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The Canine Teeth--- Normal Functional Relation of the Natural Teeth of Man (continued)

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THE DENTITION OF THE PRESENT CALIFORNIA INDIAN

In order to satisfy my conviction that primitive man would have exhibited an overbite of the canines and an interlocking position similar to the anthropoids, I set out in search of living California Indians who would be living in the same manner as their white neighbors. I was quite fortunate in my search to have the help of the Bureau of Indian Affairs at Sacramento. I was given information on the location of the one remaining organized group of Maidu, located 30 to 40 miles east of Sacramento and Colusa in the foothills of the Sierras and a short distance from Auburn in Placer County. With the assistance of Doctor Walter Banbrock of Auburn, arrangements were made for us to make a field trip examination of the young members of the group. We were assured full cooperation by their spokeswoman, Mrs. Violet Rey, and that if we found what we were looking for, individual members could be transported to the offices of Dr. Banbrock so that impressions could be taken for study casts.

The group was small, approximately 82 members. The plot of land given to them could not be called a reservation, a better term would be a refuge as it consisted of 42 acres of rocky soil unfit for tilling. However, a small plot had been cleared for cultivation, upon which they produced their own vegetables and berries. Cottages of the group were quite livable, having running water and electricity. An electric washing machine, operating constantly,

served as the community laundry. Their way of life today is not unlike their white neighbors. In order to give the reader a better perspective of their diet of today and that of their ancestors before the white man arrived on the scene, I would like to quote some excerpts from a letter I received from Mrs. Rey after our visit.

"Our group has been on this Rancheria since 1916. It was originally bought and set aside for homeless Indians by the United States Government. We have no chief now. About four years ago Antone Wiley, the last chief, died and no successor has been chosen. I am the main spokeswoman for the Auburn Indian Rancheria, the other two are Cleve Rey and Carl Moman. I am usually at home, while the men go away from home to work. Hence, I was chosen main spokeswoman so that I could attend to any business in their absence.

"We have no tribal council. If any business of importance comes up, a meeting is held, at which all adult members of the group, men and women, have their say. Then when the pros and cons are settled, I usually write or send word to the Indian Area Director or others concerned.

"In the preparation of our food we use the same utensils that our 'white' neighbors would. Pots, pans, silverware, glasses and chinaware. No native dishes of pottery or baskets are used. In fact, very few of us own baskets of any kind, the few that do keep them for show. We have the same menu as the 'whites', except maybe we

eat a heavier meal for breakfast, usually lots of fried foods. The meals are prepared from available fresh stocks as afforded, such as meats, vegetables, cereals and fruits. I believe that the diet is usually too starchy, potatoes, beans, macaroni, and lots of bread. Acorn soup is now a rare treat and made only on special occasions. If at anytime anyone is fortunate enough to have a great quantity of fish, some is dried and a part is canned. We do a lot of canning and jelly making (using pectin) because a lot of fruit is available.

"I do hope that some of this information is helpful to you. I am afraid that we have lost our native habits. For years we have mingled with the 'whites' and have accepted their ways as better if we are to survive in this day of progress. Our living depends on our being able to mingle and get along with our 'white' neighbors."

From the preceding statements by Mrs. Rey, we note that their way of life today is the same as that of the average 'white' of today. Such being the case, we would not expect to see the edge-to-edge bite of the incisors and canines and extreme attrition as seen in the primitive. Oral examinations revealed the overbite of the incisors and overbite and interlocking position of the canines. Due to ravages of caries, many members had premature extractions. Such being the case, the available supply of good specimens was limited. Be that as it may, sufficient material and data were available to demonstrate that transition from the edge-to-edge primitive relation to the overbite as seen in European man of today took place, as soon as they adopted the Western way of living. Some of the changes in the way of living would include the immediate change from a stone age to the metal; changes in methods of preserving foods for storage and future use, from the drying methods to canning, etc.; a change in methods of preparing foods for cooking; a change in cooking methods; a change in utensils as well as a change in eating habits. These changes have eliminated attrition, thus permitting the teeth to erupt into normal position in the alveoli and into normal functional relation with their opponents, and maintaining the vertical relation.

