A REVIEW OF PROBLEMS IN THE ANTIQUITY OF MAN IN CALIFORNIA.*

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Introductory

Most of us will agree that we know very little about the total sequence of prehistoric cultures in the State of California. This is not to deny that we now control a wealth of factual data and that our museums house many hundreds of thousands of tools and implements, but as of this moment no person has found it possible to synthesize the larger picture of California prehistory by stating that man first appeared in such and such a region at about such and such a date, and that the other portions of the State were occupied subsequently by populations deriving from this initial settlement or from later ones and possessing cultures which were characterized by certain imperishable artifact forms which have been recovered by excavation. The large size of the state, the evident variety of cultures present both in space and time, the large numbers of sites known to occur, and the fact that the workers must, almost without exception, devote their main efforts to earning a living and doing archaeology as a spare time pursuit, all combine to explain why the stage of synthesis has not yet been arrived at.[1]

The fascination surrounding the problem of ancient man is one which both the non-professional public and the archaeologist share. The archaeologist who is doing history and development naturally aims his program toward finding origins and first appearances. The older the remains he discovers, the more important they are to him in furnishing a time perspective into which to project the development of the cultural remains of more recent age. This is why the subject of the antiquity of man is important.

It is my own opinion, based upon information known to me, that within the confines of California there has not yet been discovered a single human skeleton or implement about which one can say, "This is without doubt truly ancient," and by the use of the word "ancient" I mean something in the order of 10 to 15,000 years. Now I hasten to add that I am aware of a very large number of individual finds, as well as sites producing an abundance of tool forms, which add up to quite respectable culture complexes, which have been described and to which have been attributed great antiquity. Some of these, such as the Calaveras skull about which such controversy raged in the last century, are rejected by all either as hoaxes, or as honest misinterpretations inspired by wishful thinking. Others of the finds, such as the Lake Mohave shoreline complex, possess a high degree of probability of antiquity. All that I am saying is that incontrovertible and dead-certain evidence of very ancient man in California is thus far lacking. [2]

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* Superior numbers refer to "Notes" section at end of paper.

What I propose to discuss, with my earlier remarks as background, is first, the indirect or inferential evidence which may be cited in support of the view that California shared in the earlier settlement of the New World by man, and second, to suggest some methods and techniques which may be employed to determine the actual or relative age of certain types of remains found under conditions suggesting extreme antiquity.

Significance of Data Based upon Living People

Since the Indian tribes occupying California at the time of discovery and earliest Caucasian settlement are to be looked upon as the descendants of the people who left the later prehistoric remains, we may logically turn to the cultural and racial studies of these peoples in order to see if these investigations can suggest anything as regards ultimate antiquity of man in the state. A number of inquiries by physical anthropologists concerning the racial history of the New World or of particular populations, contain reference to the belief that some of the physical types of Californian Indians are morphologically similar to types which are believed to be very early arrivals in the New World. Although it is often difficult to pin authors down to a single decisive statement to this effect, such is, nonetheless, the sense of their conclusions. In illustration of this, note the following statement of Dixon who says, "Although the evidence is still rather contradictory as to the relative priority of the broad-nosed and narrow-nosed long-headed types, it seems on the whole probable that the Proto-Australoid must have been one of the earliest, if not the earliest, type to spread into the North American continent. On the Pacific Coast in California and Lower California it appears to constitute the oldest stratum, characterizing as it does the crania from the lower layers of the shell-heaps, from the islands of Santa Catalina and San Clemente off the coast . . ." [3] Klimek, in his sweeping reconstruction of the development of California Indian culture,[4] includes a chapter on "racial composition" in which he identifies the Paleoamerican type in the San Joaquin cranial type, and in the living Yuki, Pomo, Costanoan, Salinan and Chumash peoples. He further identifies this type as the dominant one in the Hokan speaking tribes. [5] Although the Yuki are so distinctive in both physical type and language that Kroeber [6] was inclined to believe them the strongest contenders as California's original inhabitants, Klimek nevertheless assigns the Hokan peoples clear priority as original settlers. [7] T.D. Stewart [8] includes California as an area of early or ancient populations as evidenced by high-vaulted, long-headed and broad-nosed crania in the older archaeological deposits. Imbelloni [9] identifies Fuégids, believed by him to be the earliest type population wave to reach America, in the prehistoric population of Humboldt Bay, on the northwestern coast of California, and von Eickstedt [9a] identifies the Central Californian peoples as representatives of ancient marginals (gruppe margide). Earl Count in his several papers on Australoids in the New World [10] goes too deeply into anthropometric metaphysics for me to follow him, but he clearly envisages the presence of ancient and primitive Australoids in California, and for whatever it means he has selected as one of his type examples a skull which comes from a site which recent Carbon-14 dates indicate is well over 4000 years old. I shall close my summary by citing the recently published view of Birdsell that the living Pomo, Yuki and Cahuilla, among all American Indians, represent foci of Amurian traits. The implication is strong that these people may be recognizable survivors of a very ancient archaic Caucasoid migration to the New

