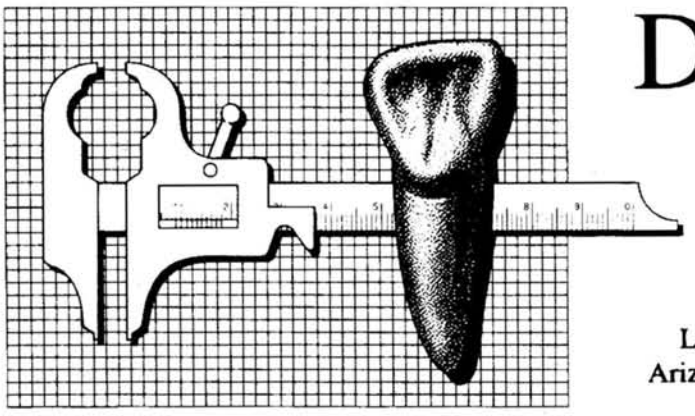

Dental Anthropology Newsletter

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Preliminary Impression of Current Dental Anthropology Research in China

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As the only two members of the Dental Anthropology Association in mainland China, we are both watching and experiencing the rapid development of dental anthropology in this big country. From 1991 to 1992, through the aid of a fellowship from Academia Sinica, Liu Wu studied dental anthropology under Dr. Christy G. Turner, II, of Arizona State University. With Liu's efforts, the scoring procedure of the Arizona State University Dental Anthropology System has been introduced to China. Several institutions, including IVPP, Institute of Archaeology of Chinese Academy of Social Sciences and Jilin University in Manchuria are now using the system. Dental morphological study has grown over the past two years and now plays a significant role in the field of anthropology.

Current dental anthropology research focuses on the following topics:

1. dental morphology of the inhabitants of China from the Neolithic (about 5,000-7,000 BP) to present;
2. dental pathology of Neolithic and historic inhabitants of China;
3. biological relationship of Chinese populations to neighboring peoples in East Asia;
4. temporal changes and microevolution of human dental morphological traits since the late Pleistocene (and earlier) in China; and
5. a dental interpretation for the origin of modern Chinese.

NEOLITHIC SAMPLES

Last year three dental collections were obtained from the archaeological sites listed in Table 1 and shown on the map in Fig. 1. Liu Wu analyzed the dental morphology of the first two samples. Professor Zhu Hong of Department of Archaeology, Jilin University, joined the senior author to observe the teeth of Miaozigou site. The statistical analysis included comparisons with dental morphological data of other Asian populations. The teeth of Longxian are still under analysis by the present authors with the support from the National Science Foundation of China.

TABLE 1. The dental collections under current study.

Sample	Number	Provenience
Xiawanggang	156	Neolithic (5,000 BP) Xichuan county, Henan province
Miaozigou	28	Neolithic (5,500-5,000 BP) Inner Mongolia
Longxian	140	Zhanguo period (2,000 BP) Shanxi province

Although the entire study is not yet complete, we can offer the following preliminary summary. In general, the frequencies of most dental morphological traits of the North Chinese Neolithic humans are quite similar to those of other Northeast Asians and are different from Southeast Asians. This is especially true of shovel-shaped incisors, double-shoveled incisors,

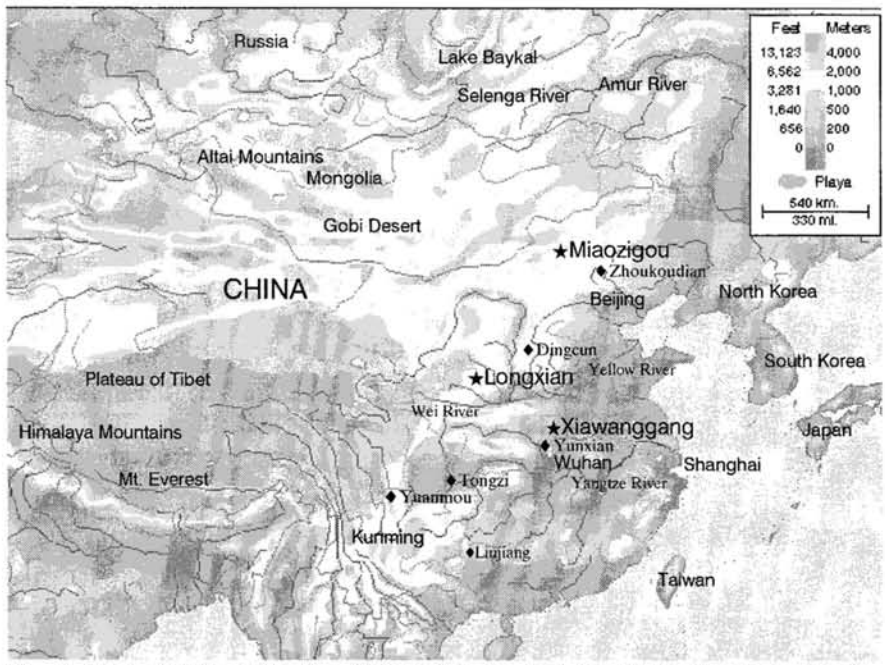

Fig. 1. Map of China with sites discussed in the text. Neolithic sites marked with a star; fossil sites, with a diamond.

upper molar enamel extensions, lower molars deflecting wrinkle and three-rooted lower first molars. Statistical analyses of MMD's (mean measure of divergence) show that the inhabitants of Xiawanggang and Miaozigou sites are dentally more like Anyang and other Northeast Asians than Southeast Asians. Cluster analysis indicates the two populations are positioned in the Sinodonty branch of Turner's terminology of Sundadonty and Sinodonty in East Asia.

Table 2 has frequencies for 29 key morphological traits of the Arizona State University Dental Anthropology System for Xiawanggang and Miaozigou, the two Neolithic human groups. The dental morphology of these samples can be summarized as follows:

1. Upper central incisor winging is common.
2. Shovel-shaped incisors occur frequently, and expression is marked, especially on UI1. The frequency on UI1 is about 90% and mainly in grades 3 and 4.
3. Double-shoveling on UI2 is common and expressed well with frequencies of 52.7% - 57.9%.
4. Interruption groove occurs on 46.2% - 75% of the lateral incisors.
5. *Tuberculum dentale* of UI2 are common but mainly in the weak grades (1-3).
6. A maxillary canine mesial ridge (Bushman canine) is extremely rare and never occurs in strong grade.
7. Upper canines with distal accessory ridges are common.
8. No Uto-Aztecan premolar was found.
9. Nearly all upper molars have a hypocone, which is usually large.
10. Cusp 5 on upper molars occurs in low frequencies (4.0% - 16.7%) and in weak expression.
11. Carabelli's cusp is rare.
12. The parastyle on upper molars are rare.
13. Upper first molar enamel extensions are common with frequencies of 51.7% - 81.3%.
14. One-rooted upper first premolar frequency ranges from 60.7% - 68.5%.
15. Three-rooted upper second molars are very common.
16. Peg/Reduced/congenital absence of upper third molars is uncommon, with frequencies of 15.4% and 16.2% respectively.
17. Lower second premolars with more than one cusp occur on 77.8% - 87.0% of the teeth.
18. Y-groove pattern of lower second molars is uncommon with frequencies of 5.8% - 12.5%.
19. 14.8% - 31.3% of lower first molars are six-cusped.
20. Four-cusped lower second molars in Miaozigou are low (18.8%), and in the other sample of Xiawanggang are common (27.6%).
21. Deflecting wrinkle of lower first molars is very common.