The early California Indian was omniv-

orous. Included in his diet were grains, fruits, berries, meat and vegetables. Information submitted to me by Mrs. Rey lists a great variety of each as follows: acorns, seeds of wild oats, wild rice and other grains. These were toasted for meals. Roots or young tender shoots of tule, wild potatoes, blue bells and chatterbox. For greens they ate fresh clover (much of this was dried for winter use), watercress, wild sweetpeas, (the tips or buds just before blooming) lambquarter, pigweed and California poppy. Fruits included a great variety of wild cherries, plums, crabapples, wild grape. Wild berries, such as the blackberry, were eaten fresh in season although a great part of the harvest was cooked and dried in cakes for winter use. Manzanita berries were used for drinks. For meat the menu consisted of wild rabbits, squirrels, birds and deer. Also worms and the larva of the yellow jackets, grasshoppers which were roasted, then ground and mixed with meal and made into a mush were a part of their diet. The Maidu was not a great fish eater. He also included a certain type of eel, but never snakes of any kind.

The foregoing information coincides quite well with that contained in the "Handbook of the Indians of California" by A. L. Kroeber. However, Kroeber (18) goes into greater detail in all the cultural phases affecting the life of the California Indian. His description of the methods used for grinding food by the use of stone or wood mortars and the metate (used extensively by the Indians of the southwest and found in use by some of the California Indians) would indicate that considerable amounts of abrasive substances were readily incorporated in the food. Leaching of acorn meal in sand pits would likewise incorporate abrasive matter with the meal. Heating the meal by placing it in tightly woven baskets, casting heated stones into it and stirring would also increase the abrasive content. Other factors contributing to the extensive attrition would no doubt include the hard toasted grains and the hard dried berry cakes. The coarseness of these foods would involve greater muscular effort or force to masticate them sufficiently for deglutition. A comparison of the progress of attrition in the California Indian with that shown by

the primitive European would lead one to believe that, at the same stage in evolution, the European must have enjoyed a similar omnivorous diet and method of preserving and preparing it for consumption.

In selecting cases for impressions and casts, I tried to stay within the same age span as those specimens found at the Miller mound near Colusa, California. All presented the overbite of the incisors and canines, the occlusal planes of the upper and lower molars and premolars presented the same curve of Spee as seen in the whites of today. None presented evidence of attrition.

The first case is that of a female, age six, and fully three-fourths Indian. Figure 41 is a posterior to anterior view of the lower teeth. The first permanent lower molars are fully erupted and in occlusion with the uppers. The permanent centrals are in position. There is no trace of attrition on the occlusal surfaces of the permanent molars or the deciduous molars. This is quite different from the abraded occlusal anatomy of the Nevada Indian child. Figure 42 shows the upper and lower casts articulated in centric position. Note the over-bite of the upper deciduous canine and its interlocking position, and also the relation of the first permanent molars with the mesio-buccal cusp of the upper articulating in the mesio-buccal groove of the lower first molar. In figures 43 and 44 the casts are articulated in eccentric position showing the balancing and working sides. On the working side, the canines and incisors are in contact, but—, the buccal cusps of the deciduous and permanent molars are not. Likewise, on the balancing side, the lingual cusps of the uppers do not make contact with the transverse ridges of lower buccal cusps.

Figure 45 is a view of the lower cast of a male Maidu, age twelve, from posterior to anterior, again showing complete absence of attrition of the molars and premolars. The occlusal plane again follows the normal curvature. In figure 46 the upper and lower casts are articulated in centric position. Here again we note the overbite of the upper canine and the intercusp relation of upper and lower premolars and molars. Figure 47 shows the same case in eccentric, viewing the working side. Here

again we see the canines and incisors in contact, but the premolars and molars again fail to show contact. Figure 48 of the same case in eccentric shows the balancing side. Again we note the absence of contact of the upper lingual cusps with the transverse ridges of the lower buccal cusps. This youngster also was three-fourth Indian.