World from northeastern Asia.[11] Enough opinions have been cited, I believe, to show that a number of students who profess to polyracialist theories of American Indian origins, have seen in California Indians archaic phenotypic traits. The upshot of all this, for my purposes, is to suggest that with all the smoke there is some fire, and that the suspicion may be entertained that California was settled early in the populating of the New World.

From the evidence of language, different students have concluded that the great linguistic diversity of California Indian tongues is also indicative of antiquity.[12] Kroeber and Klimek agree that Hokan is almost certainly the most ancient tongue surviving today in the state,[13] and an opinion by a reputable linguist[14] has been printed to the effect that the most ancient North American language stock is that superfamily called by Sapir[15] Hokan-Siouan. Yuki speech, considered as unique, separate, and ancient by Kroeber, is classed as of independent rank in Sapir's Hokan-Siouan superfamily.[16] Intriguing as these hints of antiquity from studies of language may be, I fear that they are rather shaky ones to build a concrete hypothesis upon, and they are best left for what they are -- judgments not susceptible to proof, and at most offering the possibility that California Indians retain, in the person of the Hokan speaking tribes ranging from the Chimariko and Karok in the north to the Yuman peoples in the south, one of the most ancient surviving speech forms in North America.

Other aspects of California Indian culture such as religion and material forms which, on the whole, are of a simple and archaic stamp, have led many authors to suggest that there survives in large parts of California an earlier culture type which has its roots in the ancient substratum of New World culture.[17] Such analysis, like those of language and existing racial types, cannot give us absolute answers, but it does not deny, and even affirms insofar as the limitations of the method go, that the California Indians have deep historical roots in the North American culture growth.

My review of indirect evidences is now at an end. I have considered it worth doing primarily because it has exhumed, if nothing more, the much neglected conclusions of experts on race, language and culture in regard to the antiquity of man in California. The historically minded students in these fields are generally agreed on the probability that some of the earliest representatives of the modern American Indians resided in California, and that these early population elements can be seen in some of the surviving California Indians.

Specialized Techniques for Determination of Antiquity

The same problem which faces the ethnologist or linguist also confronts the archaeologist when he attempts to find ultimate origins by working back down the time scale from the present, for he soon comes to the point where his continuous sequence is interrupted by lack of information. True, he may have evidence which he feels certain antedates the earliest culture phase of his sequential series, but in order to fit this older cultural material in its proper position he must have some idea of the duration of the time gap between the last known time point and the material which hangs suspended in the pre-dated or undated past. Dating of ancient cultural materials is always difficult. It is this matter of dating of which I want to speak in the second part of my paper.

Dating of ancient finds can only rarely be made through application of the Carbon-14 method. Thus far the earliest announced California radiocarbon date is for one Early Central California Horizon site 4052 ± 160 years old. I do not entertain very high hopes that the radiocarbon method will solve many of our problems of long-range California chronology. The chief limitation of the Carbon-14 method lies in the materials which may be used for analysis. In older occupation sites charcoal has been reduced to such small pieces that it is not possible, with present techniques, to recover the 20 grams needed for a date determination. Other finds may consist simply of a single isolated skeleton, or of a few stone tools exposed in an alluvial cutbank, or lying on an ancient beach surface, and for these we cannot expect to secure associated organic materials for radiocarbon analysis. These ancient sites which do yield organic materials suitable for Carbon-14 dating will be of the utmost significance in affording very old and precise dates.