TABLE 2. Frequencies of 29 dental morphological traits of Xiawanggang and Miaozigou.

	Winging UI1	Shoveling UI1	Double-shoveling UI1	Interruption groove UI2	*Tuberculum dentale* UI2	Mesial ridge UC	Distal accessory ridge UC	Hypocone UM2	Cusp 5 UM1	Carabelli's cusp UM1
	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)
Xiawanggang	33.3 (6)	90.1 (71)	52.7 (74)	46.2 (78)	35.9 (78)	5.9 (101)	45.3 (53)	98.3 (120)	4.0 (125)	0.0 (128)
Miaozigou	— —	100.0 (17)	57.9 (19)	75.0 (20)	45.0 (20)	0.0 (24)	46.2 (13)	88.2 (18)	16.7 (18)	11.8 (17)
Presence/Grades	1,2/0-4	3-6/0-6	2-6/0-6	+/+,-	1-6/0-6	1-3/0-3	2-5/0-5	2-5/0-5	1-5/0-5	2-7/0-7

	Parastyle UM3	Enamel extension UM1	One-rooted UP1	Three-rooted UM2	Peg/reduced /congenital absence UM3	1>Lingual cusp LP2	Y-groove pattern LM2	Six-cusped LM1	Four-cusped LM2	Deflecting wrinkle LM1
	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)
Xiawanggang	3.2 (93)	51.7 (120)	68.5 (149)	77.4 (115)	16.2 (111)	77.8 (135)	5.8 (155)	14.8 (162)	27.6 (156)	60.3 (73)
Miaozigou	5.6 (18)	81.3 (16)	60.7 (28)	88.9 (18)	15.4 (13)	87.0 (23)	12.5 (16)	31.3 (16)	18.8 (16)	100.0 (13)
Presence/Grades	1-6/0-6	2-3/0-3	1/1-3	3/1-4	+/+,-	2-9/0-9	Y/Y,X,+	6/4-6	4/4-6	2-3/0-3

	Distal trigonid crest LM1	Protostylid LM1	Cusp 7 LM1	Tomes root LP1	Two-rooted LC	Three-rooted LM1	One-rooted LM2	Odontome Premolars	Uto-Aztecan UP1
	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (N)	% (n)
Xiawanggang	37.0 (92)	23.2 (181)	2.6 (155)	70.1 (137)	0.7 (152)	36.4 (187)	31.0 (184)	0.6 (831)	0.0 (140)
Miaozigou	50.0 (14)	53.3 (15)	11.8 (17)	76.0 (25)	3.7 (27)	47.6 (21)	27.8 (18)	1.6 (192)	0.0 (28)
Presence/Grades	+/+,-	1-7/0-7	1-5/0-5	1-5/0-5	2/1,2	3/1-3	1/1-3	+/+,- (teeth)	+/+,-

% is the frequency. (N) is the number of observable dentitions. Presence-absence breakpoints expressed as Presence (grades indicating presence)/Grades (range of grades for trait). Trait ranking criteria given in Turner et al. (1991).

22. Distal trigonid crest of lower first molars is common.
23. Protostylid of lower first molars are common but mainly in the weak grades (1-3).
24. Cusp 7 is not common.
25. 70.1% - 76.0% of lower first premolars have Tome's root
26. Two-rooted lower canines are rare.
27. Three-rooted lower first molars are very common with frequencies of 36.4% - 47.6%.
28. One-rooted lower second molars occur on 27.8% - 31.0% of the teeth.
29. Both upper and lower premolars with odontome are rare.

These findings indicate the two Neolithic collections are dentally quite similar to other Northeast Asian Sinodonts. Some differences are related to their geographic locations. The Xiawanggang site is closer to South China than Miaozigou, being situated on the Hanshui River, a branch of the Yangtze River. This may account for some of the southern dental patterns of this sample (low frequency of peg/reduced/congenital absence of UM3 and high frequency of four cusps of lower second molar). Similarly, the dental pattern in the more northern Miaozigou teeth make this group a typical Mongoloid population. Although no Neolithic human teeth from South China are available to describe, the current study suggests that the large dental differences between the peoples of South and North China go back to at least since Neolithic times.

OBSERVATIONS ON FOSSIL SAMPLES

In the meantime, the temporal changes and the course of evolution of certain morphological traits were studied by observing some fossil teeth found in China. Some traits were found to have existed as early as *Homo erectus*, and evolved until modern humans. Table 3 presents the occurrence and expression of shovel-shaped incisors and double-shoveled incisors on the fossil Chinese teeth.

TABLE 3. The occurrence of shovel and double-shovel upper incisor on the fossil teeth of some early humans in China.

Fossil teeth	Provenience	Date (BP)	Shoveling	Double shovel
Two central incisors	Yuanmou county, Yuannan South China	600,000 or 1.7 mya	present	trace
One central incisor	Zhoukoudian, Beijing	460,000-230,000	present	trace
One central incisor	Yunxian county, Hubei province	*Homo erectus*	present	trace
One central incisor	Dingcun, Shanxi province	210,000 - 160,000	present	marked
One central incisor	Tongzi, Guizhou province	181,000 - 115,000	present	absent
Liujiang Man skull	South China	670,000	?	absent

The main findings are as follows:

1. In addition to confirming the results of earlier investigators that shovel-shaped incisors exist on nearly all upper incisors of fossil teeth discovered in China, the present study reveals that double-shoveled incisors occur on the teeth of *Homo erectus* as early as 650,000 BP in the Yuanmou Man. Some temporal changes of double-shoveled incisors are indicated from the table. While the expressions of double-shoveling on all *Homo erectus* teeth are very weak, this trait is much more pronounced on the tooth of the early *Homo sapiens,* Dingcun Man. Liujiang Man does not possess this trait at all.
2. The upper central incisors of Yuanmou Man and the upper lateral incisors of Dincun Man all exhibit interruption grooves.
3. Enamel extensions were not present on any fossil teeth, suggesting this trait occurs only on the teeth of anatomically modern humans.
4. Both visual and X-ray inspection revealed two cases of congenitally absent third molars in the fossil specimens of China. In Lantian Man from Shanxi province (650,000 BP) both mandibular third molars are absent and in Liujiang Man the right upper third molar is congenitally absent.

5. Like shovel-shaped incisors, nearly all fossil lower molars found in China exhibit the deflecting wrinkle.
6. Three-rooted lower first molars were found on the right side of the mandible of the *Homo erectus* excavated from Zhoukoudian in 1959.
7. All the lower second molars of fossil teeth of China have five cusps.

SUMMARY

In sum, we have accumulated some basic dental morphological data for Neolithic human groups in north China. The preliminary impressions from the findings mentioned above also confirm south-north differences represented by Sundadonty and Sinodonty. Further analyses are necessary to explain some phenomenon revealed in this research, especially the temporal changes of certain dental morphological traits. Such an interpretation will demonstrate the course of the origin of modern Chinese. In the near future, some more dental and cranial specimens will be collected and the research will continue.