Figure 49 is the posterior-anterior view

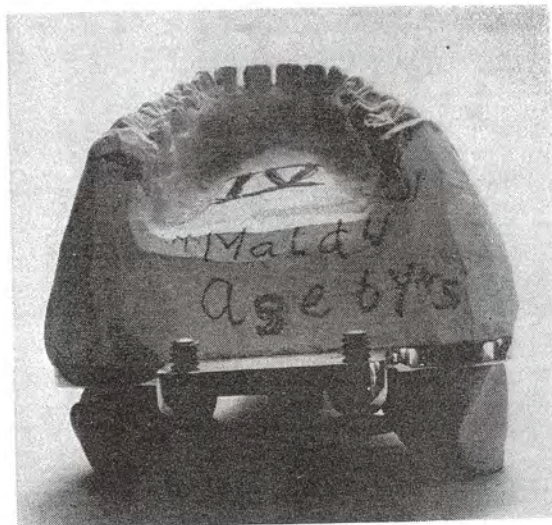


Figure 41. Lingual aspect of mandibular dentition of California Indian Child of today. (Maidu, Placer County, California).

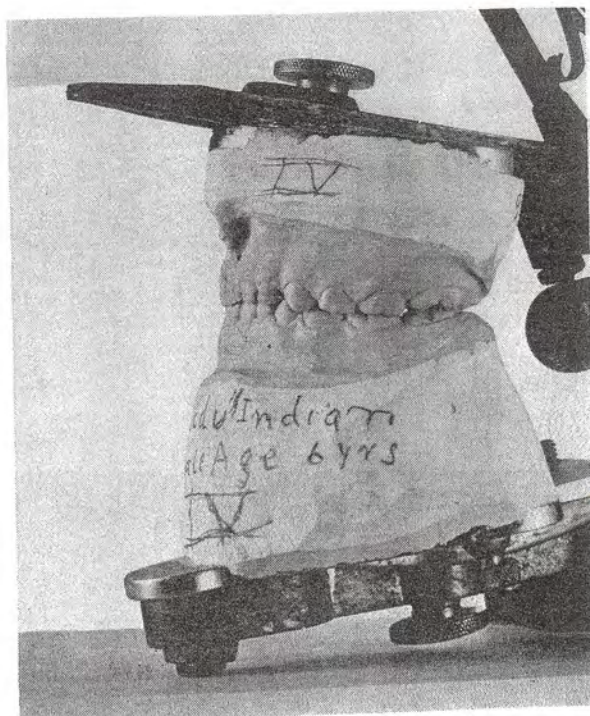


Figure 42. Upper and lower models of dentition of California Indian child of today. Mounted in centric occlusion. (Maidu, Placer County, California).

of the lower cast of a male Maidu, age thirteen. Again we see the absence of attrition and the normal occlusal curvature of the posteriors. In figure 50 we have the

upper and lower casts articulated in centric position. Again we see the same overbite of the upper canine and the intercuspal relation of the premolars and molars. Figure 51 shows casts in eccentric position on the working side. The canines and central and lateral incisors are in contact, but here again we note the absence of contact of the cusps of the upper and lower premolars and

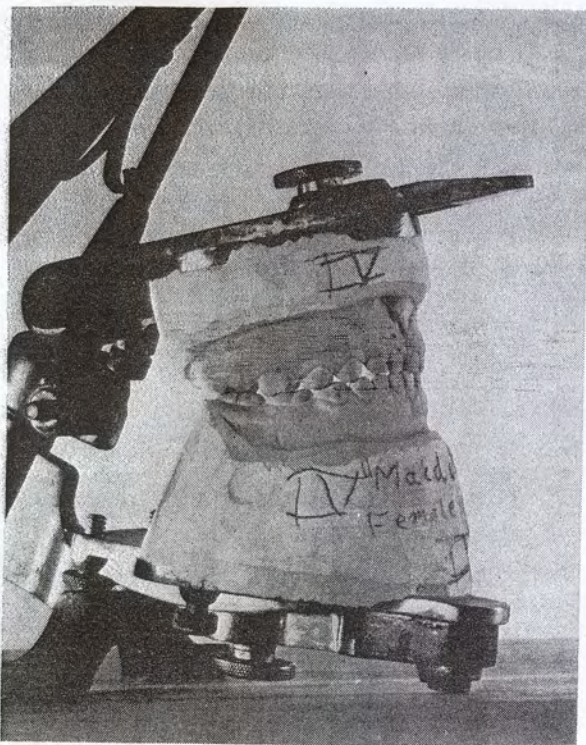


Figure 43. "Working" side of specimen illustrated in Figure 42. (Maidu, Placer County, California).