Ancient finds are often made accidentally and the positional and stratigraphic record is often disturbed. All things lose, in the long run, the race with time. Geological processes such as erosion or deposition which give us a chronological sequence of events often also destroy or obscure some requisite part of the record for establishing a definite chronological interpretation. Generally speaking, the completeness of the stratigraphic or positional record of an archaeological find is inversely correlated with its antiquity; the older the remains are, the more difficult it is to reconstruct the history of local events which have occurred since the remains were deposited.

Application of the special knowledge of geologists and climatologists to determine the relative antiquity of cultural or skeletal materials found in certain situations has been made in California. The work by Ernst Antevs in the Southern California desert lake basins, by T. Clements of the Los Angeles Man site stratigraphy, and by Bailey Willis at the site of the Stanford skull find, stand as examples of the value of this approach. There are other problems still awaiting attention, among which is the large one of the progressive rise of sea level and its bearing upon the age of certain California coastal sites.[18]

Paleontologists or paleozoologists can contribute to a solution of some archaeological problems. They can identify the animals found in association with human skeletal or cultural remains as those of still living or extinct types, but neither they nor the physical anthropologist, through their virtuosity in taxonomy, can tell the archaeologist whether the human and animal remains were deposited at the same time. An old method, newly revived and now being applied both in England and the United States, for determining the relative antiquity of fossil human and fossil animal bones found in the same geological stratum may be invoked in some cases. The method depends upon the gradual uptake of fluorine in bones. Bones long buried and subjected to ground water influences will show a higher F level than bones inhumed recently. S.F. Cook and I have been applying the fluorine dating method to several putatively ancient human remains found in association with bones of extinct animals to: Tepexpan and Melbourne finds; some Sierra Nevada cave skeletons associated with extinct sloth and horse; the Tranquillity site human remains which their discoverer, Gordon W. Hewes, believes were possibly contemporaneous with the bones of camel, horse and bison; [19] and the human skeletal remains ("Los Angeles Man") found in the same geological stratum as the teeth of the Imperial elephant (Archidiskodon). We have prepared our

results for publication, [20] and they show that while the Sierran animal bones are decidedly more ancient than the human cave remains, both the Tranquillity and Los Angeles human remains appear to be contemporaneous with the bones of the extinct animals found in immediate proximity. The fluorine method of relative dating is still too uncertain to establish a case for man's presence in California in Late Pleistocene times, [21] when the now extinct fauna was still living. The case for the antiquity of the Los Angeles skeleton is the better, for reasons which I will not detail here. The Tranquillity instance is made questionable by the apparent association of artifact types which seem to belong to the Middle Central California culture horizon. If these artifacts are properly identified by me as to culture horizon, they are too late in time to be associated with Upper Pleistocene mammals (unless of course my Central California sequence is in error). There remains also the possibility that these cultural remains were associated by chance with the human bones. Further work must be done at the site. The most interesting aspect of our experiments is, I believe, that chemical determinations seem to support certain claims of actual contemporaneity of man with extinct mammals in California.