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The Anthropological Significance of Alveolalgia ("dry socket")

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The clinical syndrome known as "dry socket" (DS) is a frequently encountered complication of tooth extraction. The major symptom of this troublesome condition is a delayed-onset, excruciating pain following 2-4 days of minimal post-surgical discomfort (Archer, 1975, p.1106). Variously known as alveolalgia (inflammation of the alveolus), alveolar osteitis, and alveolitis, dry socket is characterized by 1) non-production or loss of socket blood clot, 2) improper granulation bed formation, and 3) localized jawbone inflammation (Schofield and Warren, 1981; Tomasetti et al., 1993). First documented a century ago, dry socket was initially described as "disintegration of a normal socket blood clot" (Crawford, 1896). X-rays can help to confirm the diagnosis of dry socket in two ways: a) by revealing another key defining indicator—"ghost imaging" of the socket, detectable up to three weeks following the extraction, and b) by ruling out jaw damage or sequestra (fragments of necrotic bone in the socket) as the source of the inflammation and pain (Abrahmsohn et al., 1993).

Reported incidence rates of dry socket range from 1-30% in various random and consecutive samples of dental removals, with an average of 3-5% for all extraction sites (Archer, 1975, p. 1628; Lilly et al., 1974). Dry socket incidence is highest in impacted mandibular tooth extractions, especially third molars where the rate of occurrence is 14-35% (Belinfante et al., 1973; Krekmanov, 1981). The latter author reported dry socket in 17.4% of a sample of 195 extraction patients with "partially erupted or totally impacted" mandibular third molars (Krekmanov, 1981).

While the exact cause of dry socket has been a debated issue among researcher since its initial discovery, "faulty healing" is usually cited as the principal precipitating factor. Amber (1973) pinpoints the pathogenesis to a disruption in the healing process between "Stage 1" (blood clot formation) and "Stage 2" (granulation tissue deposition) of normal extraction recovery. Lacking the necessary amount of granulation tissue, the bony walls of the empty socket are subsequently exposed to the outside air which may increase both the severity of the pain and the risk of local infection (Tomasetti et al., 1993).

TABLE 1. Dry Socket (DS) incidence in samples of dental extraction patients.

N	DS Frequency	Reference
696	3.5%	present study
6,403	2.2%	Krogh (1937)
1,274	2.6%	Turner (1982)
300	7.6%	Schatz et al. (1987)
400	5.0%	Belinfante et al. (1973)

A variety of possible contributing influences in the etiology and development of dry socket have been suggested in the literature on this controversial subject, ranging from bacterial infection to anesthetic side effects, fibrin breakdown, nutritional deficiency (e.g. iron, calcium, vitamin D, etc.), insufficient blood supply in socket or surrounding bone, decreased oxygen supply to socket due to cigarette smoking, and patient usage of drugs and medications such as contraceptive tablets during the recovery period (Nordenram and Graves, 1983; Schatz et al., 1987; Nitzan, 1983). The latter author has identified a specific bacterium (*treponemea denticola*) that may be responsible for the fibrinolysis that might lead to dry socket (Nitzan, 1983), and Krekmanov (1981, p. 183) noted that dry socket patients had "denser oral microbial populations than normal" immediately prior to their extraction operations. Other investigators have thus attempted to treat or prevent dry socket with antibiotics (e.g. Sorensen and Preisch, 1987; Swanson, 1989). The elevated frequency of dry socket incidence in sockets of impacted molars points also to surgical trauma accompanying more difficult extractions as another potentially contributing factor. The possibility of genetic predisposition to dry socket has not been discussed in the literature.

As part of a wider investigation of the possible role of dietary and supplemental nutrients in enhancing tooth extraction recovery (Halberstein, 1993; Halberstein and Abrahmsohn, 1988, 1995; Abrahmsohn et al., 1993), dry socket was analyzed in a sample 696 consecutive extraction patients who visited a dental/oral surgery clinic in Miami, FL. In addition to dry socket evaluations, extensive demographic and health history data were collected from each subject including gender, age, occupation, marital status, past diseases and injuries, previous medical care, recent or current medication, allergies, smoking/non-smoking status, etc. Dental X-rays were taken before each extraction and following one full week of recovery. A deliberate effort was made to standardize each extraction and the post-surgical experience of each subject in the sample. The post-operative dietary and supplemental nutrient intake of the patients was closely monitored and quantified through the analysis of patient's daily food/drink diaries.

In the present sample of 696 extraction patients, 24, or 3.5%, experienced a dry socket. As Table 1 indicates, this incidence rate is generally in line with other published reports regarding all extraction sites combined.

In Table 2 demographic and clinical characteristics of the present sample of dry socket patients (n=24) are compared to the total sample of extraction patient (N=696) as follows. The higher incidence of dry socket in females in the present study corroborates previous research (Krogh, 1937; Nordenram and Grave, 1983; Tomasetti et al., 1993), although the absence of gender differences has also been reported (Turner, 1982). Dry socket subjects appear to differ from the remainder of the extraction patients in the present sample in overall health status, as suggested by higher rates of previous diseases/medical care, allergies, and cigarette smoking. Pre-operative oral infection was not observed in any of the extraction patients eventually diagnosed with dry socket.

TABLE 2. *Dry socket (DS) patient compared to all extraction patients in the present study.*

Variable	DS sample (N=24)	Total sample (N=696)
Gender (m/f)	41.7%/58.3%	48.4%/51.6%
Age range	16-60	10-88
Under Physician's care in past five years	37.5%	25.6%
Allergies to food or drugs	29.2%	17.0%
Smoker/Non-smoker	16.7%/83.3%	12.2%/87.8%

Each of the presently described dry socket individuals was provided supplemental vitamin C (total intake = 4,000 mg/day), and the symptoms completely subsided within four days in every case. Vitamin C was also tested a possible dry socket preventive, as it was associated with reduced incidence compared to placebo recipients and other control patients who underwent tooth removal (Abrahmsohn et al., 1993; Halberstein and Abrahmsohn, 1988).

The present data indicate that a complex combination of factors, perhaps both genetic and environmental, may be involved in the etiology and development process of dry socket. Gender and health status appear to be related to dry socket incidence, although the present sample is relatively low. Our research also supports prior work which characterizes dry socket as a problem of inflammation more so than infection. Further research is required on additional dry socket patients in order to investigate these possible correlations. The present findings indicate that the possibility of genetic predisposition to dry socket also deserves additional attention.

According to McKusick (1992) in order to determine its genetic basis a biological trait should have a clear-cut, well-defined phenotype (measurable biological expression for gene action or genetic combinations); and pedigree data consistently demonstrating transmission within family and/or population lineages, such as concordance between twins, parent-offspring, or siblings irrespective of environmental variations. The present study provides evidence for the hypothesis that dry socket is a well-defined characteristic with consistent, nearly stereotypical symptomatology. On the other hand, pedigree analysis is proving exceedingly difficult due to the previously noted fact that dry socket has often been misdiagnosed or undiagnosed altogether (Amber, 1973; Nitzan, 1983). Thus, additional investigation is required to ascertain whether or not a pattern of dry socket incidence exists in family, kinship, or ethnic/racial groups.