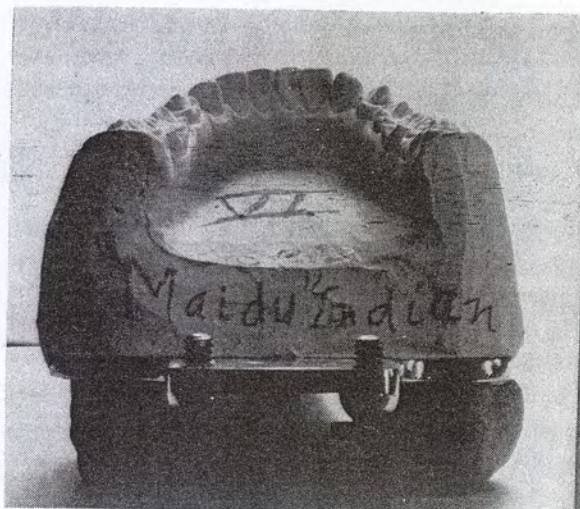


Figure 45. Lingual aspect of mandibular teeth of present day California Indian, male, age 12. (Maidu, Placer County, California).

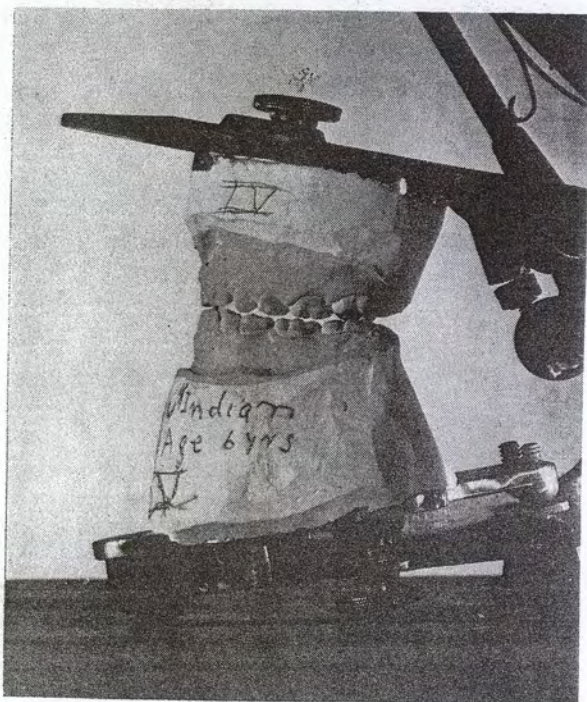


Figure 44. "Balancing" side of specimen illustrated in Figures 42 and 43. (Maidu, Placer County, California).

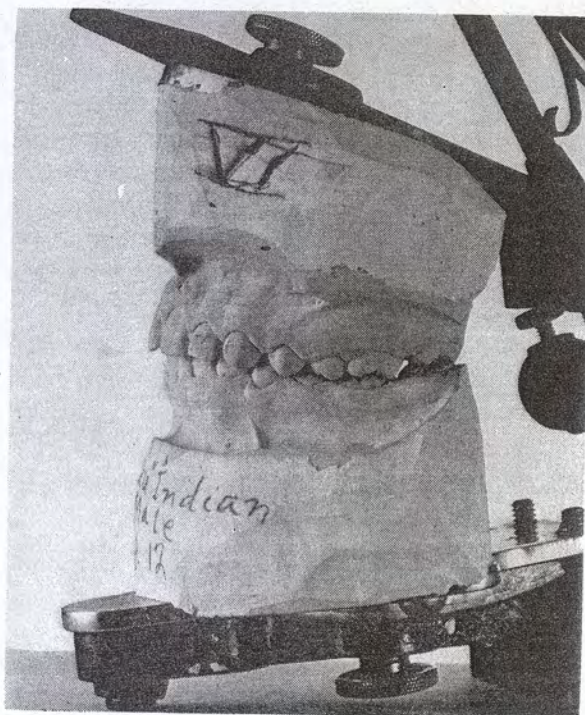


Figure 46. Upper and lower models of present day California Indian, male, age 12. Mounted in centric occlusion. Same case as illustrated in Figure 45. (Maidu, Placer County, California).

molars. Figure 52 shows the balancing side of the same case. None of the lingual cusps

of the uppers make contact with the transverse ridges or cusps of the lower premolars and molars.