One point worth emphasizing is that the geologist who reconstructs the local depositional or geomorphological history of a site, the paleobotanist, paleoconchologist or paleozoologist who applies his specialized techniques of interpretation and identification, or the physicist who runs a carbon sample through the Geiger counter to derive a date -- each and all of these are only assisting the archaeologist. For the ultimate decision on antiquity must be judged by the general fit of the form and quality of the cultural or morphological data, a judgment which the anthropologist alone, among these, is qualified to make. I am not denying that we should actively seek the assistance of specialists in these outside fields, but merely that their techniques are not so infallible that we must accept their conclusions when they run counter to the general culture-historical picture of the archaeologist, provided his data are sufficiently full to afford the major outlines of the historic development. Let me illustrate this point by referring to the radiocarbon date of 4283 ± 250 years ago derived from charcoal from a hearth at the site of the type find of the Folsom culture at Folsom, New Mexico. The date was, at first glance, probably incorrect for several reasons. The excavation had been done carefully, and no doubt existed as to the actuality of the association of the fluted projectile points with the bones of an extinct species of Bison. Since other controlled excavations, especially that by F.H.H. Roberts at the Lindenmeier Site, verified the association, and none of these instances gave any indication of dating under 5000 years ago, the archaeologist could with justification view the Folsom site radiocarbon date as probably in error. As it later turned out, the date did not refer to the Bison bone pit with fluted points, but to a nearby, and quite separate spot which was probably of later date.

Let me call your attention, in further illustration, to G. Carter's recent proposal that a single grinding stone (mano), some hearths and flint flakes from the La Jolla terrace exposures indicate the presence of man in California at least 40,000 and probably 100,000 years ago.[22] It is essential to note the fact that his geological reconstruction has not been verified, and his time allotments for the several stages of events seem rather liberal and are admittedly based on pure guesswork. Carter's proposal does not now seem acceptable because it claims man's presence on the basis of doubtful evidence in the New World at a time much earlier than all other information

at hand seems to indicate. True there must always be a first discovery, and perhaps Carter is correct in being the first to recognize third interglacial New World man, but any claim of such significance will have to be backed up with more evidence.[22a] A primary necessity is to have qualified geologists check Carter's reconstruction of the sequence of events which he believes is represented at the locality. The La Jolla mano is undistinctive and similar to other pieces found to the north and south along the California coast from horizons known to be of more recent date than that which he claims for La Jolla man. One critical test may be the testimony of the charcoal from the La Jolla hearths by the radiocarbon dating method.

One means of determining the antiquity of California sites may be through cultural comparisons with sites outside California which have been dated by geological or radiocarbon means. To cite an example, there are beads of Olivella shell from Leonard Rockshelter in west central Nevada which date about 7,000 years old.[23] Since these marine shells must have come from the Central California coast, we may therefore take this as indicating occupation of Middle California by 5,000 B.C. We have not yet found, so far as we can tell, any actual evidence of man's presence in Central California of this order of antiquity, but we may confidently look forward to the day when that evidence will appear.

Positive Evidences for Antiquity

It is only fair, after having taken the liberty of indulging in critical remarks, to state as positively as seems warranted by the evidence, my own estimation of our present state of knowledge and understanding of the matter of the antiquity of man in California. Speaking most generally, I believe the present status of information is that it is too deficient both in quantity and quality, to enable us to do more than construct a series of working hypotheses which may be tested, either to be verified or rejected, by future field investigation. It is my impression that the coastal area of northwestern California was settled relatively recently by man. The sites now known demonstrate only a type of culture patently ancestral to the modern Yurok and Wiyot configuration. Earlier culture phases may be present and thus far unrecognized or undiscovered, but the rain forest is difficult of access, and I should guess was settled after more attractive regions had been occupied. Central California, by which I mean the Interior Valley exclusive of the higher Sierran elevations, but including the coastal strips north and south of San Francisco Bay, was probably settled at a remote time. We may, as detailed earlier, look for occupation here as early as 5,000 B.C. or toward the end of the Anathermal Age.* The Tranquillity site in Fresno County may prove to be yet older, perhaps early Anathermal or pre-Anathermal, judging from the possibility of contemporaneity of the human remains with the bones of Bison, Equus, and Camelops.[24] Certain spots on the coast, notably about San Francisco and Monterey Bay, may have shared in settlement this early, though of this there is not yet any evidence.[25] The whole eastern trans-Sierran border of the state from the Oregon line to Mono Lake and including the Modoc Plateau, and from Mono Lake south and west to the

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*For date of Anathermal period, see chart in Antevs' paper (Ed.).