This research underscores our repeated observation that vitamin C might be an effective therapeutic treatment for dry socket. It should also be re-tested as a potentially powerful preventive for dry socket in carefully administered "megadose" form. Our data suggest that the value of dietary and supplementary ascorbic acid in promoting rapid extraction recovery lies mainly in its well-documented role in scar tissue and granulation bed formation: vitamin C stimulates the body's manufacture of collagen, a non-dietary protein which is a major component of connective tissue.

Dry socket is an intriguing clinical phenomenon that should be reexamined by medical and dental anthropologists. In order to better understand the causes and potential treatment for dry socket it is necessary to clarify the array of assorted precipitating factors that may be involved. Increased research and information on the likelihood of various genetic, environmental, and biodemographic forces might ultimately lead to greater predictability, management, and control of this problematic condition.

ACKNOWLEDGMENTS

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TOOTH EVULSION AMONG THE ANCIENT ETRUSCANS: RECYCLING IN ANTIQUITY

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Tooth evulsion among the southern Etruscans, particularly around the area of Tarquinia, about 96 km north of Rome, has been suggested by indirect evidence. A long term program of study of Etruscan and other ancient dental appliances (Becker 1994a,b; in press) has revealed answers to many questions regarding the use of these items. The myth that the Poggio Gaiella appliance had orthodontic value (Corruccini and Pacciani, 1989) has been dispelled (Becker, Ms. A). The most notable finding of this research, based on direct, intensive study of nine examples and the skulls and teeth which they are now associated, has been that all of these appliances were made for women. In particular, the majority appear to have served purely ornamental functions, with the retention of loose teeth clearly a secondary and possibly only incidental result of their use. This fits with what we know about the public presentation of Etruscan women, who held relatively high status in their society. Both Greek and Roman women at that time were bound by cultural "avoidances" that severely limited their appearance in public.

Another important conclusion from this research is that the manufacture and use of these "appliances" was concentrated in southern Etruria (in central Italy between the Arno and Tiber rivers and between the Apennines Mountains and the Tyrrhenian Sea), perhaps limited to the region within the cultural sphere of Tarquinia. The decline and end of the use of the Etruscan type appliances appears to correlate with the Romanization of this region, which accelerated sharply in the first century BC. Since jewelry and other ornaments continued to be worn by women from all cultures in this region, the question to be asked concerns the loss of that quite specific aspect of Etruscan culture relating to women and dental ornamentation.

Placing this question in another context has opened up the possibility that a hitherto unrecognized cultural phenomenon is critical in this particular aspect of culture change. Since maxillary central incisors are not commonly lost to decay or to any other natural cause, one might wonder about the source of a demand for pontics that almost invariably include one or both maxillary central incisors.

My hypothesis is that tooth evulsion was practiced in Etruria and that the gold pontics were used as replacements and as ornaments. Furthermore, the false teeth may have been made from ivory or other durable materials. I suspect that in some cases the removed teeth were recycled as the material from which false teeth were cut and later riveted into the gold appliance.

The Etruscans and most Iron Age Italic peoples practiced cremation, thereby reducing sharply possible observations of the alveolar regions by which tooth evulsion might be identified. By the 7th century BC inhumation had become the rule throughout this region. Yet, preservation in large open tomb situations was poor (Becker, 1993).

Before 1987 few skeletal remains had been recovered from the area, let alone provided adequate curation. Recent excavation programs at Tarquinia have generated useful samples of skeletal material. A careful review of the fragmentary remains now in storage at Tarquinia may provide support for this thesis regarding tooth evulsion.

At this time I am interested in archaeological as well as ethnographic information regarding tooth evulsion. A. M. Haeussler has pointed out to me Suzuki's (1982) important paper. I would very much appreciate having interested colleagues send to me other references to tooth evulsion, from any context. The information contained within the literature will be useful in drawing possible cultural comparisons with what is now known regarding Etruscan culture.

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DENTAL ANTHROPOLOGY ASSOCIATION SECTION

A Tribute

Cornelis Adriaan Willem (KEES) Korenhof (1929-1994)

A dynamic personality and drive, characterized his accomplishments and leadership in research and teaching as well as his stimulating guidance of the Netherlands "Tandheelkundig Genootschap." His horizon extended far and wide reaching as in depth knowledge of clocks and their restoration. When our 250-year old Frisian clock suddenly refused to run and turn the moon, day, and date wheels, one phone call to Kees brought expert advice an unfailing remedy.

Coenraad F.A. Moorrees
4 Peacock Farm Road Lexington, MA 02173-6317 USA

Re: Malaria, Enamel Hypoplasia, Apes, Humans, and Grantsmanship

Dear Colleagues,

Are you aware of any skeletal/dental collections or studies in which we could test the hypothesis that malaria causes linear enamel hypoplasia (LEH) in humans? In our recent grant application to the Natural Sciences and Engineering Research Council of Canada, we asked for funding to examine whether regularly recurring LEH in fossil and contemporary apes (commonly observed) might be due to rainy seasonal malarial outbreaks. We were refused funding primarily because the reviewers wanted us to show first that malaria causes enamel hypoplasia in humans. We know of no such study or test sample; basically patients are treated clinically and to our knowledge, no one has bothered to examine the teeth of older children and adults who in young childhood (when the dental crowns are forming) had malaria. If you know of any collections of human remains that are certain or highly suspected to have had malaria, or are from malarial regions, please let us know at your earliest convenience. Thank you.

Yours sincerely

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Dental Anthropology at the University of Oregon: John R. Lukacs

Three University of Oregon participants gather after the final session at the Annual Meeting of the American Association of Physical Anthropologists in Oakland. From left to right they are John R. Lukacs, Bruce Floyd, and Misty Penton.

Misty Penton's (University of Oregon) masters paper is titled "Archaeology and Subsistence in the Lower Mississippi Valley: the Magnum Site." This work contains an evaluation of both skeletal and dental indicators of generalized stress in relation to subsistence. A revised version will ultimately be submitted for publication.

John R. Lukacs (University of Oregon) recently completed the final draft of an introductory article on dental anthropology for undergraduates, entitled "Dental deductions: how and why anthropologists study teeth." The work is 'in production' with Prentice- Hall - Custom One Source Publishing, and is a 'modular chapter' for inclusion in introductory anthropology 101 courses.

Brian Hemphill (Vanderbilt University) will attend the 13th Meeting of the European Association of South Asian Archaeologists, and present further information on Bactrian - Indus Valley bio-cultural contacts. Hemphill will also present a paper for **John Lukacs**, who will be unable to attend. Lukacs paper is entitled "The People of Lekhahia: A Bio-Cultural Portrait of Mesolithic Hunters and Foragers of North India."

Guy Tasa (University of Oregon), a PhD Candidate, completed data collection and is in the write-up phase of his doctoral dissertation, which consists of an analysis of skeletal and dental non-metric traits of native Americans of the Northwest and their meaning in relationship to geographic, linguistic, and archaeological factors. It is entitled, "Population Definition on the southern Northwest Coast."

Greg Nelson (University of Oregon) is in the data collection phase of his dissertation research on occlusal variation among castes and tribes of the Indian subcontinent.