The next series of photographs are those of an adult Maidu female, age 43 and fully three-quarters Indian. This woman

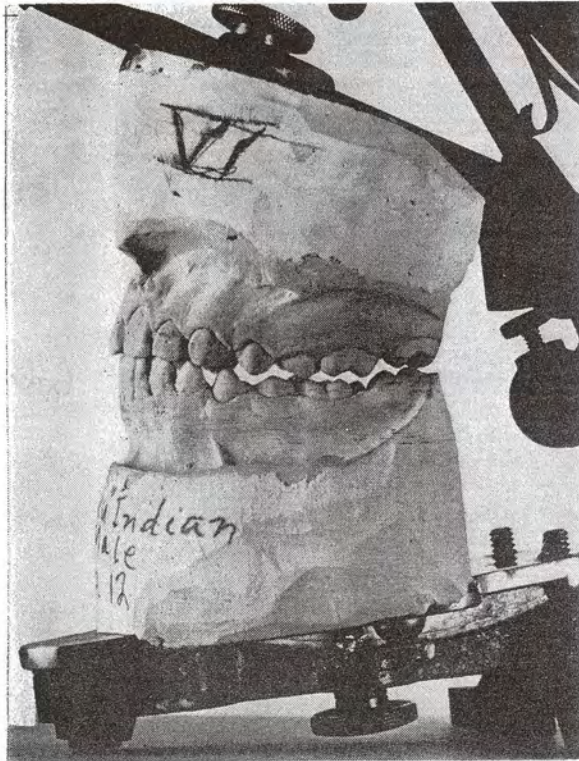


Figure 47. "Working" side of case illustrated in Figures 45 and 46. (Maidu, Placer County, California).

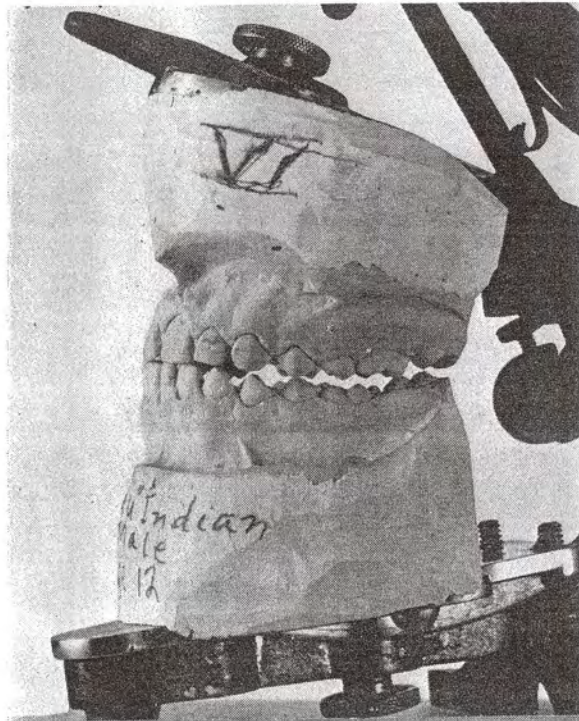


Figure 48. "Balancing" side of case illustrated in Figures 45, 46 and 47. (Maidu, Placer County, California).



Figure 49. Lingual aspect of mandibular dentition of present day California Indian, male, age 13. (Maidu, Placer County, California).