Pacific, an area which is open to penetration from the Basin-and-Range province, was probably settled very early, perhaps in the Late Pleistocene period. I should say that 10,000 or 11,000 years ago would be a reasonable age estimate for this occupation. It is easier to find old archaeological remains by surface reconnaisance in the arid portions of interior Southern California than in most other portions of the state because of less topographic alteration and obscuring of evidence by vegetation. In addition the really habitable areas of the past, as well as present, are somewhat limited, so that directed and intensive search for remains can be carried out. In the Sacramento-San Joaquin delta region, by contrast, man-made artifacts have been recovered from the alluvial sediments up to 70 feet below the present surface. The finding of really ancient evidences, if they are present, will come here by accident, and not by conscious, directed search. At key points in the Great Basin area, specifically in southcentral Oregon caves, Leonard Rockshelter in west central Nevada, and Gypsum Cave in southern Nevada, we have reliable radiocarbon dates -- i.e., taken from good materials in clear association -- indicating man's presence at least 10,000 years ago. Recent work in the Lovelock region of Nevada has yielded indications of a stone tool complex which resembles the Lake Mohave-Playa complex of Southern California. One might propose that the whole region from the Columbia River southward into the Peninsula of Lower California, and from the Pacific to the Rockies forms a grand unit, where local sequences have evolved, and within which cultural connections between neighboring subareas did operate and will probably be definable. [26]

There are two projects in Southern California which I would consider to be of primary value. First would be a careful and critical summary of all known information pertaining to ancient man in this region, with an attempt to correlate the various workers' interpretations and the variably defined and designated culture horizons, together with some comparison of the Southern California data with those from Oregon, Nevada, and Arizona. [27] Second would be the search for an excavation of habitation caves in desert Southern California in order that the climatic and human occupation sequences might be illuminated by vertical stratigraphy rather than by inferences derived from the occurrence of stone artifacts on surface sites. [28]

Kroeber in his general summary of the archaeology of California published in the Putnam Anniversary Volume in 1909, made a statement which I quote here for the purpose of emphasis and because, over 40 years after its writing, it is still to the point. He says:

> "The single problem of greatest importance [in the study of California archaeology] is undoubtedly that concerning the origin and early antiquity of man. The final answer to this is likely to bear on the question of the origin of man in general and to be of more than regional or geographical interest. The greatest opportunity for the discovery of evidence on this question seems to lie in the exploration of caves. The [auriferous] gravel deposits so far have yielded negative results, and the shellmounds while their antiquity is great from a historical point of view, are almost certainly too recent to throw much light on the first appearance of man in the region. If man existed in California in Quaternary times, the chances are greater that he inhabited the country in late epochs of this period than in earlier ones. While

> the search in caves dating to the early or middle Quaternary accordingly promises more fundamental and more sensational results, if positive results are obtained, the question, if not of the origin, at least of the geological antiquity of man in western America, is likely to be sooner answered by investigation of caves that are somewhat more recent." [29]

It is my impression that we are making fair progress on the problem of the antiquity of man in California. Each year sees more discoveries made. The public is becoming increasingly conscious of the importance of archaeological materials which turn up in earth moving projects, and it will not be long before one or several significantly ancient evidences of man are discovered, reported to, and studied by qualified workers. These discoveries which I am forecasting, will probably be made along the coast or in the Coast and Peninsular Range valleys, for these areas have for long been most favored for primitive occupation, and are at present the chief scene of earth moving activities as a result of residential, industrial, and agricultural expansion. Buried sites and caves can tell us more than open surface sites, and it is for these that we should keep looking. With the growing systematization of efforts of archaeologists through the various local organizations and societies, coupled with new techniques of interpretation, and a public which is gradually becoming concerned with prehistory, we may confidently hope for accelerating progress in all aspects of California archaeology.

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NOTES

[1] For a bibliography of ancient man in California, see Heizer (1948); for a general bibliography of California archeology, see Heizer (1949a).

[2] A similar situation obtains in the study of the antiquity of man in South America. For a precise and carefully worded statement to this effect, see McCown, 1950.

[3] Dixon, 1923, p. 401.