Dr. J. N. Pal (University of Allahabad, Department of Ancient History, Culture, & Archaeology) spent the spring term at the University of Oregon. He has been working on use wear analysis of microliths derived from 'Mesolithic' contexts in north India (Ganges Plains sites). His visit and research is supported by a Wenner-Gren Foundation Grant for International Research Collaboration that was awarded to **John Lukacs** and Pal for the 1994-95 academic year. The project is entitled "Bioarchaeology of Mesolithic India" and includes a significant dental anthropology component. The results of this project will be presented at the upcoming International Congress for Pre- and Proto-Historic Sciences, to be held in Forli, Italy in September 1996.

Correction: The caption under the photograph on page 2 of the last newsletter should have read: John Lukacs (left) and Brian Hemphill (right) and Burial 127a foreground, at Cemetery R-37 Harappa Pakistan, one of numerous primary and secondary burials excavated during the 1987 excavation season at Harappa.

News from the University of the Witwatersrand: Phillip V. Tobias

During 1994 the private sector in South Africa set up the PAST Fund. Among other purposes, this fund is now enabling PARU (Paleo-Anthropology Research Unit) to continue its operations under the Directorship of Emeritus Professor **Phillip V. Tobias**. Excavations are underway by members of the unit and of the Anatomy Department at Sterkfontein, Makapansgat, Gladysvale, Drimolen, and Kromdraai, while we have wound up our six-year operation at Taung under **Jeff McKee**. Gladysvale and Drimolen are two new sites of early hominid remains and the field work is under Lee Berger and Andre Keyser, respectively. They are the first new South African sites to have yielded early hominid fossils for close on half a century. Close on 60 years after Sterkfontein yielded the first adult specimen of *Australopithecus africanus*, the site continues to be highly fruitful at the hands of Ron Clarke and Kathy Kuman. Especially interesting are the revelations of at least two different archaeological industries within Member 5 (Oldowan and Acheulian) and the prospect of hominid remains from the much older Member 2 of the Sterkfontein Formation.

Also within the Department, a Hominid Paleo-ecology Research Program has come into being under the direction of **Jeff McKee**. Under it, he is excavating at Makapansgat and **Kevin Kuykendall,** at the fossil site of Buffalo Cave not far from the Makapansgat Limeworks. Buffalo Cave has yielded a very interesting fauna, but has not yet proved to contain hominid remains. Another new endeavor in the Department is the Biological Anthropology Research Programme under Maciej Henneberg.

New finds and analyses at Gladysvale, Sterkfontein, and Makapansgat are leading to serious questioning and probably the total abandonment of the "savanna hypothesis." This exciting change of a paradigm seems to be supported by Tim White's new discoveries at Aramis Ethiopia.

Cordial relations have been established between the PARU Director, **Phillip V. Tobias,** and Wu Rukang and others from the IVPP in Beijing. Similar relations have been established between PARU and the paleo-anthropologists of Java, Indonesia, and visits have been exchanged, Tobias and Clarke to Java, and Teuku Jacob to Johannesburg.

A special symposium was held in Johannesburg late in 1993 on Southern African Contributions to Hominid Evolution and the proceedings have been published in a special issue of the *South African Journal of Science*. In February, 1994, ISMA (Institute for the Study of Man in Africa) held a further symposium on "Bones of Contention" at the Witwatersrand Medical School, Johannesburg.

Four graduate students successfully completed their Ph.D. theses and obtained their doctorates between November 1994 and April 1995. Lee Berger worked on the shoulder complex of early hominids, basing his study on new specimens from Sterkfontein. Cecil Taitz's project was on the bones and joints of the craniocervical region, especially in modern humans. Hoosen Vawda worked on the blood supply of the brain of modern humans (infants and adults) and of the morphological, ontogenetic, and phylogenetic viewpoints. Maryna Stein's Ph.D. was devoted to a re-analysis of protohistoric populations from Mapungubwe, North Transvaal.

During the past year a number of new research students have registered for higher degrees in the Department of Anatomy and Human Biology at the University of the Witwatersrand. They include Richard Delisle, who is devoting his Ph.D. thesis to an historical study of paleoanthropological concepts, especially in the second half of the twentieth century, and Charles Lockwood, who is working on the face and jaws of early hominids with special reference to unpublished specimens from Sterkfontein. Barbara Brauer is devoting her dissertation to the pelvi-femoral complex in ancient and modern hominids and other primates. Acacia von Mayer's M.Sc. project is devoted to a study of Plio-Pleistocene cercopithecoids. Colin Mentor is studying the elbow joint and fore-arm of the early African hominids with especial reference to posture and locomotion.

Member News

According to **Diane Hawkey**, the ASU Dental Anthropology System reference plaques may be obtained for $50.00 per set. Included with the 27 dental morphology reference plaques are descriptions of scoring procedures (Turner et al., 1991) and a sample data collection sheet. If you are interested in obtaining this set, please send a purchase order or check made payable to ANTHROPOLOGY-ARIZONA STATE UNIVERSITY, and mail it to:

Diane Hawkey (Research Specialist)
Department of Anthropology, Box 872402
Arizona State University
Tempe, AZ 85287-2402

If you have questions, or wish to order by telephone, e-mail or Fax, please contact Diane Hawkey at:

Tel: (602) 965-5016 Fax: (602) 965-7671
E-mail: dentanth@asuvm.inre.asu.edu.

M. Yaşar İşcan (Florida Atlantic University) is organizing two conferences. The first is "The 6th Annual Meeting of the International Association for Craniofacial Identification." Dates are November 8-11, 1995. The conference will be held at the Sheraton Inn, Boca Raton, Florida. The second conference, "The Third Conference on Identifyng Human Remains," will take place between January 3-6, 1996. Site of the conference is the Sheraton Inn, Boca Raton, Florida. Anyone interested may contact İşcan at the Department of Anthropology, Florida Atlantic University, Boca Raton, FL 33431, U.S.A. FAX: (407) 367-2744, Telephone (407) 367-3230, E-Mail: iscan@acc.fau.edu.

Beginning in the fall **Joseph Powell** (Texas A&M University) will be working as assistant professor in the Department of Anthropology and Curator of the Maxwell Museum of Anthropology at the University of New Mexico. Powell encourages Dental Anthropology Association members to contact him about using the Museum's extensive human skeletal collection in their research. This summer Powell will direct excavation of burials from an historic cemetery in Grafton, Illinois. Dr. Jane Buikstra will serve as the project P.I.

Note from the Secretary-Treasurer

SHARA BAILEY-SCHMIDT, DAA Secretary-Treasurer

One of my goals as the new secretary-treasurer for the Dental Anthropology Association is to make it easier for foreign members to pay their association dues. For a trial period we will be accepting payment by personal bank check in non-U.S. currency. I hope that this will eliminate the charges that foreign members have incurred in the past for paying in U.S. funds.

Foreign members can contact their financial institution to get the current U.S. exchange rate for the amount of their dues, and write the sum in local currency on the check. As an example, at the time of this writing ten U.S. dollars is equivalent to 15 English pounds. Therefore, a full member from England would write his/her check for 15 pounds. Our bank has told us that no charge would be made for the exchange.

We are considering setting up a VISA/ Mastercard account in the near future which would make it easier still for members to pay dues. I am interested in how many members would actually take advantage of this convenience. Please feel free contact me about this or other matters by mail (Department of Anthropology, Arizona State University, Box 872402, Tempe AZ 85287-2402, U.S.A.), Email at AZSBS@ASUACAD, or Internet at AZSBS@imap2.asu.edu.