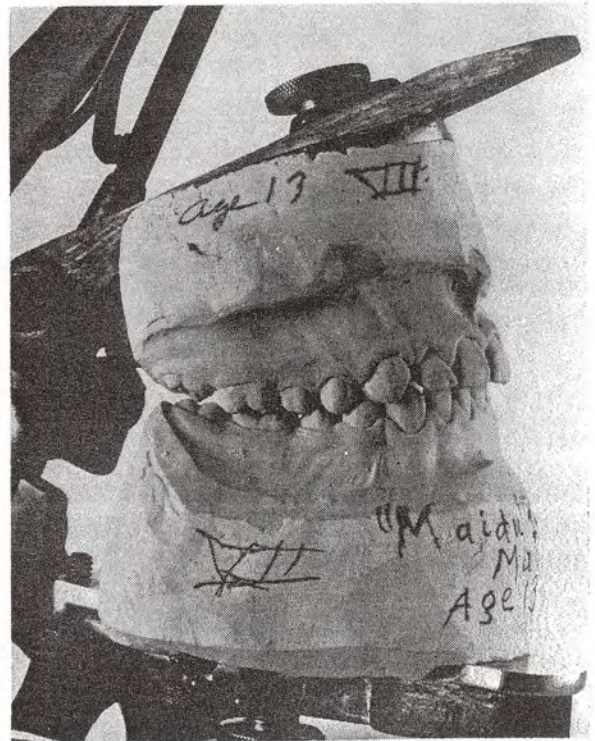


Figure 50. Upper and lower models of dentition of present day California Indian, mounted in centric occlusion. Male, age 13. Same specimen as illustrated in Figure 49. (Maidu, Placer County, California).

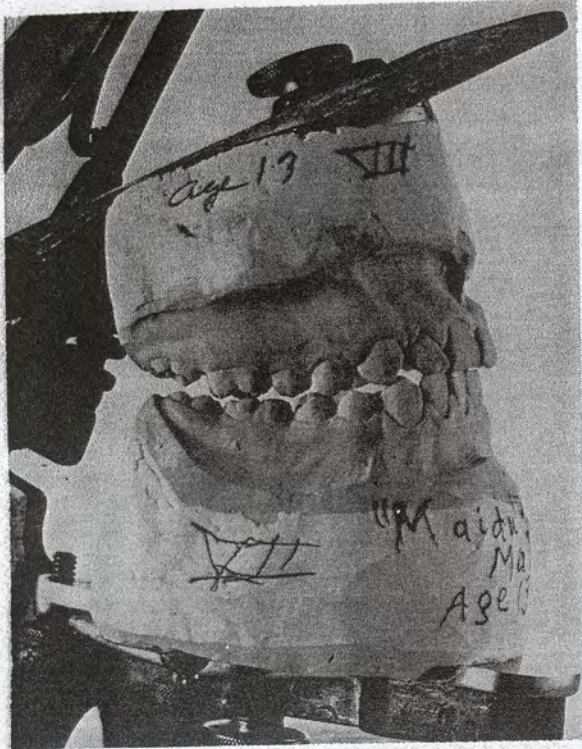


Figure 51. "Working" side of specimen illustrated in Figures 49 and 50. (Maidu, Placer County, California).

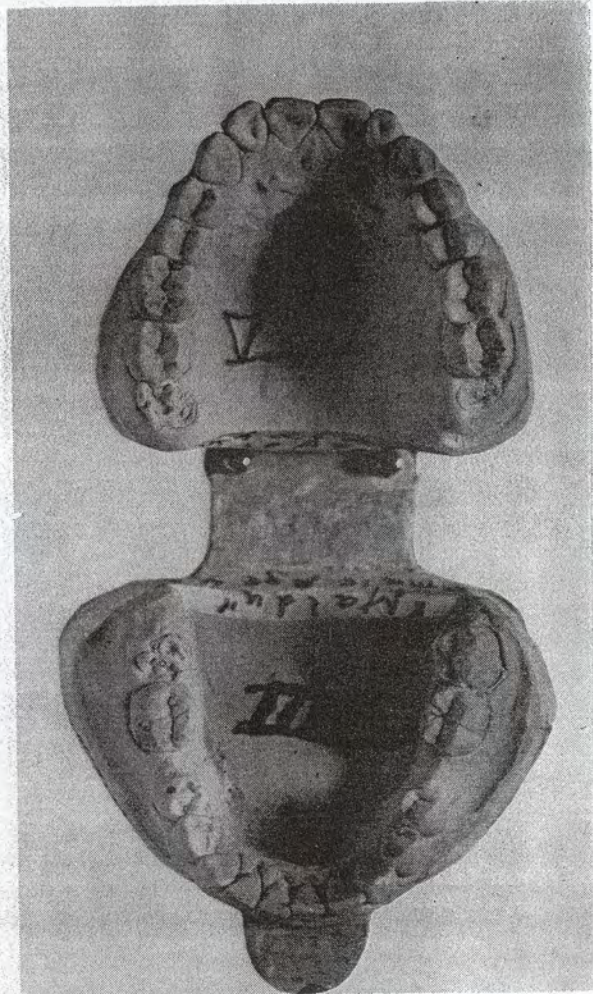


Figure 53. Occlusal aspect of upper and lower models of dentition of present day California Indian. Female, age 43. (Maidu, Placer County, California).