[4] Klimek, 1935.

[5] Ibid., pp. 31, 33.

[6] Kroeber, 1925, p. 159.

[7] Op. cit., pp. 61, 63, 65; see also Kroeber 1923c, pp. 130, 142.

[8] 1940, p. 41.

[9] 1943.

[9a] 1934, pp. 709-711.

[10] 1938, 1939, 1941. See criticism in Birdsell, 1951.

[11] Birdsell, 1951, passim, p. 63.

[12] Dixon, 1923, p. 399.

[13] Kroeber, 1923, p. 130; Klimek, 1935, p. 63, Table 9.

[14] Voegelin, 1945.

[15] 1925, 1929.

[16] Sapir, 1925. pp. 525-526.

[17] For example, Kroeber, 1917, p. 392; 1923a, p. 16; 1923b, p. 388; Klimek, 1935, p. 68; Fisher, 1935, p. 67; Dixon, 1913, p. 558; Cooper, 1941, pp. 9-13.

[18] This matter has recently been touched upon by R. Greengo, 1951.

[19] Hewes, 1943, 1946.

[20] Heizer and Cook, n.d.

[21] In this paper I am defining "Pleistocene" in the sense that Antevs (1948) employs the term. The Pleistocene -- post Pleistocene boundary according to Antevs falls about 9,000 years ago (7,000 B.C.). Other workers (e.g., Krieger, 1941) would terminate the Pleistocene at the end of the Anathermal Age from 6-7,000 years ago (4-5,000 B.C.).

[22] Carter, 1949, 1950a, p. 75, 1950b.

[22a] Linton (1949) develops the idea that man might have found it possible to enter the New World during the last interglacial with a Pebble Axe type culture.

[23] Heizer, 1951.

[24] The Late Pleistocene or Rancholabrea type fauna includes numerous forms of Carnivora and Rodentia which continue today plus extinct species of Mammuthus, Mammut, Camelops, Equus, Bison, Smilodon, Megalonychidae and others. See on this: Savage, 1951; Hay, 1927; Stirton, 1939; Stock, 1946.

[25] The oldest dated site in this region is the shellmound deposit at the mouth of Willow Creek, on the southern coast of Monterey County (site Mnt-282). Charcoal from this deposit yielded a radiocarbon date of 1879 ± 250 years (Johnson, 1951, p. 19). The date, while not of great magnitude, is still of interest because the culture represented includes C-shaped shell fishhooks which in the Santa Barbara region not far to the south occur only in the Late culture horizon (Heizer, 1949). If the latest culture is 2,000 years old, the earliest (Oak Grove or Early Mainland) at Santa Barbara may be 5,000 or 6,000 years old. The point here is that the Mnt-282 radiocarbon date implies that the Central Coast archaeological horizons may extend farther back in time than is now generally supposed.

[26] See Steward, 1937, p. 123; Roberts, 1940, pp. 108-109; Antevs, 1948, pp. 15-17.

27 Cf. references cited in note 20. Though the report by Haury (1950) on Ventana Cave, Arizona, has received uniformly favorable and uncritical reviews, it does in fact contain much that is questionable, and I find some of the wider interpretations (pp. 521-541) entirely unacceptable. Much of the Ventana interpretation is based upon a reinterpretation by Rogers of the cultural sequences he had already published for Southern California (Rogers, 1939). The basis of this revision is not set forth, yet it alters, for example, the age of San Dieguito from 1200 B.C. to 8000 B.C. So flexible a foundation can hardly bear the edifice that is constructed upon it.

28 A single cave site with cultural stratification could settle conclusively the problem of whether men left their implements on the Lake Mohave beaches when the lake was at high water point in the pluvial period (the view of Antevs), or whether later fillings might have attracted temporary settlement and the artifacts thus date from more recent times (the view of Rogers and Roberts). Recent fillings of Lake Mohave are mentioned by Rogers (1939) and Thompson (1921). Hubbs and Miller (1948, p. 24) also discuss this problem.

29 Kroeber, 1909, pp. 40-41.

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