Also, please note that membership blanks now include a space to write in the name of a foreign member you wish to sponsor. As always, we encourage all members to remit extra cash to help in sponsorship. It is not necessary to name the person you wish to sponsor as we continue to have many requests for sponsorship.

Minutes of the Tenth Annual Meeting Dental Anthropology Association, Oakland, California, March 30, 1995

I. PRESIDENTIAL ADDRESS (John R. Lukacs):

A. Opening Remarks: The meeting was opened at 7:00 p.m. with a greeting, and a comment that the Albert Dahlberg Memorial Symposium on Dental Morphology and Evolution was well-attended, and an nyoverall success. Lukacs, co-chair of the symposium with G. Richard Scott, thanked the participants and all those who attended.

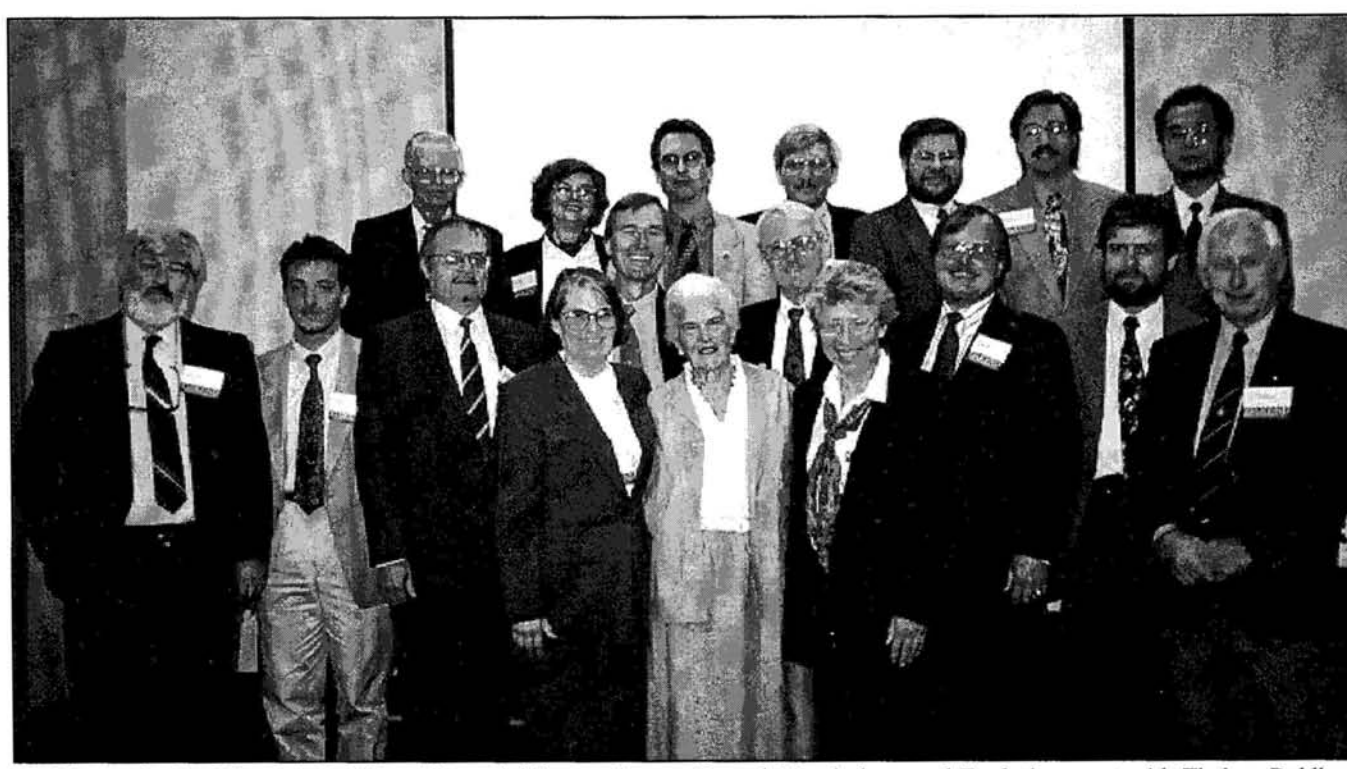
B. Agenda Outline: Old Business, Report of the Secretary-Treasurer, Newsletter Editor Report, and New Business.

II. OLD BUSINESS:

A. 1995 Elections: Nominations were received by Linda Winkler, Executive Board Member, during and following the 1994 meeting for two positions in the 1995 elections: 1) Shara Bailey-Schmidt (Arizona State University) and Debbie Guatelli-Steinberg (University of Oregon) for DAA secretary Treasurer (2 years), and 2) Brian Hemphill (Vanderbilt) for DAA executive Board Member (2 years).

Voting for the position of Secretary-Treasurer was conducted via secret ballot by the 29 members present. The final count tallied was 15 votes for Bailey-Schmidt, and 14 votes for Guatelli-Steinberg. Thus, Shara Bailey-Schmidt became the new Secretary-Treasurer, replacing outgoing Secretary-Treasurer, Joel D. Irish.

Voting for the position of Executive Board Member was conducted by open ballot. Brian Hemphill was unanimously elected as the new Executive Board Member, replacing outgoing Executive Board Member, Linda Winkler.



Participants in the Albert A. Dahlberg Memorial Symposium on Dental Morphology and Evolution meet with Thelma Dahlberg after the presentations. Sponsored by the Dental Anthropology Association, the symposium took place on March 30, 1995, in conjunction with the Annual Meeting of the American Association of Physical Anthropologists. Front row from left to right: Mehmet Yaşar İşcan, Andrea Cucina, Lassi Alvesalo, A.M. Haeussler, Thelma Dahlberg, Patricia Smith, John R. Lukacs, Simon W. Hillson, and Tasman Brown. Center row: Grant Townsend and John T. Mayhall. Top row: Donald H. Morris, Diane E. Hawkey, G. Richard Scott, Phillip L. Walker, Edward F. Harris, Joel D. Irish, and Yuji Mizoguchi.

III. REPORT OF THE SECRETARY-TREASURER (Joel D. Irish):

A. Status of the Treasury: As of March 30, 1995, the Association's net assets are $2,975.39, compared to $1,642.59 one year ago. Thanks go to those individuals who are making the effort to keep their membership current. The winter issue of DAN cost $491.36 for publication (24 pages) and $164.05 for foreign postage. The Arizona State University Anthropology Department provides bulk mailing for U.S. Members. In addition, the DAN Office has other expenses, including phone charges and office supplies, plus, the DAA paid $75.00 to the AAPA for the business meeting cash bar. The consensus of members in attendance at last years DAA meeting concerning the cash bar was positive, thus, it was continued this year.

B. Membership Status: As of March 30, 1995, the DAA has 330 members -- up 34 from one year ago. During the past year we acquired 54 new members, but were forced to drop 20 non-paying individuals. They did not respond to requests for payment nor did they request sponsorship. One hundred ninety-six (59%) of the 330 members are form the U.S., whereas 134 (41%) are from foreign countries. Currently, 137 full and student members (60 from the U.S. and 77 from foreign countries) are delinquent, which accounts for a $1,140.00 shortfall in the DAA Treasury. DAA members are urged to pay their dues, and are also encouraged to donate to the Foreign Membership Fund to help sponsor those foreign members who, because of currency restrictions or other reasons, cannot pay their own membership fees.