Figure 52. "Balancing" side of specimen illustrated in Figures 49, 50 and 51. (Maidu, Placer County, California).



Figure 54. Lingual aspect of mandibular dentition of specimen illustrated in Figure 53. Female, age 43. (Maidu, Placer County, California).

was one of the eldest of the women we examined and I would say the most fortunate of any we interviewed. Practically all the younger women were either full or partial denture cases. Caries and neglect have taken a great toll of their natural teeth. Figure 53 is a view of the occlusal surfaces of upper and lower casts. Here we see almost complete absence of attrition of the cusps and incisal edges. The lower first molars were extracted early in youth. Notice also the anatomy of the lingual surfaces of the upper incisors, especially the shovel effect of the centrals. The posterior-anterior view (figure 54) again reveals the typical inclination of the premolars and molars, and the curvature of the occlusal plane even though the first molars were extracted early in life. The lateral view of the upper and lower casts (figure 55) was taken at an angle to show the sloping position of the upper and lower incisors and also the fairly normal intercuspal relation of the premolars and molars. From this particular angle it is impossible to show the overbite and interlocking position of the upper canine. Figure 57 showing the working side, gives a better

view of the relation of the canines as well as showing the relation of the buccal cusps of the posteriors. Again we note the lack

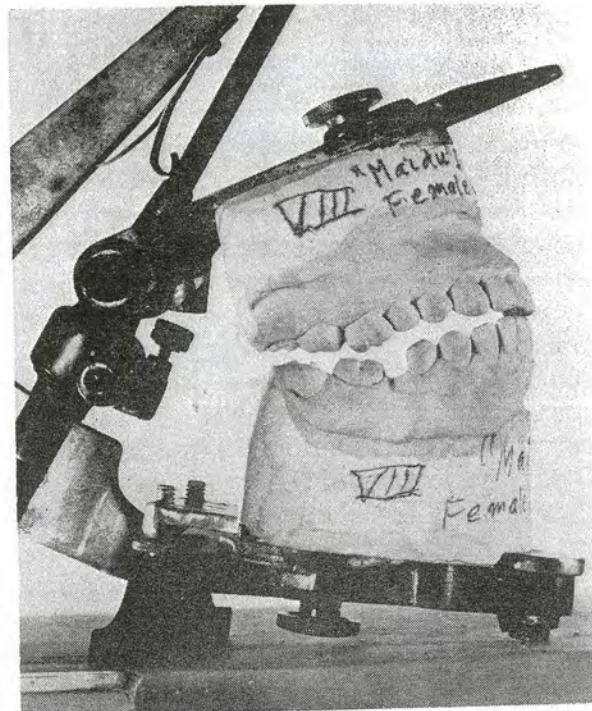


Figure 56. "Balancing" side of specimen illustrated in Figure 55. Female, age 43. (Maidu, Placer County, California).

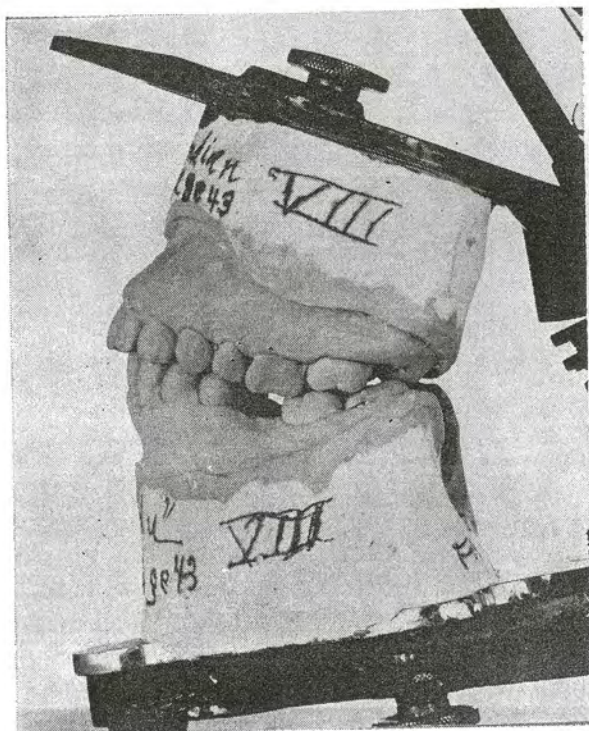


Figure 55. Upper and lower models of dentition of specimen illustrated in Figures 53 and 54 mounted in centric occlusion. Female, age 43. (Maidu, Placer County, California).

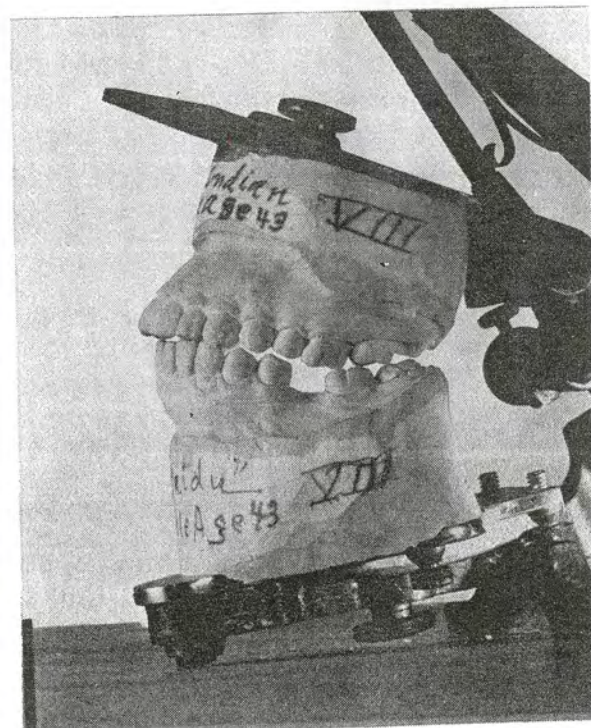


Figure 57. "Working" side of specimen illustrated in Figures 53 to 56. Female, age 43. (Maidu, Placer County, California).

of contact of the buccal cusps. The balancing side (figure 56) again fails to show contact of the lingual cusps of the uppers with the transverse ridges of the lowers.

The foregoing description of the relation of the natural teeth of the Maidu Indian of today as compared to that of the early Maidu, no doubt coincides with the comparable relationship of the Australian aboriginal as seen by Hector Jones. In both races we see evidence of an immediate change from the edge-to-edge bite and extreme gliding movements of the mandible as seen in primitive man which were due to excessive usage and extra ordinary function. The overbite of the incisors, and the interlocking position of the canines in man today is a reversion to the normal functional relation which man has always possessed. The length of the roots of the canines and their interlocking position are definitely for the purpose of limiting lateral excursions of the mandible. This rela-

tionship restores the desirable hinge movement of the mandible when the opposing teeth come into functional contact, and the normal shearing and cutting action of the cusps of the premolars and molars which is typical of the frugivorous-carnivorous species.

There is no doubt in my mind that previous writers on normal occlusion have been guided in their theories by what they saw in primitive specimens. As a result of this, we have been trying to reproduce in man an abnormal functional relationship of the opposing teeth, a relationship typical of the herbivor or ruminant in contrast to the normal relation and function of the frugivorous carnivorous primate. This theory appears to be contrary to all physical evidence available and submitted by the writer relating to the origin and evolution of the natural dentition of man.

(Continued in June Issue)

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ARTICLE ON X-RAYS NOW AVAILABLE FOR DISTRIBUTION TO PATIENTS

Reprints are now available of a popular article, "The Truth About the X-ray Scare," which was published in the Feb. 22 issue of *This Week Magazine*. A copy of the reprint is enclosed with this issue of the *A.D.A. News Letter*. The A.D.A. received permission to make the reprints from the United Newspapers Magazine Corporation and the author, Mr. A. E. Hotchner. The article is recommended by the A.D.A. Council on Dental Research for distribution to patients. Sample copies of the reprint may be obtained without charge upon request to the A.D.A. Bureau of Public information, 222 E. Superior St., Chicago 11, Ill. There will be a charge of \$5.00 per thousand for quantity orders.