C. Acknowledgments: The outgoing Secretary-Treasurer thanked the members for the support over the past three years, and wished success to the incoming Secretary-Treasurer.

IV. REPORT OF THE NEWSLETTER EDITOR (A.M. Haeussler):

A. News from Members Requested: A request was made for the submission of news, current research, and formal articles form members in the U.S. and overseas to the Newsletter.

B. Dental Database: Ideas on assembling a world-wide accessible dental morphometric database was requested.

C. Acknowledgments: Thanks were given to Diane Hawkey, Joel Irish, Shara Bailey-Schmidt, Esther Morgan, and Korri Turner for their help in editing the Newsletter over the past year.

V. NEW BUSINESS:

A. 1995 AAPA Meeting Scheduling Conflicts: The time conflict between the DAA sponsored Albert Dahlberg Symposium and Dental Anthropology Poster Session, both scheduled for Thursday morning, was addressed. Linda Winkler, DAA Executive Board Member, mentioned there is a new AAPA Program Coordinator, which may have been a contributing factor to the conflict. Yaşar İşcan suggested that in the future the Executive Board Member should keep in closer contact with the AAPA Program Coordinator to prevent such problems. Brian Hemphill stated that only one poster was submitted following his call for a poster session at least years DAA meeting. Thus, the poster session turned into a contributed session -- which may have also led to the scheduling problems.

B. 1995 Dental Anthropology Symposium: John Lukacs suggested that ideas for a 1996 AAPA Meeting Dental Symposium be submitted to him for publication in the winter edition of the Dental Anthropology Newsletter. Yaşar İşcan noted that 1996 marks the 10-year anniversary of the Dental Anthropology Association; and perhaps a symposium marking this event should be organized. Lukacs mentioned that 1) the symposium could perhaps have a methodological orientation, and 2) suggestions for a chair of the session should be sent to him at the University of Oregon.

C. Division of the Secretary-Treasurer position?: Joel Irish suggested that the position of DAA Secretary-Treasurer be split into separate Secretary and Treasurer positions, so as to decrease the work load. A discussion between Irish and İşcan ensued as to how the duties would be split. No consensus was reached, and the issue may be discussed again at the 1996 DAA Meeting.

D. Voting for DAA Officers: A suggestion was also made to change the method of electing DAA Officers from voting at the annual meeting to voting through a ballot included with the Dental Anthropology

Newsletter. In this way, all DAA members would have the option of voting. John Mayhall stated that details of changing the procedure should be outlined in an upcoming issue of the Newsletter and be discussed again at the 1996 meeting. Those in attendance were in agreement.

E. DAA Membership Sponsors: A suggestion was made that 1) those members who donate to the DAA Foreign Membership Fund be acknowledged in the Newsletter (unless they wish to remain anonymous), and 2) the current DAA Membership Form be modified to provide space to write in the name of a foreign member who the individual wishes to sponsor. A general consensus of those members present was reached.

F. Repatriation of Human Remains in Israel: Philip Walker informally addressed the members, and encouraged everyone to write to the Culture Minister of Israel to help -put a stop to the repatriation of all human remains without study to mollify the concerns of a small religious minority. He noted that such repatriation could affect the Mt. Carmel remains.

A motion for adjournment of the Tenth Annual Dental Anthropology Association Business Meeting was asked for by John Lukacs. Yaşar İşcan made such a motion, and the motion was seconded at 7:55 p.m.

Minutes prepared by Joel D. Irish, Ph.D.
Outgoing DAA Secretary-Treasurer.
Submitted April 18, 1995.

Recent Publications

Dissertations

Crummett TL (1994) The Evolution of Shovel Shaping: Regional and Temporal Variation in Human Incisor Morphology. Ann Arbor: University of Michigan.

Markowitz DL (1995) Arikara Subadult Craniofacial Development: a Cross-Sectional Growth Study in Three Dimensions. Philadelphia: University of Pennsylvania.

Powell JF (1995) Dental Variation and Biological Affinity among Middle Holocene Human Populations in North America. College Station: Texas A&M University.

Thesis

Bailey-Schmidt S (1995) Population Distribution of the *Tuberculum Dentale* Complex and Anomalies of the Anterior Maxillary Teeth. Tempe: Arizona State University

Publications

Abreu Tabarini HS (1995) Dental attrition of Mayan Tzutujil children--a study based on longitudinal materials. Bulletin of Tokyo Medical and Dental University *42(1)*:31-50.

Akoren AC, and Karaagaclioglu L (1995) Comparison of the electromyographic activity of individuals with canine guidance and group function occlusion. Journal of Oral Rehabilitation *22(1)*:73-77.

al-Dashti AA, Williams SA, and Curzon ME (1995) Breast feeding, bottle feeding and dental caries in Kuwait, a country with low-fluoride levels in the water supply. Community Dental Health *12(1)*:42-47.

Alvarez JO (1995) Nutrition, tooth development, and dental caries. American Journal of Clinical Nutrition *61(2)*:410S-416S.

Andersen L, and Wenzel A (1995) Individual identification by means of conventional bitewing film and subtraction radiography. Forensic Science International *72(1)*:55-64.

Angulo M, Zinemanas E, Pivel L, Jorysz E, Casamayou R, and Krasse B (1995) Caries incidence, effect of preventive measures, and caries prediction in Uruguayan children. Acta Odontologica Scandinavica *53(1)*:1-6.

Bechtel GA, Shepherd MA, and Rogers PW (1995) Family, culture, and health practices among migrant farmworkers. Journal of Community Health Nursing *12(1)*:15-22.

Bowles WH, Wilkinson MR, Wagner MJ, and Woody RD (1995) Abrasive particles in tobacco products: a possible factor in dental attrition. Journal of the American Dental Association *126(3)*:327-331; quiz 348.

Bromage TG, Schrenk F, Zonneveld FW (1995) Paleoanthropology of the Malawi Rift - an early hominid mandible from the Chiwondo Beds, northern Malawi. Journal of Human Evolution *28(1)*: 71-108

Caliskan MK, Pehlivan Y, Sepetcioglu F, Turkun M, and Tuncer SS (1995) Root canal morphology of human permanent teeth in a Turkish population. Journal of Endodontics *21(4)*:200-204.

Clarke NG, and Hirsch RS (1995) Personal risk factors for generalized periodontitis. Journal of Clinical Periodontology *22(2)*:136-145.

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da Silva Filho OG, Montes LA, and Torelly LF (1995) Rapid maxillary expansion in the deciduous and mixed dentition evaluated through posteroanterior cephalometric analysis. American Journal of Orthodontics and Dentofacial Orthopedics *107(3)*:268-275.

DeCastro JMB, and Nicolas ME (1995) Posterior dental size reduction in hominids: The Atapuerca evidence. American Journal of Physical Anthropology *96*:335-356.

DeCastro JMB, and Perez J (1995) Enamel hypoplasia in the middle Pleistocene hominids from Atapuerca (Spain). American Journal of Physical Anthropology *96*:301-314.

dePaula S, Almeida MAD, and Lee PCF (1995) Prediction of mesiodistal diameter of unerupted lower canines and premolars using 45 degrees cephalometric radiography. American Journal of Orthodontics and Dentofacial Orthopedics *107(3)*:309-314.

Diekwisch TG, Berman BJ, Gentner S, and Slavkin HC (1995) Initial enamel crystals are not spatially associated with mineralized dentine. Cell and Tissue Research *279(1)*:149-167.

Fields SJ, Spiers M, Hershkovitz I, and Livshits G (1995) Reliability of reliability coefficients in the estimation of asymmetry. American Journal of Physical Anthropology *96(1)*:83-87.

Friedman MH (1995) Pterygoid muscle function in excursive jaw movements: a clinical report. Journal of Prosthetic Dentistry *73(4)*:329-332.

Fujita H (1995) Geographical and chronological differences in dental caries in the Neolithic Jomon period of Japan. Anthropological Science *103(1)*:23-37.

Greksa LP, Parraga IM, Clark CA (1995) The dietary adequacy of edentulous older adults. Journal of Prosthetic Dentistry *73(2)*:142-145.

Grossi SG, Genco RJ, Machtei EE, Ho AW, Koch G, Dunford R, Zambon JJ, and Hausmann E (1995) Assessment of risk for periodontal disease. 2. Risk indicators for alveolar bone loss. Journal of Periodontology *66(1)*:23-29.

Hattab FN, Yassin OM, and Rawashdeh MA (1995) Supernumerary teeth: report of 3 cases and review of the literature. Journal of Dentistry for Children *61(5-6)*:382-393.

Hershkovitz I, Speirs MS, Frayer D, Nadel D, Wishbaratz S, and Arensburg B (1995) Ohalo II H2: A 19,000-year-old skeleton from a water-logged site at the Sea of Galilee, Israel. American Journal of Physical Anthropology *96*:215-234.

Hiltunen K, Schmidtkaunisaho K, Nevalainen J, Narhi T, and Ainamo A (1995) Prevalence of signs of temporomandibular disorders among elderly inhabitants of Helsinki, Finland. Acta Odontologica Scandinavica *53(1)*:20-23.

Holbrook WP, Arnadottir IB, Takazoe I, Birkhed D, and Frostell G (1995) Longitudinal study of caries, cariogenic bacteria and diet in children just before and after starting school. European Journal of Oral Sciences *103*:42-45.

Kasai K, Richards LC, Townsend GC, Kanazawa E, and Iwasawa T (1995) Fourier analysis of dental arch morphology in South Australian twins. Anthropological Science *103(1)*:39-48.

Tsunehiko Hanihara ar the Annual Meeting of the American Association of Physical Anthropologists. Hanihara stands before his poster presentation "Craniofacial Affinities of Mariana Islanders and Circum-Pacific Peoples."

Kelley J (1995) Sexual dimorphism in canine shape among extant great apes. American Journal of Physical Anthropology *96*:365-389.

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Lee CF, and Proffit WR (1995) The daily rhythm of tooth eruption. American Journal of Orthodontics and Dentofacial Orthopedics *107(1)*:38-47.

Li YH, Navia JM, and Bian JY (1995) Prevalence and distribution of developmental enamel defects in primary dentition of Chinese children 3-5 years old. Community Dentistry and Oral Epidemiology *23(2)*:72-79.

McCabe M, Kinirons MJ (1995) Dental caries and dental registration status in nursery school children in Newry, Northern Ireland. Community Dentistry and Oral Epidemiology *23(2)*:69-71.

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Minneman MA, Cobb C, Soriano F, Burns S, and Schuchman L (1995) Relationships of personality traits and stress to gingival status or soft-tissue oral pathology: An exploratory study. Journal of Public Health Dentistry *55(1)*:22-27.

Nanda RS, and Ghosh J (1995) Longitudinal growth changes in the sagittal relationship of maxilla and mandible. American Journal of Orthodontics and Dentofacial Orthopedics *107(1)*:79-90.

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Pajari U, and Lanning M (1995) Developmental defects of teeth in survivors of childhood ALL are related to the therapy and age at diagnosis. Medical and Pediatric Oncology *24(5)*:310-314.

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Pitts NB, and Palmer JD (1995) The dental caries experience of 5-year-old children in Great Britain. Surveys coordinated by the British Association for the Study of Community Dentistry in 1993/94. Community Dental Health *12(1)*:52-58.

Plavcan JM, Vanschaik CP, and Kappeler PM (1995) Competition, coalitions and canine size in primates. Journal of Human Evolution *28(3)*:245-276.

Quade J, Cerling TE, Andrews P, and Alpagut B (1995) Paleodietary reconstruction of Miocene faunas from Pasalar, Turkey using stable carbon and oxygen isotopes of fossil tooth enamel. Journal of Human Evolution *28(4)*:373-384.

Quirynen M, and Bollen CM (1995) The influence of surface roughness and surface-free energy on supra- and subgingival plaque formation in man. A review of the literature. Journal of Clinical Periodontology *22(1)*:1-14.

Robb ND, Smith BG, and Geidrys-Leeper E (1995) The distribution of erosion in the dentitions of patients with eating disorders. British Dental Journal *178(5)*:171-175.

Rose KD (1995) Anterior dentition and relationships of the early Eocene omomyids *arapahovius-advena* and *teilhardina-demissa, sp nov*. Journal of Human Evolution *28(3)*:231-244.

Roth RH (1995) Occlusion and condylar position. American Journal of Orthodontics and Dentofacial Orthopedics *107(3)*:315-8.

Rothwell BR (1995) Bite marks in forensic dentistry: A review of legal, scientific issues. Journal of the American Dental Association *126(2)*:223-232.

Schwartz JH, Brauer J, and Gordonlarsen P (1995) Tigaran (Point Hope, Alaska) tooth drilling. American Journal of Physical Anthropology *97(1)*:77-82.

Seow WK (1995) Dental development in amelogenesis imperfecta: a controlled study. Pediatric Dentistry *17(1)*:26-30.

Silness J, Berge M, and Johannessen G (1995) Longitudinal study of incisal tooth wear in children and adolescents. European Journal of Oral Sciences *103(2 Part 1)*: 90-94.

ten Bosch JJ, and Coops JC (1995) Tooth color and reflectance as related to light scattering and enamel hardness. Journal of Dental Research *74(1)*:374-380.

Thomas FD, Kassab JY, and Jones BM (1995) Fluoridation in Anglesey 1993: a clinical study of dental caries in 5-year-old children who had experienced sub-optimal fluoridation. British Dental Journal *178(2)*:55-59.

Tripodakis AP, Smulow JB, Mehta NR, and Clark RE (1995) Clinical study of location and reproducibility of three mandibular positions in relation to body posture and muscle function. Journal of Prosthetic Dentistry *73(2)*:190-198.

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The deadline for materials for the next issue is September 15, 1995. The newsletter uses, as a guide, the format and citation style of the *Journal of the American Association of Physical Anthropologists.*

Materials for the newsletter are welcome by mail, email, and Fax to the numbers and address on the last page of this newsletter. Especially appreciated are manuscripts on diskette, DOS format, if possible. Photographs and illustrations are welcome and can be in any format or size. They will be returned, if the author requests.

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